00:00:00.000 --> 00:00:02.110
Matt Fronzak
That connects days same deal.

00:00:03.620 --> 00:00:04.130
David A Strand
Hey.

00:00:05.080 --> 00:00:05.670
David A Strand
Uh.

00:00:46.280 --> 00:00:51.150
Mendonca, Nancy (HQ-EO000)
Brad Pitt remind pronouncing your last name for me, so I can try not to slaughter it too badly.

00:00:55.830 --> 00:00:57.520
Koeckeritz, Bradley S
You bet. It's kecker it's

00:00:57.990 --> 00:01:00.130
Mendonca, Nancy (HQ-EO000)
Kicker it's OK, thank you.

00:00:59.160 --> 00:01:01.930
Koeckeritz, Bradley S
take out together over this way to think of it.

00:01:15.680 --> 00:01:19.530
Matt Fronzak
Hey Dave, you got really scratchy audio again like yesterday.

00:01:20.080 --> 00:01:23.590
David A Strand
Right OK, I'll log off log back on you know it's interesting.

00:01:24.420 --> 00:01:38.360
David A Strand
I've been on 2 teams calls this morning and on both of them people have had problems with scratchy with the frame freezing and they had to log out log back in so anyway, I'll be off and back.

00:01:35.290 --> 00:01:35.730
Matt Fronzak
Yeah.

00:01:36.450 --> 00:01:36.770
Matt Fronzak
Yeah.

00:01:38.940 --> 00:01:39.430
Matt Fronzak
Brother.

00:01:55.220 --> 00:01:56.210
David A Strand
Is that any better?

00:01:58.530 --> 00:01:59.420
Matt Fronzak
Ah.

00:01:59.720 --> 00:02:00.230
David A Strand
No.

00:02:00.080 --> 00:02:00.500
Matt Fronzak
No.

00:02:01.550 --> 00:02:02.220
David A Strand
OK.

00:02:04.140 --> 00:02:06.790
David A Strand
Let me try just for the heck of it the switch networks here.

00:02:07.420 --> 00:02:10.890
David A Strand
But Fortunately I will be doing probably much talking today since Brian 's gonna be.

00:02:12.370 --> 00:02:13.200
David A Strand
Uh.

00:02:13.500 --> 00:02:14.550
Matt Fronzak
He's in the hot chair.

00:02:15.000 --> 00:02:18.340
David A Strand
Yeah, he's gonna be the one that sounds like he's off today so.

00:02:19.180 --> 00:02:19.870
David A Strand
I'll be back.

00:02:37.280 --> 00:02:40.800
Matt Fronzak
Gosh, Frank Bruni I haven't seen you in a month of Sundays.

00:02:45.210 --> 00:02:47.570
Matt Fronzak
You're muted, but that's OK, I I got the drift.

00:02:48.990 --> 00:02:50.230
Frank Brody (Guest)
All good how are you doing?

00:02:50.630 --> 00:02:51.680
Matt Fronzak
I'm fine, thank you.

00:02:52.750 --> 00:02:54.380
Frank Brody (Guest)
Do you hear noise in the background?

00:02:55.210 --> 00:02:57.950
Frank Brody (Guest)
I'm doing double duty grandkid watch and.

00:02:59.320 --> 00:02:59.910
Frank Brody (Guest)
Yep.

00:03:01.460 --> 00:03:03.960
Matt Fronzak
Roger that and that's what the big mute buttons for.

00:03:04.890 --> 00:03:05.400
Frank Brody (Guest)
There you go.

00:03:48.560 --> 00:03:51.910
Matt Fronzak
Good morning, everybody Matias you ready to kick this show off.

00:03:57.980 --> 00:03:59.100
David A Strand
Is that any better?

00:03:59.900 --> 00:04:00.580
Matt Fronzak
Negative.

00:04:01.910 --> 00:04:02.640
David A Strand
Interesting.

00:04:05.180 --> 00:04:06.910
David A Strand
Right like this will not fight today.

00:04:07.760 --> 00:04:11.040
David A Strand
And then 2 other meetings and my audio, which is fine.

00:04:11.560 --> 00:04:12.000
Matt Fronzak
Yeah.

00:04:13.210 --> 00:04:19.800
David A Strand
But one guy said he had a problem where the help desk told that Z Scaler was giving problems with teams.

00:04:21.150 --> 00:04:23.760
David A Strand
But but I'm not on Z scaler so.

00:04:24.310 --> 00:04:24.710
Matt Fronzak
No.

00:04:24.390 --> 00:04:24.820
David A Strand
Who knows?

00:04:26.910 --> 00:04:27.440
Dr. Brian Pettegrew
I.

00:04:28.070 --> 00:04:30.110
Dr. Brian Pettegrew
I got on this scale or a couple weeks ago.

00:04:30.810 --> 00:04:31.520
Dr. Brian Pettegrew
And.

00:04:32.110 --> 00:04:35.340
Dr. Brian Pettegrew
Today and yesterday, the only problems with teams that I've had.

00:04:36.340 --> 00:04:42.400
Matt Fronzak
Yeah, I don't I don't think it's I don't think it's Z scaler related but anyhow Matias Good morning to you, Sir.

00:04:36.680 --> 00:04:37.130
David A Strand
Yeah.

00:04:43.850 --> 00:05:14.670
Matt Fronzak
Uh I'm gonna hand it over to you in one minute, but I do wanna mention to our 62 ish so far participants that at yesterday's session number one. There were some intermittent. I believe teams related problems that cropped up, where folks were unable to either mute or unmute in some cases. We had one presenter who was unable to get his audio to work I know in my case.

00:05:14.730 --> 00:05:25.210
Matt Fronzak
While attempting to mute myself one time. My whole teams window shut down and I had to had to log back into the meeting so.

00:05:25.260 --> 00:05:28.630
Matt Fronzak
So so I I hope today goes better.

00:05:29.130 --> 00:05:33.090
Matt Fronzak
Uh and especially for the presenters and and and panelists.

00:05:33.720 --> 00:05:56.610
Matt Fronzak
Ah, but will you know if if if you're having problems and need help. Please use the IT while you're on the chat room to to maybe reach out and we'll see what we can in the background due to to to assist you. On that node Matias. Let me hand it over to you to do the usual greeting and and going over the the dues and don'ts.

00:05:58.420 --> 00:06:29.220
Matthias Steiner (Guest)
OK, Good morning, everyone and welcome to Day 2 of the friends and partners meeting the following meeting that is focused on a technical exchange meeting across federal agencies that deal one way or another with heavy Asian weather and so these 4 days from yesterday through Thursday or really focused on trying to understand what is going on in the various agencies?

00:06:29.540 --> 00:07:04.030
Matthias Steiner (Guest)
Either use of whether to support aviation, which you know they have needs which we need to be aware of and research and development activities and operational matters related to producing obviation weather guidance and what's the next thing coming down the pipe so yesterday. We looked at

traditional aviation and what's going on from a weather perspective and today we will look at evaluation whether for advanced air mobility operations.

00:07:04.720 --> 00:07:27.320
Matthias Steiner (Guest)
And so just that little bit of bookkeeping here at the meeting is generally going from 11:30 AM to 4:00 PM. Eastern daylight savings. Time, and the meeting will be recorded and materials posted on the F power website at the appropriate time after the meeting ends.

00:07:28.490 --> 00:07:57.500
Matthias Steiner (Guest)
On October 20th we will have a planning meeting to discuss look ahead of what's happening on the spring meeting, and also an early look at next year 's fall meeting. If you wanna join us there and make suggestions of what should be discussed there by the way you can also submit topics for future discussions on the F power website, please make use of that.

00:07:53.540 --> 00:07:54.330
Matthew Wandishin (Guest)
Here to discuss.

00:07:58.300 --> 00:08:19.440
Matthias Steiner (Guest)
Now, for today's meeting, uh please, mute your microphone 's. If you're not speaking this will really help reduce background noise and we are using the chat room. So you submit your questions or comments in the chat room, which will you know help us?

00:08:19.500 --> 00:08:22.160
Matthias Steiner (Guest)
Uh keep the panelists.

00:08:23.170 --> 00:08:43.270
Matthias Steiner (Guest)
Focused on on time and once the appropriate time comes up for questions and discussions. Then is Dave Strand again. Our question Master of the chat room, etc or who is in charge. Today, well, he's he's he's up in your screen there on Mateus. It's Ryan Pettigrew today.

00:08:43.800 --> 00:08:45.650
Matthias Steiner (Guest)
Oh, OK sounds good.

00:08:45.100 --> 00:09:01.000
Matt Fronzak
And and uh and and I've talked with Nancy ahead of time and I think Nancy will probably run point on most of the Q&A with Brian as her as her backup or filling in any any other ones that that may have been missed in the in the course of the day.

00:09:01.780 --> 00:09:16.770
Matthias Steiner (Guest)

OK, that sounds good. And that's a good cue to hand it over to Nancy Mendonca, who will be the Master of ceremonies for today's Day on advanced air mobility, please. Nancy take it from here, thank you.

00:09:17.920 --> 00:09:48.710
Mendonca, Nancy (HQ-EO000)
So thank you and welcome everyone to asthma and Matthias said was day. 2 of our our technical exchange meeting. Jennifer if you bring up the slides will do a quick walk through the agenda. Basically, I've got its start the day is structured, it with 2 sessions and 2 panels, alternating the session that the sessions will have some kind of an overview thinking of the first one, will be around operations in lower altitude planetary boundary layer.

00:09:49.360 --> 00:09:56.460
Mendonca, Nancy (HQ-EO000)
That kind of Advanced Air Mobility Urban Air Mobility trade space there, so I'm I'll take the second slide.

00:09:57.150 --> 00:10:27.890
Mendonca, Nancy (HQ-EO000)
So I'd like to thank all the speakers from them. I I'm not going to do, I will do introductions by title and that? But the full BIOS and things will be available as part of the slides afterwards so if folks are interested in learning more about people. Thank you for the folks who did send in their BIOS and also like say courage folks to go back and look at him, so looking forward to a great set of speakers here come the the questions that I've asked them to talk to or they're on the left looking for little farther forward in the agenda, the on the next slide.

00:10:28.220 --> 00:10:59.190
Mendonca, Nancy (HQ-EO000)
Do you first stump panel will be Steve Bradford and pick up our parmal Koper Decker for those who haven't met him, yet, which I think are very few people on to talk about the future vision and then the second session. We have a AMA series of speakers looking at the current state of of what research is going on in the across the federal government and the last panel session. I'm really excited to have some great speakers to talk about you know the vision wrote challenges to get to the vision.

00:10:59.480 --> 00:11:04.370
Mendonca, Nancy (HQ-EO000)
Potential bomb thoughts forward from that, so looking forward to a great great day.

00:11:05.170 --> 00:11:14.040
Mendonca, Nancy (HQ-EO000)
And hopefully a lot of quote lots of questions. And lots of interchange. I'm next slide. The kind of goals. I had were thinking about when I set the meeting up.

00:11:14.450 --> 00:11:42.550
Mendonca, Nancy (HQ-EO000)
Was to identify the stakeholders across the federal government? Is we've put together a research portfolios. You know what? Are the stakeholder needs build awareness across the federal agencies about the different missions. I mean we're doing a lot of public good missions out there. Hopefully we'll be able to leverage what each other is doing lessons learned and and be able to provide much better

services because of that start to look at requirements for that low altitude weather in the future so that we can shape.

00:11:42.740 --> 00:12:14.360
Mendonca, Nancy (HQ-EO000)
Shape or research portfolios to to build and and need and satisfy those those requirements that were that were identifying today also just kind of start to look at a catalog you know, quote Unquote 's of what research is going on. So we can see what's being done. You know where we can collaborate where the gaps are and have a bunch better informed research portfolio, the each of the agencies initiates and the the last is to hopefully find if if folks find value in this is to understand a better venue.

00:12:14.590 --> 00:12:45.640
Mendonca, Nancy (HQ-EO000)
Or continue here of how do we you know? How do we keep this going so hopefully we start something that folks find valuable and there's a desire to keep going. I kind of caught the seals along the right as you know as agencies become more interested in and engage we can add the seals and and build maybe a potential community interest. Next my last slide before I turn it over to the verse, Speaker as I'm looking forward. You know, I mentioned the community of interests. There's there's things we can learn and things we could do. I think there's a lot of best practices out there.

00:12:45.690 --> 00:12:48.990
Mendonca, Nancy (HQ-EO000)
Hopefully we can pick up some of those, and and do do what's needed.

00:12:50.130 --> 00:13:00.810
Mendonca, Nancy (HQ-EO000)
We've written between NASA and the FAA a concept of operations around weather and advanced her mobility and and maybe that will serve as our guiding light or vision to shoot for?

00:13:00.860 --> 00:13:32.340
Mendonca, Nancy (HQ-EO000)
Or some of what we're going to start assemble road Maps and and understand the trade space looking forward like I said mentioned several times research portfolios? How do we make sure our research portfolios? Meet the needs of the stakeholders. We're seeing a lot more innovation across you know technologies communities ways of doing things. Hopefully, by this broader awareness that we're able to enable innovation in targeted areas and Lastly. It's say you know road Maps are or aren't real good unless you keep up to date.

00:13:32.390 --> 00:14:02.340
Mendonca, Nancy (HQ-EO000)
So hopefully looking forward will find event will find this valuable and continue it and and keep a road map updated that people can come back to and understand and learn from with that. Thank you very much. I will keep an eye on for questions. But the format for today. I guess like I mentioned 10 minutes for each nominally 10 minutes for each speaker. I've liked this format. I've tried it. Before I think it's a great because it reduces the burden on the speakers and it.

00:14:02.420 --> 00:14:25.670
Mendonca, Nancy (HQ-EO000)
For the participants I found I saw less teams, fatigue or zoom fatigue from that, from this format. So hopefully folks have a flexible. Hopefully, like the format and look forward to engaging in here in comments and questions with that I will introduce the first speaker Brad Corn. It's nighttime messed it up from the Department of interior with head over to Brett over to you. Brad thank you.

00:14:26.710 --> 00:14:35.390
Koeckeritz, Bradley S
Thanks, Nancy. Yes, I'm Brad Kecker. It's time, the division chief for unmanned aircraft systems with the Department interior OPS aviation services.

00:14:36.100 --> 00:14:57.250
Koeckeritz, Bradley S
Uh my backgrounds in aviation wildland firefighting predominantly spent about 20 years on a helitack crews round the West United States and then along the way became an airplane pilot flight instructor and then took over the small unmanned aircraft program back in 2010 and have been pretty much full time.

00:14:57.830 --> 00:15:03.130
Koeckeritz, Bradley S
A small uas integration in interior for the last 11 years.

00:15:03.930 --> 00:15:08.920
Koeckeritz, Bradley S
Our Department is quite large when you have 9 bureaus.

00:15:09.560 --> 00:15:18.710
Koeckeritz, Bradley S
Uh I'll just kind of run through some just so folks know what which which bureaus belonged to DOI 'cause oftentimes we get confused with agriculture, but

00:15:19.300 --> 00:15:25.950
Koeckeritz, Bradley S
uh and Bureau of Indian Affairs Bureau of Land Management Bureau of Ocean Energy Management Bureau of reclamation.

00:15:26.010 --> 00:15:36.570
Koeckeritz, Bradley S
In a National Park Service Office of surface mining reclamation US Fish and Wildlife Service and USGS pigment kind of biggest of the bureaus that we have.

00:15:37.390 --> 00:15:50.660
Koeckeritz, Bradley S
Uh we manage about 500, 1,000,000 acres of the of public land, which is about 20% of the landmass United States. But we also manage the outer continental shelf and oil and gas interests there.

00:15:51.250 --> 00:15:55.480
Koeckeritz, Bradley S
Uh and we have conducted missions all the way from the Arctic.

00:15:56.470 --> 00:16:02.560
Koeckeritz, Bradley S
2 little tiny island called Palmyra Atoll, which is basically in the center of the Pacific Ocean.

00:16:03.330 --> 00:16:06.670
Koeckeritz, Bradley S
Uh we have a pretty robust aviation program.

00:16:07.240 --> 00:16:16.180
Koeckeritz, Bradley S
Uh we think about 50,050, 5000 flight hours per year of man deviation and then generally.

00:16:16.390 --> 00:16:26.880
Koeckeritz, Bradley S
Uh not withstanding some political stuff that's been going on are you ask programs been around 10 to 15,000 flights annually when it's up and fully operational.

00:16:27.850 --> 00:16:41.700
Koeckeritz, Bradley S
We've got 89 total fleet. DOI owned aircraft, 53 of those which are in Alaska. Prominently, like fixed wing aircraft and then 36 fleet aircraft in the Lower 48.

00:16:43.140 --> 00:16:56.750
Koeckeritz, Bradley S
We also have up to about 1200 contract aircraft that we utilize for either an exclusive use contracts or calling needed contracts think firefighting.

00:16:57.740 --> 00:17:06.180
Koeckeritz, Bradley S
You know in the summer time where we have a surge capacity needed will bring in those those collimated contractors.

00:17:06.980 --> 00:17:16.810
Koeckeritz, Bradley S
We also have a lot of Co operators in the various states where we evaluate and inspect their aircraft for utilization under operational control.

00:17:18.130 --> 00:17:26.470
Koeckeritz, Bradley S
Are you as program has about 853 small uas and 568 remote pilots across 47 states?

00:17:27.530 --> 00:17:34.820
Koeckeritz, Bradley S
Our mission set is very diverse. We do lots of different kind of missions from firefighting to search and rescue.

00:17:35.520 --> 00:17:41.700
Koeckeritz, Bradley S
Wildlife survey offshore oil and gas transportation of inspectors to offshore platforms.

00:17:42.360 --> 00:17:52.620
Koeckeritz, Bradley S
Evaluating geological geologic hazards, Hurricane Response Marine Mammal research surface mining law enforcement so it's a very diverse diverse mission set.

00:17:53.820 --> 00:18:01.110
Koeckeritz, Bradley S
As far as how we get our current weather observations. I would say the vast majority of our pilots are using.

00:18:01.970 --> 00:18:29.590
Koeckeritz, Bradley S
The digital data services whether that's 4 flight. The aviation Weather Service center. Jefferson 1800 on WX brief online and then particularly in places like Alaska, we utilize the network of webcams to try and get some real time intelligence of conditions in various places, especially those kind of critical chokepoints passes things of that nature where pilots can get into trouble.

00:18:30.910 --> 00:18:35.430
Koeckeritz, Bradley S
As far as what could be improved and what what's missing.

00:18:36.370 --> 00:18:56.210
Koeckeritz, Bradley S
I'm talking to one of my colleagues. You know, we think one of the challenges in particular. In the West and and in Alaska is just the distance between observation stations and how you can have weather in between A&B and you don't know that it's there until you until you get into the area.

00:18:57.550 --> 00:18:59.050
Koeckeritz, Bradley S
The other issue we have.

00:19:00.120 --> 00:19:19.660
Koeckeritz, Bradley S
Significantly, across the West and in Alaska and other places is connectivity is just the lack of available network to get current data so as things change over the course of a flight or course of a day or course of a project we if we don't have access to data then we can't get updated.

00:19:20.370 --> 00:19:21.850
Koeckeritz, Bradley S
Uh whether products.

00:19:23.160 --> 00:19:23.830
Koeckeritz, Bradley S
Uh.

00:19:24.510 --> 00:19:38.430
Koeckeritz, Bradley S
As far as improvements, you know, I think just a more robust network of observation stations, but also for us is the more robust network in general in terms of covering a large geographic area with.

00:19:38.630 --> 00:19:42.270
Koeckeritz, Bradley S
A man with a cell signal that we can get access to.

00:19:44.640 --> 00:19:48.960
Koeckeritz, Bradley S
The 4th question as far as how much of an impact with the improvement, having our comp lixing our mission.

00:19:50.430 --> 00:20:14.170
Koeckeritz, Bradley S
Anytime we can get better decision support tools. It's gonna make us safer and more efficient and ultimately save time and money and so that to us is the biggest obviously safety is the number one priority for us is ensuring that that each flight goes off safely and efficiently. But you know also saving money and getting better better information.

00:20:15.150 --> 00:20:34.230
Koeckeritz, Bradley S
One of the things like for example, with the small uas program is is the right weather conditions to collect the right kind of imagery in order to make map products and things of that nature so you know the more accurate weather. Data is the better the better data. We can collect for our for our actual emission.

00:20:35.880 --> 00:20:49.980
Koeckeritz, Bradley S
Then the final thing is what would we like to get out of today's session. I think just kind of information gathering learn what the community is up to see if there's any any particular items that would be of use to us or things that were unaware of or.

00:20:50.550 --> 00:20:54.700
Koeckeritz, Bradley S
Uh networking, we can do to to improve our overall mission.

00:20:55.620 --> 00:21:00.150
Koeckeritz, Bradley S
So with that I'll take any questions folks may have about DIY.

00:21:13.130 --> 00:21:14.140
Koeckeritz, Bradley S
I'm not seeing any.

00:21:15.680 --> 00:21:27.950
Mendonca, Nancy (HQ-EO000)

Subreddit, it sounds like you have a mix of urban and rural but also ones that you can plan ahead for and ones that you need to do without a lot of notice.

00:21:29.220 --> 00:21:46.810
Koeckeritz, Bradley S
Yeah, so yeah, we in general, I would say majority of our missions are in rural or unpopulated or sparsely populated areas. We do have though you know 2 helicopters based in downtown Washington DC that fly for the park US Park Police.

00:21:47.550 --> 00:22:03.740
Koeckeritz, Bradley S
Uh so you know our you're exactly right at our missions are mixed between you know projects that are planned well in advance to emergency emergency response, which is you know plan your flight in 5 minutes and get off the ground to go.

00:22:07.090 --> 00:22:15.530
Mendonca, Nancy (HQ-EO000)
That sounds great. I'm our question from Brian what's Department of Interior 's current US policy on flights allowable platforms.

00:22:16.490 --> 00:22:17.860
Koeckeritz, Bradley S
Yeah, we could do that.

00:22:18.830 --> 00:22:29.970
Koeckeritz, Bradley S
So right now, we're we're going through a bunch of machinations matched imaginations with the White House subject to Europe as a result of Executive Order 3981.

00:22:30.620 --> 00:22:43.100
Koeckeritz, Bradley S
The the current policy is we're able to fly in for emergency missions. Our existing fleet were still in a holding pattern on procurement. But we're hoping to get off of top dead center, there shortly based upon the.

00:22:43.160 --> 00:22:48.040
Koeckeritz, Bradley S
But the OS recommendations that will be going back to the White House.

00:22:48.680 --> 00:23:02.290
Koeckeritz, Bradley S
Uh so right now, we're in We're in the evolution mode as that those policies are finalized and we see what the final. The final guidance coming back from OMB is going to be as a result of those recommendations.

00:23:04.040 --> 00:23:08.370
Koeckeritz, Bradley S
Uh as a percentage of flights were still very low.

00:23:08.420 --> 00:23:22.690
Koeckeritz, Bradley S
So are you as you know, we, we, we figured we would have been about 17,000 flights this year before the the previous administrations grounding order. And this year were about 4000 so we've seen a pretty significant decline in what we expected.

00:23:23.300 --> 00:23:26.890
Koeckeritz, Bradley S
But overtime I believe that that we will scale up again.

00:23:27.550 --> 00:23:58.790
Koeckeritz, Bradley S
We're not typically utilizing uas to replace manned aircraft what we're doing. There are specific use cases where we do that. But in general, what we've found is that the small uas are a good supplement for either mission sets that are to hazardous to conduct with a traditional aircraft or in in in in agencies and in projects where they don't have the resources to pay for A.

00:23:58.950 --> 00:24:19.840
Koeckeritz, Bradley S
Uh manned aircraft so you know your average science scientists. That's doing field research needs, some aerial apparently collected data. They can't afford a $1500.00 helicopter, but they can they can afford to learn how to fly a $1500.00 drones so that's where we really seen that uptick in?

00:24:20.490 --> 00:24:27.200
Koeckeritz, Bradley S
Uh in our use Joes question its executive order 13, 981.

00:24:28.430 --> 00:24:52.780
Koeckeritz, Bradley S
What is the order that we're working with the White House on so we've been going back and forth at the deputy secretary level with our colleagues at at Commerce and justice and off science, technology policy on the final recommendations to the White House and they should be getting delivered from NSC to the White House here shortly and then hopefully we get some further guidance on a path forward.

00:24:58.960 --> 00:25:06.390
Koeckeritz, Bradley S
Uh looking at another question what types of Usdata at Fannie and decision support tools versus processed by an analyst before sharing.

00:25:08.100 --> 00:25:14.620
Koeckeritz, Bradley S
So, in terms of we have not only uas data that gets shared but we also have data that we collect like our.

00:25:15.080 --> 00:25:45.500
Koeckeritz, Bradley S
Then I rocks program where they collect thermal or infrared imagery from align scanner in the back of an airplane create a create the fire perimeters to deliver those down to the ground in general. I don't have exact numbers on how our breakdown is, but it depends on the type of the mission a lot of the

missions that we do from an emergency standpoint or kind of more ISR type missions where we are just out there trying to collect.

00:25:45.730 --> 00:26:08.320
Koeckeritz, Bradley S
Video imagery real time or near real time to inform decision makers on where fire is a search and rescue law enforcement type mission. But we also have a significant percentage of projects where we're collecting thousands of images and Geo and then processing. Those images into a derived product and then that direct product becomes the the decision support tool so.

00:26:08.370 --> 00:26:16.530
Koeckeritz, Bradley S
So we collect all kinds of different stuff we've got 37 different payloads that we've approved to fly on various aircraft.

00:26:17.160 --> 00:26:31.710
Koeckeritz, Bradley S
Uh so it it's anywhere from a aerial ignition device that we used for fire to a Doppler radar to you know 30 times optical zoom camera to a ground penetrating radar. So there's a lot of different payloads that we've experimented with.

00:26:33.770 --> 00:26:34.610
Koeckeritz, Bradley S
Uh hum.

00:26:34.040 --> 00:26:34.770
Dr. Brian Pettegrew
Brad this is.

00:26:35.370 --> 00:26:44.140
Dr. Brian Pettegrew
I I want to take you back really quick since you're talking about decision support tools. There were a couple questions up above regarding your weather data, particularly hempson jeffay pages.

00:26:42.540 --> 00:26:42.980
Koeckeritz, Bradley S
Yep.

00:26:49.710 --> 00:26:54.120
Koeckeritz, Bradley S
Uh I'm not GF GF a helped me with those names.

00:26:52.540 --> 00:27:03.980
Dr. Brian Pettegrew
So so Matt Fronzak asked if a DUI operations uses a WC hems and GFA pages and a very similar question about the sources of weather data used by the DOI uas operators.

00:27:04.870 --> 00:27:07.230
Koeckeritz, Bradley S
What are the hands and nothing happened yet?

00:27:04.890 --> 00:27:07.880
Matthias Steiner (Guest)
Bryan you may have to explain the Acronyms.

00:27:09.670 --> 00:27:15.510
Dr. Brian Pettegrew
So a WC is the aviation weather center and the hens tool is a decision support tool called.

00:27:17.280 --> 00:27:28.080
Dr. Brian Pettegrew
A helicopter and Emergency Management Medical Services and the GFA is the graphical forecast for aviation on the AWC tools page.

00:27:26.020 --> 00:27:26.400
Koeckeritz, Bradley S
Yep.

00:27:28.550 --> 00:27:35.140
Koeckeritz, Bradley S
So absolutely the aviation weather center. I think I mentioned that earlier. We I'm sure I know our pilots use that?

00:27:35.190 --> 00:27:48.740
Koeckeritz, Bradley S
Uhm I think in general, most of our pilots are using foreflight now to be honest with you. It's very slick tool. It's kind of all-in-one between flight planning and and.

00:27:48.790 --> 00:28:16.120
Koeckeritz, Bradley S
Uh and weather data collection, we have some standalone risk management tools that we utilize that live within our office and I know? Our bureaus have some different models that the gar model and some other different risk assessment models that they use Bureau by Bureau so I can't say for certain that all pilots use a WC but I know that all pilots ingest and use the data that comes from that.

00:28:21.190 --> 00:28:21.950
Koeckeritz, Bradley S
Uhm.

00:28:22.720 --> 00:28:27.060
Koeckeritz, Bradley S
Looking at Matt I think I got all the ones above here.

00:28:27.710 --> 00:28:28.460
Koeckeritz, Bradley S
Uhm.

00:28:29.980 --> 00:28:37.030
Koeckeritz, Bradley S
Matt 's question on what types of severity of weather will cancel your non helicopter missions so.

00:28:38.150 --> 00:28:49.890
Koeckeritz, Bradley S
In general, I Fr or were were mostly a VFR organization, so things that cancel a lot of our missions are you know just I have far conditions.

00:28:50.370 --> 00:28:55.430
Koeckeritz, Bradley S
Uh and the other is smoke in the wildland firefighting arena, we have a lot of.

00:28:56.500 --> 00:29:02.590
Koeckeritz, Bradley S
Today's now where we have inversions or just really dense smoke from the quantity of Flyers that are happening.

00:29:02.710 --> 00:29:32.980
Koeckeritz, Bradley S
Uh and in those situations that's where really uas has been quite helpful is that it gives us the opportunity to fly in those smoky conditions and gather intelligence and and and in particular use the aerial ignition system that we have on the qas to conduct burnout and backfire operations and conditions that we typically would not never not be able to fly in which is in those extremely smoky conditions. So you know, we're little we're we're at low altitude.

00:29:33.030 --> 00:29:37.940
Koeckeritz, Bradley S
Organization by nature very few of our flights are in in you know.

00:29:39.010 --> 00:29:50.520
Koeckeritz, Bradley S
That's a airspace so uhm were we live in the low altitude. And so we're subject to any of the typical restrictions on our ability to operate severe weather thunderstorms things of that nature.

00:29:55.980 --> 00:30:00.800
Mendonca, Nancy (HQ-EO000)
Fred thank you very much any last questions before we turn it over to Jim.

00:30:05.450 --> 00:30:24.000
Mendonca, Nancy (HQ-EO000)
Great presentation and and a ton of information thank you. Thank you very much and hope. Hope you're able to join us for the rest of the the these secession and and hopefully the day so I'm I'd like to introduce Jim. Thank you Jim Wallman. He's a meteorologist with the US Department of Agriculture.

00:30:16.610 --> 00:30:16.890
Koeckeritz, Bradley S
Yeah.

00:30:29.030 --> 00:30:50.700
Wallmann, James - FS, BOISE, ID
Alright Thanks Nancy and a uh, yeah, as Nancy mentioned I'm I'm a mirror. I was here with the US Forest Service in Boise, Idaho, working at the National Interagency Fire Center and so I'm just gonna really focus more from you know, Brad talking about the overall more toward the The Wireland Fireside with Uas.

00:30:51.730 --> 00:30:56.180
Wallmann, James - FS, BOISE, ID
Nancy I didn't send Jennifer a short presentation if.

00:30:57.210 --> 00:30:59.110
Wallmann, James - FS, BOISE, ID
If you can get that loaded.

00:31:00.220 --> 00:31:04.050
Mendonca, Nancy (HQ-EO000)
OK, a perfect Jennifer do you want to grab it or you have it?

00:31:02.130 --> 00:31:02.490
Wallmann, James - FS, BOISE, ID
Yeah.

00:31:05.020 --> 00:31:07.230
Jennifer Jaquin
I will be grabbing it momentarily.

00:31:08.550 --> 00:31:08.980
Wallmann, James - FS, BOISE, ID
OK.

00:31:11.170 --> 00:31:28.400
Wallmann, James - FS, BOISE, ID
Even just go to the the second slide if you want. Then Jennifer when when he get it up and what I'm going to talk about really at first, and kind of lead into it here is you know just talk about wildland fire you just have different there's a typing system.

00:31:28.980 --> 00:31:52.790
Wallmann, James - FS, BOISE, ID
Uhm where you know, depending on the capability of the resource. You're using it could be. You know type. One Type 2 all the way up to like Type 6 generally. I know for you as we currently have type you know type one through Type 4 as what we have the capability of right now. Generally, the the type one and Type 2 or the larger.

00:31:54.170 --> 00:32:10.210
Wallmann, James - FS, BOISE, ID
Larger systems and are run by contractors that are contracted out and then the Type 3 and Type 4 very

you know the smaller ones that are generally handled by agency personnel that are trained as to pilot the the crafts there and.

00:32:11.090 --> 00:32:15.180
Wallmann, James - FS, BOISE, ID
So, like the the type one and 2 in in general.

00:32:15.670 --> 00:32:45.700
Wallmann, James - FS, BOISE, ID
Uh as Brad was mentioned they can they can fly even when it when it's smoking and help to get some of the data a lot of those are use help to aid in mapping missions detect heat near the fire line, or in that era any spot fires outside potential containment lines or beyond, the containment lines and help to identify any problem areas. On on fires to help target you know provide information to the the boots on the ground the people on the ground.

00:32:45.990 --> 00:32:47.490
Wallmann, James - FS, BOISE, ID
We're doing the firefighting in where?

00:32:49.140 --> 00:32:57.970
Wallmann, James - FS, BOISE, ID
Where they can be of most use and most effective as well so there and then uh as Brad was also mentioning a lot of the?

00:32:58.020 --> 00:32:59.950
Wallmann, James - FS, BOISE, ID
Yeah, the Type 3.

00:33:00.280 --> 00:33:04.530
Wallmann, James - FS, BOISE, ID
Uh run by agency personnel, they can do.

00:33:06.290 --> 00:33:09.270
Wallmann, James - FS, BOISE, ID
Ah firing operations dropping.

00:33:09.620 --> 00:33:21.750
Wallmann, James - FS, BOISE, ID
Ah, I'm we call him ping pong balls little balls filled with the ignitable fluid so when they hit the ground. So now it's it'll it'll ignite and instart backfire operations so that that's something that's capable.

00:33:22.140 --> 00:33:26.230
Wallmann, James - FS, BOISE, ID
Uh one of the capabilities as well, and then.

00:33:28.010 --> 00:33:57.170
Wallmann, James - FS, BOISE, ID
The other thing is too is there's also other projects kind of going on. I know in in in the agency or working on, too, so OK now you have it up. If you just want to go through it. Just go to the these are just

the different typing like fixed wings and in the rotorcraft that are used for the different types. You can see by you know the the type capability based on endurance. Also, the data collection out too, and their Max range kind of you know given the typing.

00:33:57.940 --> 00:34:00.760
Wallmann, James - FS, BOISE, ID
If you go to the next slide. It's just going to be one example.

00:34:02.070 --> 00:34:24.520
Wallmann, James - FS, BOISE, ID
Uh just it's like one example of a of a type one and just kind of giving you the the specifications on and the performance and then general the typical uses you know just large far support the mapping mapping projects and and things like that. It's they're really used heavily when you when you can get them on an incident for the mapping part of it.

00:34:24.580 --> 00:34:30.720
Wallmann, James - FS, BOISE, ID
Uh so if you go ahead. Uh actually 2 more slides and go to the Type 3.

00:34:31.460 --> 00:34:33.060
Wallmann, James - FS, BOISE, ID
Ah example.

00:34:34.790 --> 00:35:05.840
Wallmann, James - FS, BOISE, ID
This is just another example of a Type 3 kind of what what it looks like one of the rotorcrafts. They can be. You know quadcopter or hex. I think this example is a is a hex here at the M 600 and you know typically uses uh again. Aerial ignition that can be used for mapping and these generally because the range is not as much they are flown pretty close to the line. You'll you'll have the operators. The pilots getting out closer to the line so they so they can be within.

00:35:05.890 --> 00:35:16.240
Wallmann, James - FS, BOISE, ID
Range and and conduct the operations from there, so and then if you go ahead 2 more slides. We are working on other projects. I know when I was talking to.

00:35:18.250 --> 00:35:23.920
Wallmann, James - FS, BOISE, ID
One of the one of the current projects is just for air sprays coordination, they're already working with NASA.

00:35:25.080 --> 00:35:26.770
Wallmann, James - FS, BOISE, ID
And so this is just really just.

00:35:28.050 --> 00:35:57.750
Wallmann, James - FS, BOISE, ID
Trying to get you know better understanding of you know because you're you're dealing in a very

congested airspace on wildland fire and in order to better coordinate at this is something that was really important port and so this is one of the project. Their current working on. I think it's in phase. One of 3 planned phases and then going that the the next slide. One of the things that I was talking about one of the agency operators here is what do they need and generally they're looking for lesson 20?

00:35:58.020 --> 00:36:28.270
Wallmann, James - FS, BOISE, ID
20 knots of wind and once they get above about 15 meters above ground level. They're fairly stable. They used GPS to help stabilize this system to account for turbulence. So it's it makes it a lot easier to fly, but of course, you know in some areas where if you can get downslope winds. I I hadn't talked to him about that it that he had no experience with that, but I imagine in areas where you have extreme turbulence and they would still not be able to account for it. I imagine but I don't know for sure. But.

00:36:28.330 --> 00:36:59.760
Wallmann, James - FS, BOISE, ID
You know it's also where did they get their their observations and in addition, you know to using I know some of them you will go to the aviation one or center, but they use. I nearby remote automated weather stations that are specific to wildland fire put out in remote areas. The leaders of National Weather Service spot forecast to get an idea of what's happening there and then on the larger incidents. If there's an incident meteorologists at these incidents they will get information from the inseam urologist.

00:37:00.020 --> 00:37:07.810
Wallmann, James - FS, BOISE, ID
And you who will put you know provide their own site specific forecasts or aviation forecasts so if we go to the next slide.

00:37:08.790 --> 00:37:30.120
Wallmann, James - FS, BOISE, ID
There just talking about the incident mirror ologist support a little bit more in depth than what they're getting generally they're going to be on the type one and Type 2 team incidents occasionally on a Type 3, so for example, a couple of fires going on right now like the CNP complex, the windy fire RR.

00:37:31.330 --> 00:37:35.700
Wallmann, James - FS, BOISE, ID
Are fires that have imets and so they cannot help it?

00:37:36.680 --> 00:38:07.170
Wallmann, James - FS, BOISE, ID
You know the Mets will give daily forecast generally over the fire, but they also do other optional forecasts, depending on the needs of the team in there and what's requested aviation forecasts? Which still you know go at generally there's a form that we would use and we were on fires it. It can be done. You know every 1000 feet. Just temperature, humidity, and and wind speed at at each elevation generally derived from model forecasts if they?

00:38:07.220 --> 00:38:37.670
Wallmann, James - FS, BOISE, ID

You know what they have in the fires and then updates and alerts for any hazardous weather whether it be strong winds low humidity thunderstorms in the area, or even working with the fire behavior analysis extreme fire behavior that you know any large column development. They they will issue updates and alerts and then what a lot of Imets will also do is a program run by its wind ninja. It's a laptop when modeling program where you can ingest other.

00:38:38.190 --> 00:38:57.990
Wallmann, James - FS, BOISE, ID
Uh models or you know just use a Aras Station to as an input and it'll give you a higher resolution up to like 250 meter resolution wins surface winds over the fire area, or whatever location you choose and that's the IT was developed by the.

00:38:58.920 --> 00:39:28.630
Wallmann, James - FS, BOISE, ID
Fire Sciences lab in Missoula, Montana so just kind of next slide give a little bit more idea of what I meant so trying to do on the fire and what the needs are when you get into the the finer scale of the fire is Winninger itself. You earn pig can be generally just show a model, but it can be like a A Generalized area, or you can use a point source from like arroz, but some of the model options include than and the 3 kilometre dwarfy RW.

00:39:29.000 --> 00:39:30.830
Wallmann, James - FS, BOISE, ID
There, her and

00:39:31.530 --> 00:40:02.420
Wallmann, James - FS, BOISE, ID
uh and then downscale it based on 2 solvers, either just have conservation of mass or conservation of mass and momentum. So there's no real stability options in there at all or or or any diabetic effects output. You can put to either a Google Earth, which is shown here on the right or you can send a geospatial PDF or boots on the ground. So it can be pulled up in like for example, events and Maps on the on the smartphone. I miss can run this in the field.

00:40:02.660 --> 00:40:11.830
Wallmann, James - FS, BOISE, ID
Or it can be done in the National Weather Service or 4 servers. BLM district offices. It's needed, and they're getting the resolution is 250 meters.

00:40:12.630 --> 00:40:24.270
Wallmann, James - FS, BOISE, ID
There so I'm really so getting into the next slide. The last slide here is like what we're really looking for to kind of help. I mentioned what UIS and the ground is really what we need is.

00:40:24.520 --> 00:40:54.210
Wallmann, James - FS, BOISE, ID
High higher resolution data of the of the fire environment. I kind of left that last bullet out and then really high resolution in modeling of complex terrain would really be helpful. You know, not just though. The winds as is done in win ninja. But something that will take into account the diabetic facts and also

what's going on uh an operator any turbulence. A lot and things like that, especially since we're dealing with complex terrain on fires so and that's all I have.

00:40:54.540 --> 00:40:56.280
Wallmann, James - FS, BOISE, ID
So any questions.

00:41:04.250 --> 00:41:17.120
Mendonca, Nancy (HQ-EO000)
I'm not seeing any questions in the chat from the fires any lessons learned on interagency coordination from the fire from fire centre or or should say what's the most obvious one of a lesson learn or best practice.

00:41:19.400 --> 00:41:23.260
Wallmann, James - FS, BOISE, ID
As far as what do you mean like a best practice as far as?

00:41:22.850 --> 00:41:26.710
Mendonca, Nancy (HQ-EO000)
I'm working working Cross Department Cross Agency.

00:41:28.050 --> 00:41:40.660
Wallmann, James - FS, BOISE, ID
Uhm the really it's it's something that's that's ongoing, it's really just the The The The Communication is really what needs to be refined so.

00:41:41.310 --> 00:41:42.780
Wallmann, James - FS, BOISE, ID
Ah, it's a

00:41:43.590 --> 00:41:55.740
Wallmann, James - FS, BOISE, ID
the communication is really what's important, and then doing after action reviews and things like that, so those are? What's really important, and then finding better ways. We can can relate to mother in each others needs.

00:41:56.840 --> 00:41:57.340
Wallmann, James - FS, BOISE, ID
So.

00:41:58.550 --> 00:41:59.120
Wallmann, James - FS, BOISE, ID
Uhm.

00:41:58.660 --> 00:42:03.190
Mendonca, Nancy (HQ-EO000)
Sounds great and I have 2 questions if if you can't see them I can read them.

00:42:01.650 --> 00:42:01.980
Wallmann, James - FS, BOISE, ID
Yeah.

00:42:03.350 --> 00:42:12.530
Wallmann, James - FS, BOISE, ID
I I I can see him so silly and what is the time between obtaining data relating to firefighters it? It depends on on? What you're looking at in in general.

00:42:13.200 --> 00:42:17.210
Wallmann, James - FS, BOISE, ID
Uh it can be like the the general forecast.

00:42:18.240 --> 00:42:42.930
Wallmann, James - FS, BOISE, ID
Uh you know you could be maybe you know 6 to 12 hours, depending on what's going on like for the forecast for the operational plan. The overview under fire can be as much as 12 hours old when the fire is get it from when you produce it. But for the high resolution events or or alerts and things like that generally once you get obtain the data whether from radar or anything else.

00:42:43.590 --> 00:42:58.560
Wallmann, James - FS, BOISE, ID
Uh you can get something out within 5 minutes over the radio or through a cell phone call and that will be over the radio. But the problem is, you related to communications they sent it out and then there's a chain that it goes through so even in a in A.

00:42:59.620 --> 00:43:23.000
Wallmann, James - FS, BOISE, ID
Uh you know a short short term forecast that's a of critical importance. Sometimes it can be as much as a a half hour to maybe even 45 minutes to get it to the boots on the ground because of the chain of of communication. It goes through on the radio and then any potential issues on the radio. You know with 'cause. They're dealing with a lot of line of sight at that point.

00:43:24.310 --> 00:43:34.840
Wallmann, James - FS, BOISE, ID
And so if if there's any cruise or or resources in a hole. They may not receive it right away. It may take several attempts before they reached with that update.

00:43:36.300 --> 00:43:44.650
Wallmann, James - FS, BOISE, ID
Uh next question how do you decide whether smaller US is safe to operate under the at the experience wins that that's not something?

00:43:45.270 --> 00:44:02.690
Wallmann, James - FS, BOISE, ID
Uh I I decided myself it's something that the user will based on their experience and what their guidelines are so generally they they, I I know one example. I was given is that it any surface wins, 20 knots or greater they will they will not fly?

00:44:03.810 --> 00:44:07.630
Wallmann, James - FS, BOISE, ID
Do the potential damage and and lack of control at that point.

00:44:10.250 --> 00:44:13.360
Wallmann, James - FS, BOISE, ID
As far as any feedback on the on the.

00:44:14.280 --> 00:44:15.980
Wallmann, James - FS, BOISE, ID
Accuracy of when engine information.

00:44:16.710 --> 00:44:19.000
Wallmann, James - FS, BOISE, ID
Uh in regards to Dustin sudden changes.

00:44:19.940 --> 00:44:30.110
Wallmann, James - FS, BOISE, ID
It really went ninja is fairly accurate, especially in any areas where you have like larger drainage is generally.

00:44:31.590 --> 00:44:34.980
Wallmann, James - FS, BOISE, ID
You know as you get you know you have several grid points to resolve the drainage.

00:44:36.050 --> 00:44:55.910
Wallmann, James - FS, BOISE, ID
And as far as regard to Gus and sudden changes that is not explicitly modeled. It's only generally the sustained winds that are expected in the terrain. So it it does do a little bit better. The mass momentum. Solver is generally better because it will better resolve least side effects.

00:44:56.240 --> 00:45:18.750
Wallmann, James - FS, BOISE, ID
Uh, however, the IT takes a lot longer to run probably about 10 to 20 times as long to run so that may be something that uh some some of us in the field. When I was and I met before I moved here. We would sometimes try to run those simulations a little bit ahead of time to get any potential impacts.

00:45:19.360 --> 00:45:22.970
Wallmann, James - FS, BOISE, ID
Uh I I had a time and then that run just the conservation of mass.

00:45:23.690 --> 00:45:24.210
Wallmann, James - FS, BOISE, ID
Uhm.

00:45:25.370 --> 00:45:29.440
Wallmann, James - FS, BOISE, ID
So that's kind of what we were trying to do ahead of time.

00:45:27.940 --> 00:45:28.370
Mendonca, Nancy (HQ-EO000)
We're

00:45:29.910 --> 00:45:42.870
Mendonca, Nancy (HQ-EO000)
sorry I'm still lots of questions. Can I teach him if if David is on? Can I see that questions over to the chat. I've skimmed the participant list and didn't see David name so I will.

00:45:30.810 --> 00:45:31.660
Wallmann, James - FS, BOISE, ID
Yeah, go ahead.

00:45:39.520 --> 00:45:39.780
Wallmann, James - FS, BOISE, ID
Sure.

00:45:43.830 --> 00:45:45.550
Mendonca, Nancy (HQ-EO000)
Give him a second to queue up and.

00:45:46.270 --> 00:45:46.740
Wallmann, James - FS, BOISE, ID
OK.

00:45:46.860 --> 00:45:49.430
Mendonca, Nancy (HQ-EO000)
Either turn it over to him or will continue with questions.

00:45:53.480 --> 00:46:00.310
Matt Fronzak
So Nancy this is mad were you, referring to David Strand and if so, Brian Pettigrew is your guy today.

00:46:01.270 --> 00:46:05.280
Mendonca, Nancy (HQ-EO000)
No dumb David David Warfield from the UM.

00:46:04.300 --> 00:46:04.650
Matt Fronzak
Ah.

00:46:06.070 --> 00:46:07.030
Mendonca, Nancy (HQ-EO000)
Homeland Security.

00:46:07.560 --> 00:46:08.110
Matt Fronzak
Got it.

00:46:17.660 --> 00:46:21.180
Mendonca, Nancy (HQ-EO000)
Hearing nothing Jim I'll continue our Q it back to you for more questions.

00:46:22.090 --> 00:46:28.470
Wallmann, James - FS, BOISE, ID
OK, I'm just going to Brians question like how is it the 4 service deconflicting uus and?

00:46:29.040 --> 00:46:52.790
Wallmann, James - FS, BOISE, ID
Airplane flights and the fires well. There's alot generally when you get when there's gonna be a lot of aviation there will be a temporary flight restriction issued for the fire area. But on the fires themselves. There's a lot of communication setup generally run by that as run at that. The Helibase to kind of help coordinate it and then there's also what's called a terror attack.

00:46:54.440 --> 00:47:21.250
Wallmann, James - FS, BOISE, ID
Which will be a fixed wing kind of flying over the fire and they'll be able to to coordinate not just the uas but also the uh any helicopters flying in and out or or tankers trying to you know manage the airspace and then in you know very large fires depending on what's going on if it's going to impact. Other areas that there we can call the FAA to set up a uh a temporary tower.

00:47:21.720 --> 00:47:28.530
Wallmann, James - FS, BOISE, ID
Uh for for a nearby airport such as Reno Stead or or anywhere else that it's needed.

00:47:30.790 --> 00:47:31.280
Wallmann, James - FS, BOISE, ID
Uhm.

00:47:32.120 --> 00:47:34.400
Wallmann, James - FS, BOISE, ID
Where should the higher met resolution models?

00:47:34.520 --> 00:47:38.370
Wallmann, James - FS, BOISE, ID
Uh be run can, we run them in the field.

00:47:38.780 --> 00:48:03.220
Wallmann, James - FS, BOISE, ID
Uhm there, I know there's uh the National Weather Service in Monterrey runs a uh worf simulation of at 1:00 kilometer. But they run it at the office as far as running in the field. It'll be really difficult based on you know computation not based on the computational needs to run the high resolution in the field, especially if you're going to be running it.

00:48:03.730 --> 00:48:07.790
Wallmann, James - FS, BOISE, ID
Come over you know, some of these larger fires that.

00:48:09.100 --> 00:48:27.540
Wallmann, James - FS, BOISE, ID
You know, or over you know, 100,000, 200,000 acres so and so I I'd be better run in an office or somewhere like that. That used to be. You know the fire. Science lab used to run a better version of Winninger rose like a wind wizard up there.

00:48:28.000 --> 00:48:29.270
Wallmann, James - FS, BOISE, ID
Uh where

00:48:29.930 --> 00:48:32.510
Wallmann, James - FS, BOISE, ID
it was done remotely and die.

00:48:35.050 --> 00:48:48.340
Wallmann, James - FS, BOISE, ID
You know they they would do it for the field and you would have to request a different runs so that that's something I think it might be the way to go 'cause. I don't know if any elements or anyone like that would have the resources to do it.

00:48:48.950 --> 00:48:52.990
Wallmann, James - FS, BOISE, ID
And I I guess the question is how do you find high resolution I'm looking at like?

00:48:53.680 --> 00:48:54.390
Wallmann, James - FS, BOISE, ID
Really?

00:48:55.470 --> 00:49:06.410
Wallmann, James - FS, BOISE, ID
250 meters or less is when I'm looking at high resolution there. I mean, very high resolution because we do have the you know the high resolution rapid. Refresh one and 3 kilometers, the 3 Kilometre Nam.

00:49:07.060 --> 00:49:14.870
Wallmann, James - FS, BOISE, ID
Ah that that are available, but looking really high resolution to help resolve some of these drainages that are are really mission critical and the fire.

00:49:17.980 --> 00:49:18.430
Wallmann, James - FS, BOISE, ID
So.

00:49:21.890 --> 00:49:34.060
Wallmann, James - FS, BOISE, ID
Uh and then one more question here just since fires can create their own surface weather how you take raw NWP outputting create wind speed and orguss forecasts.

00:49:34.160 --> 00:49:34.830
Wallmann, James - FS, BOISE, ID
Uhm.

00:49:38.010 --> 00:49:42.270
Wallmann, James - FS, BOISE, ID
And then since fires really do create their own weather.

00:49:43.070 --> 00:49:48.350
Wallmann, James - FS, BOISE, ID
Uh what we'll do with the the national the the NWP output is.

00:49:49.710 --> 00:50:01.760
Wallmann, James - FS, BOISE, ID
We for the fire itself, we in those specific environments. When we look at the overall fire. We're not going to try to account for any potential.

00:50:02.360 --> 00:50:02.980
Wallmann, James - FS, BOISE, ID
Uh.

00:50:04.550 --> 00:50:29.510
Wallmann, James - FS, BOISE, ID
Air impact from the fire itself, So what we do is when we start to see you know larger fires or impacts. Uh I know San Jose State is running the S fire model for some of the fires and that can be used as input because it will take him account. What's going on with the fire. So if that is being run for the fire, we can talk to them, but

00:50:29.620 --> 00:50:42.310
Wallmann, James - FS, BOISE, ID
ah as far as you know, taking that output and creating wind speed or gust forecasts. You know, we try to downscale as much as possible in general, but as far as the fire it's really.

00:50:43.100 --> 00:50:50.970
Wallmann, James - FS, BOISE, ID
You know, taking knowledge of what we've we've learned in the past and experience and and to dial that in better, so that's kind of where we're at right now.

00:50:59.440 --> 00:51:04.130
Mendonca, Nancy (HQ-EO000)
Looks like a great conversation on resolution on in the chat any other questions.

00:51:10.240 --> 00:51:18.440
Mendonca, Nancy (HQ-EO000)
Sounds great now I'm Jim thank you. Thank you very much. I hope you can stay in and contribute to the conversation and and continue to answer questions with us.

00:51:18.940 --> 00:51:19.770
Wallmann, James - FS, BOISE, ID
OK, thank you.

00:51:19.990 --> 00:51:20.270
Mendonca, Nancy (HQ-EO000)
With.

00:51:21.430 --> 00:51:24.250
Mendonca, Nancy (HQ-EO000)
With that I'll turn it over to James Gray.

00:51:25.280 --> 00:51:29.880
Mendonca, Nancy (HQ-EO000)
From the US Department of Transportation, the Federal Highway administration.

00:51:31.670 --> 00:51:38.840
Gray, James (FHWA)
Alright, thank you, yeah, and I do have slides I'm hoping they were received, and can be loaded.

00:51:41.180 --> 00:51:49.150
Gray, James (FHWA)
I will talk in the meantime, I'm James Grammy, you as program manager from the Federal Highway Administration and kind of had a

00:51:49.820 --> 00:52:11.920
Gray, James (FHWA)
2 sides to our uus program. One major side. Probably the the majority of what we do is the oversight. I'm funding for the National Highway system, and to do that work with 50 State Department of training departments of Transportation District of Columbia and Puerto Rico so we have 52 jurisdictions.

00:52:12.660 --> 00:52:17.770
Gray, James (FHWA)
That we work with to help them with their uas program through technical guidance.

00:52:19.130 --> 00:52:48.600
Gray, James (FHWA)
And that's where the bulk of the uas operations are happening or that the state beauty level where we provide some technical assistance. But ultimately in support of National Highway system that is state maintained but federally funded it with all the oversight that goes along with those federal funds and the other half of the house is at our highways are direct federal program where we actually build roads and bridges through direct direct here amends on behalf of federal Land Management agencies.

00:52:49.210 --> 00:53:05.200
Gray, James (FHWA)
Partner with clients and even occasionally state theotes if there's a overly complex technical project. They can use Federal Highway 2 directly procure the design or or and construction activities.

00:53:05.890 --> 00:53:06.540
Gray, James (FHWA)
Uhm.

00:53:08.430 --> 00:53:11.310
Gray, James (FHWA)
Nancy or Jennifer or my slides existing.

00:53:09.970 --> 00:53:13.360
Mendonca, Nancy (HQ-EO000)
I'm not see I'm not seeing the slides yet I'm hunting.

00:53:15.110 --> 00:53:19.930
Jennifer Jaquin
Hi it's Jennifer I did not see any slides from you James.

00:53:15.210 --> 00:53:15.820
Gray, James (FHWA)
Do you want me?

00:53:19.550 --> 00:53:22.540
Gray, James (FHWA)
Ah, maybe file too big and got hung up.

00:53:23.510 --> 00:53:28.490
Gray, James (FHWA)
I said that or is it possible for me to share my screen, I can do that as well.

00:53:28.290 --> 00:53:29.850
Jennifer Jaquin
Yes, it should be possible.

00:53:31.550 --> 00:53:32.210
Gray, James (FHWA)
Do that.

00:53:39.890 --> 00:53:40.380
Gray, James (FHWA)
Right.

00:53:45.410 --> 00:53:46.080
Gray, James (FHWA)
This year.

00:53:48.600 --> 00:53:49.220
Gray, James (FHWA)
Hey Court,

00:53:49.420 --> 00:53:49.860
Matt Fronzak
Got it.

00:53:50.740 --> 00:53:51.250
Gray, James (FHWA)
yeah.

00:53:51.960 --> 00:53:53.470
Gray, James (FHWA)
Always goes the wrong side.

00:53:55.190 --> 00:53:56.040
Gray, James (FHWA)
Alright.

00:53:58.850 --> 00:54:28.540
Gray, James (FHWA)
So we'll start off ah that's me it's my contact information. My background just by way of introduction briefly here is 15 years in construction, but a lot of emergency response construction projects again part of that direct federal program during emergency response to that and so we can support state. DRT 's getting roads and bridges and things of that nature rebuilt quickly and so that's where a lot of my background is so they they sort of the rapid response nature that let me.

00:54:28.910 --> 00:54:39.230
Gray, James (FHWA)
Uh get exposed to a lot of new technology and innovation, so that's why I brought their headquarters office and now try to push that out at in conjunction with managing her uas program.

00:54:41.680 --> 00:55:11.930
Gray, James (FHWA)
So again this is what we've done with State Theotes. We're working with every state dotd on state with 52 jurisdictions to help move all the way through fully institutionalized. Uas programs and what I mean, with that is generally the small uas the end of 55 pound uas because most of our infrastructure as static. We know where it is, and then sets were doing or require fairly important we need. We have for some of the bigger platforms would be larger surveying projects.

00:55:11.980 --> 00:55:43.090
Gray, James (FHWA)
No, that's not really the use case that a lot of State Theotes or are looking for right now, so just continue to kind of set the examples of what kind of work. We're doing with it. But the highway. These are again breaking down. We have 15 of the most widely used use cases within state duties and these are all used kids that federal highways provided technical guidance. We've had peer exchanges workshops. We have training programs to help stay theotes.

00:55:44.120 --> 00:55:47.120
Gray, James (FHWA)
Move these program Portsmouth very interesting how it's structured.

00:55:47.700 --> 00:55:57.940
Gray, James (FHWA)
Uhm some states have dedicated pilots who will go fly. These missions for any one of these missions some stadia tease of added.

00:55:58.280 --> 00:56:17.800
Gray, James (FHWA)
Uhm you as part of their surveying crew operations or at a view as to their bridge inspectors so that the user of the data is also the culture of the data and we kind of support, whatever way they want to manage their data flow were there to kind of support, but ultimately, it's not Federal Highway who's doing those flight operations.

00:56:19.350 --> 00:56:37.020
Gray, James (FHWA)
More come and just if anyone is interested. We all of our published information is on this website, so information on the types of flights that we are in in research. We've done on the accuracy of the data how we collect the data and all of those things would be located on this website.

00:56:39.580 --> 00:56:44.510
Gray, James (FHWA)
For me the more interesting stuff is Federal Highway direct you as operations that we do.

00:56:45.310 --> 00:57:16.280
Gray, James (FHWA)
And use cases, we have internal Federal Highway is getting aerial photography in VR free until correct surveys and probably the most common and we started a lot more rockfall analysis in rockfall change detection and that involves a lot of steep slope monitoring which is an interesting one because we're not. We're we're operating under one M 7 rules. So we're staying within that 400 feet above the ground, but our changes in sea level, elevation could be a few 1000.

00:57:16.340 --> 00:57:31.280
Gray, James (FHWA)
The ugly map a a large rock bass and you know move over a couple of feet. You might move up several 100 feet. So we have some pretty decent elevation change and in short durations to get these steep slopes.

00:57:31.770 --> 00:57:36.330
Gray, James (FHWA)
Uh they get along the rural locations where we primarily work with federal land.

00:57:36.850 --> 00:57:39.320
Gray, James (FHWA)
Uh agent management agencies.

00:57:39.860 --> 00:57:48.690
Gray, James (FHWA)
Uh can be pretty mild, mess and so that's location for working a lot of wind variability. There is probably our biggest concern.

00:57:50.820 --> 00:58:20.680
Gray, James (FHWA)
Model land use cases again. We're trying to get better asset management data so again. The large bridges and things like that can that involves some significant elevation changes specially bridges over canyons and things of that nature. The the wind created around the actual birth members itself as as a large problem. The GPS the mag environment where we can't rely on sort of GPS stabilizing effect. That kind of offsets as a minor wind changes is it problem as well.

00:58:20.730 --> 00:58:26.310
Gray, James (FHWA)
But again wind is always kind are our number one environmental enemy there.

00:58:31.160 --> 00:58:39.320
Gray, James (FHWA)
So again I had to get some more perspective we're not a large uas operation. We have 12107 pilots we have.

00:58:39.990 --> 00:58:48.470
Gray, James (FHWA)
8 US platforms that we operate out with us so we do not have a a large fleet, but we are.

00:58:50.370 --> 00:58:58.700
Gray, James (FHWA)
Working in every state to where like where we had about operations to try to see where we can leverage this to get better asset data.

00:59:01.090 --> 00:59:21.990
Gray, James (FHWA)
Yeah, so as we're kinda getting looking toward the future are you know, we really wanna keep building out that rockfall monitoring and there's a huge cost reason for us. Together is also large safety reason for doing that and we don't want to have our people trying to repel down unstable slopes when we can gather the data with combinations of live are in Standard Photogrammetry.

00:59:23.120 --> 00:59:39.640
Gray, James (FHWA)
So from a safety perspective, even if it wasn't in a cost benefit. We'd still be heavily focused on on rockfall and steep slopes. There's it's a major issue for a lot of infrastructure. So I see that continuing to be one of the largest opportunities for us.

00:59:40.740 --> 00:59:54.890
Gray, James (FHWA)
And then now we also had some security issues that will continue to adapt to as new policies. Move forward there so share all that just to share sort of a quick run through of what Federal Highway is working on and and.

00:59:55.520 --> 00:59:56.040
Gray, James (FHWA)
Uhm.

00:59:57.760 --> 01:00:10.810
Gray, James (FHWA)
So the use cases, we have weather wise, we use, ABC as well, just to get the general local weather, but it's always, in the hands of the pilot in command.

01:00:11.430 --> 01:00:19.330
Gray, James (FHWA)
Wow, what their comfort is because again wind impacts, especially are not going to be.

01:00:20.120 --> 01:00:20.790
Gray, James (FHWA)
Uhm.

01:00:21.640 --> 01:00:45.280
Gray, James (FHWA)
Captured that local wind is is always our big problem, so we, we need to have a lot of flexibility in our college command where we generally do a center in uas team out there as part of our technical team anyway. So it would be part of a survey crew or bridge inspection crew, so if the wind is is not right for flying uas the first survey crew.

01:00:46.130 --> 01:00:58.040
Gray, James (FHWA)
For example, they'll do there and they might do their traditional survey operations that the ground control points and wait for the next day to see if the weather improves the flies were very conservative on our weather operations.

01:00:58.950 --> 01:01:07.500
Gray, James (FHWA)
Looking at the data we collect a photogrammetry lidar our primary data project products for survey.

01:01:07.560 --> 01:01:28.910
Gray, James (FHWA)
Hey uh for design models not for change detection is a big thing that we're looking at. You know use depending on where we're at we can get away with photogrammetry with generally do that. It's a little easier to process then Lidar sometimes an overload of data.

01:01:30.340 --> 01:01:38.950
Gray, James (FHWA)
Again, we move those into into the models were either designed for change detection are kind of our big it's useless right now.

01:01:40.530 --> 01:01:45.380
Gray, James (FHWA)
Are there any other question and I was pretty quick run through our program?

01:01:55.640 --> 01:02:05.610
Mendonca, Nancy (HQ-EO000)

James it sounds like between the you're the only the SMS that you also operate, but in collaboration with all of the state DOT is you guys have a really broad UM.

01:02:06.780 --> 01:02:18.960
Mendonca, Nancy (HQ-EO000)
I guess capability to determine or to identify requirements and and leverage. You know training materials and things like that, so quite a broad constituency, I guess I'd say.

01:02:20.590 --> 01:02:43.810
Gray, James (FHWA)
Yeah, in internally, we may have only 12. You know, one M 7 pilots. But we we work with several 100 when you get the community together and we we definitely pull all the state GOP 's together. 'cause it's in our best interest to have some common operating frameworks or looking everything from data frameworks, so we can share data across.

01:02:43.870 --> 01:03:00.500
Gray, James (FHWA)
Uh yeah, you work with the even at my fault and planning organizations or companies and how to get everybody to harmonize their data. So we're not collecting the same data 10 different times. It's definitely been a key focus and then also from me.

01:03:00.970 --> 01:03:22.260
Gray, James (FHWA)
Uh we consultant contractor community. They appreciate some standard operating procedures so they can do business nationwide rather than having different requirements. You know, sometimes County by County indefinitely state by state and that that's not not not invested interest that canonically to try that again to collect the similar data and location versus another.

01:03:27.430 --> 01:03:45.970
Mendonca, Nancy (HQ-EO000)
Thank you. I'm not seeing any questions. I appreciate it and hope you can you could stay on if if other folks have questions in the chat and then and continue the conversation with that I'd like to turn it over to Travis Potter from the Department of Homeland Security at FEMA.

01:03:47.360 --> 01:03:51.750
Mendonca, Nancy (HQ-EO000)
And and Travis I don't have I don't see slides from you in my inbox if you have them thank you.

01:03:55.030 --> 01:03:55.580
Travis Potter - Region 04 (Guest)
OK.

01:03:56.570 --> 01:04:00.920
Travis Potter - Region 04 (Guest)
Good afternoon, everyone are you guys able to see the screen that just shared.

01:04:05.520 --> 01:04:06.020
Matthias Steiner (Guest)
Yes.

01:04:06.100 --> 01:04:07.080
Mendonca, Nancy (HQ-EO000)
Yes yes.

01:04:06.620 --> 01:04:09.020
Travis Potter - Region 04 (Guest)
Yes, OK, all right very good.

01:04:09.940 --> 01:04:14.900
Travis Potter - Region 04 (Guest)
My name is Travis Potter, I'm the uas remote, sensing coordinator for FEMA Region 4.

01:04:15.380 --> 01:04:30.630
Travis Potter - Region 04 (Guest)
Uh although it's been said it's not true in regards to their being FEMA drones flying around, though. We don't currently have any aviation Department. We rely on mission assignments with our federal partners and also with our state and local partners.

01:04:31.210 --> 01:04:40.290
Travis Potter - Region 04 (Guest)
Uh I'll speak a little bit about the collaboration. We have with our state partners to get their situational awareness force and help with remote sensing.

01:04:42.410 --> 01:04:55.910
Travis Potter - Region 04 (Guest)
We have sub menu as working groups in our member states here in the southeast in Region 4. We've been collaborating with our partners since about 2017 since we don't have an internal.

01:04:57.860 --> 01:05:21.080
Travis Potter - Region 04 (Guest)
Asset in regards to uas capability. We partnered with our state partners to cover down during major events on situational awareness data also recovery data and mitigation data in support of the federal declaration so that we can expedite that process and for them and support of the FEMA mission.

01:05:22.380 --> 01:05:53.340
Travis Potter - Region 04 (Guest)
Uh so not only do we have working groups and meeting to discuss how to capture situation awareness. We also have exercises prior to kovit. We were in the process of doing major multistate exercises. You see here. We had one there in Alabama. We also had one here in Georgia in the Smyrna area that was attended by you know, most of the SLT partners. I'm sorry state, local tribal and territorial partners who have uas capability. So we could help them figure out.

01:05:53.490 --> 01:06:08.280
Travis Potter - Region 04 (Guest)

How to go out and do damage assessments and also to bring them all together so everyone knows who has what and also to help in regards to doing emacs between states for resources if needed.

01:06:08.840 --> 01:06:41.420
Travis Potter - Region 04 (Guest)
Uh since covid we've had just a few exercises and we had one down in Florida during the June period. We invited our federal partners to participate as well, and it went fairly well. Of course, a lot of folk were looking to get out and get some stick time out of the House and go out and practice their skill sets. We have another exercise coming up here later this month at Tennessee and North Carolina will be meeting their new mountains forward downplaying exercise.

01:06:42.400 --> 01:07:12.510
Travis Potter - Region 04 (Guest)
Now we solicit. This data from our state and local partners in support of products that are produced in the remote sensing cell, and here's an example of a product that combines both uas imagery from North Carolina. D OT and also Civil Air Patrol imagery and the product was produced by the National Guard you pads. We also produce a product similar to this within the remote sensing cell, utilized in Usdata. It's very important for us.

01:07:12.560 --> 01:07:23.610
Travis Potter - Region 04 (Guest)
And to have this imagery because it helps tell the story. I'd expedites the PDA process and it helps us get money into those folks who have been impacted by the event sooner.

01:07:24.720 --> 01:07:54.760
Travis Potter - Region 04 (Guest)
Uh as many of you may know in 2020, not just because of Covid, but because we're looking for other opportunities to advance technologies within FEMA the primary damage assessment guide allowed for the introduction of desktop damage assessments. That way we could use imagery in support of the damage assessment that's done both with with the state partner and the.

01:07:54.820 --> 01:08:08.770
Travis Potter - Region 04 (Guest)
Federal assessors so with this guidance, we moved toward the virtual desktop damage assessment and we've been using that and this hurricane season and we've had great success with it and we look forward to making it better.

01:08:09.680 --> 01:08:14.590
Travis Potter - Region 04 (Guest)
Here's an example of sort of what that virtual damage assessment looks like we're able to.

01:08:14.640 --> 01:08:34.350
Travis Potter - Region 04 (Guest)
To take imagery and displayed on the screen, and have a look at it from a desktop so we don't have to put assessors in the field as often. Currently we're doing this in tandem with the manual process, but our hope is to move further toward a virtual process for the damage assessment.

01:08:35.550 --> 01:08:53.990
Travis Potter - Region 04 (Guest)
As many of you may know FEMA is also responsible for resource typing for you as we currently have 3 types out there and that was done back in 2018. We've got a lot of feedback on that, so we are gonna be making changes on these documents of course, are living documents so that will be updating this soon.

01:08:54.940 --> 01:09:12.610
Travis Potter - Region 04 (Guest)
And then just this year, Congress awarded the National Training Education Division. Within FEMA instead. About $2,000,000.00 to develop SLTT training for you as partners in coordination with the FAA and also with the center of excellence.

01:09:13.890 --> 01:09:19.090
Travis Potter - Region 04 (Guest)
Uh but we found it and here's an example of where we use uas down in Surfside.

01:09:19.140 --> 01:09:50.230
Travis Potter - Region 04 (Guest)
It uh most of the missions that were flown down there in support of both search and rescue response and recovery. Efforts were flown by uas so this was really the first time we focus primarily most of our resources on uas to get situational awareness and keep awareness on what was happening, there with the debris pile. So we found that uas is probably going to be more useful to us than we expected and will be focusing a lot.

01:09:50.290 --> 01:10:01.130
Travis Potter - Region 04 (Guest)
Of our remote, sensing capability, on uas in support of our recovery response and mitigation missions.

01:10:01.880 --> 01:10:05.900
Travis Potter - Region 04 (Guest)
So I uh I guess I should go back and answer.

01:10:06.520 --> 01:10:10.750
Travis Potter - Region 04 (Guest)
The original questions with the time that I have left.

01:10:12.400 --> 01:10:13.400
Travis Potter - Region 04 (Guest)
Bear with me here.

01:10:17.170 --> 01:10:47.720
Travis Potter - Region 04 (Guest)
So I explained our missions and how we use, you as data. How do you currently get weather observations and forecasts for this mission? Of course we have our own internal meteorologists. We also rely on meters. Our partners also rely on spot forecasts commercial apps like UAV forecast a loft air map and of course. We have observed conditions and common sense? How could this be improved and where you're missing gaps well, we are looking for better.

01:10:47.790 --> 01:11:17.950
Travis Potter - Region 04 (Guest)
Information in regards to whether plus 5 to 12 hours after a major event around the areas of our primary concerns. So where we have those areas of interest. We'd like to know what's happening there a little sooner and that locality as you can imagine if it's a major event and it's multi state that's a lot of areas of interest and it's pretty hard to gather all that data in support of search and rescue and response efforts in a timely fashion, so if there were.

01:11:18.020 --> 01:11:18.780
Travis Potter - Region 04 (Guest)
A way to.

01:11:18.830 --> 01:11:31.220
Travis Potter - Region 04 (Guest)
To pinpoint areas and get spot reports for those areas, no matter where they are when communications. Maybe it'll sparse because of the size of the event and the impacts that will be certainly helpful.

01:11:31.910 --> 01:11:54.160
Travis Potter - Region 04 (Guest)
Uh so I guess sorry entered the improvement and accomplishing the mission, and would you like to get from today's session? I'd like to learn more about learn more about the options you know what's out there? What's available, and how we could benefit from the newer technologies and support of our response, and recovery missions. That's all I have pending your questions.

01:11:56.580 --> 01:12:19.320
Mendonca, Nancy (HQ-EO000)
I'll answer one or all that's going well folks type in I'm Travis. This is Nancy are you seeing from the state partners interest in predictive Analytics. So you know they understand that 3 inches of rain falls here. It's likely to result in a you know a flood or a in a road being impassable down the road or the not down the road, but in a certain location.

01:12:20.440 --> 01:12:46.630
Travis Potter - Region 04 (Guest)
Also, yes, but I'll give you a remote sensing coordinator, answer on that there's always a model out there, but having actual data to compare to that model so we can train them or help with the analytics is very helpful. So I'm always a believer in you know show it to me and then I'll compare that to the model. So yes, I think there will be a a greater degree.

01:12:46.970 --> 01:12:49.840
Travis Potter - Region 04 (Guest)
Of interest in that.

01:12:52.630 --> 01:12:58.310
Mendonca, Nancy (HQ-EO000)
So that yeah, if the data validation for the models OK great any other questions.

01:13:04.620 --> 01:13:16.430
Mendonca, Nancy (HQ-EO000)
Thank you very much I hope you can stay. I imagine a couple questions will come up in chat over time and with that I will turn it over to Brian Goulet from the Environmental Protection Agency.

01:13:17.620 --> 01:13:20.640
Gullett, Brian
Thanks, Nancy I'm gonna share my screen I hope.

01:13:26.240 --> 01:13:27.990
Gullett, Brian
Let me know when you can see that please.

01:13:29.160 --> 01:13:29.760
Mendonca, Nancy (HQ-EO000)
Perfect.

01:13:30.410 --> 01:13:47.330
Gullett, Brian
Great well thanks Nancy. I wanna discuss a little bit about the uas operations at the EPA 's in general, but with a focus on the office of research and development and what I know best which is emission sampling and I'm starting to learn about plume dispersion.

01:13:54.570 --> 01:14:23.300
Gullett, Brian
So EPA unlike a lot of our federal colleagues is really just emerging from the, The Dark Ages in terms of uas use. We have recently conformed to the Obama request to font to define a policy on uas use. We've signed the directive at the end of last year, which discusses how the agency can use and then the aerial systems. It has different components of.

01:14:23.840 --> 01:14:34.810
Gullett, Brian
Data management security privacy so rights and financial mechanisms by which we can use the OS of course for us for years now.

01:14:35.540 --> 01:15:01.070
Gullett, Brian
Drones have been sort of the 3rd rail of Science and this has been primarily related to the fact that I would say that the agency is principally perceived as a compliance and enforcement agency and so that ended up having a lot of privacy and civil rights concerns that kept us from fully utilizing uas even though we had been allowed to.

01:15:02.080 --> 01:15:33.090
Gullett, Brian
So the the main point I want to mention now is that EPA is currently not allowed to even own or pilot any kind of aircraft, which obviously includes Uas. It also includes tethered balloons. So we're pretty much a ground agency. However, I believe this is changing. The directive had and also the Ord policy just recently. I was able to get it changed. I was able to get their appropriation law changed we can now.

01:15:33.500 --> 01:15:35.590
Gullett, Brian
Utilize aircraft.

01:15:36.500 --> 01:16:06.300
Gullett, Brian
But we are still not allowed to own any so we have been able to collaborate with grantees contractors and other agencies. Many of them are on the phone call today over the last 6 years or so to conduct some 19 different US based emission measurements. So I I. I checked the agencies record of uas flights, which is actually a new thing and.

01:16:06.450 --> 01:16:27.590
Gullett, Brian
We have recorded so far, 24 flights in the past 6 to 12 months, primarily in the regions. The regions have used you as primarily for site surveillance on things like Superfund sites, which might be mines, etc.

01:16:27.650 --> 01:16:29.920
Gullett, Brian
Uh etc so.

01:16:29.980 --> 01:16:40.000
Gullett, Brian
Uhm Ord my agency, which the officer research and development has only recorded 3 flights and all of those are mine.

01:16:43.240 --> 01:17:10.720
Gullett, Brian
So I'll focus a little bit on what we eat what my group is used in 4 and that's been a mission sampling. I mentioned we've done 19 campaigns and we've been very fortunate to team up with folks across the federal agencies. NASA Ames for instance, US Geological Survey. The Innovation Center Coast Guard RDC in research and Development Center. The Department of Defense Strategic Environmental Research Development Program.

01:17:11.310 --> 01:17:26.010
Gullett, Brian
The US Army at several facilities, including the joint munitions command were recently done work with Noah. DOI is been a great partner through their Bureau of safety and Environmental Enforcement.

01:17:27.610 --> 01:17:37.520
Gullett, Brian
Desert Research Institute and also the universe in North Carolina with their private partner at a low and I've just shown here. Some of our applications that we've done since 2015.

01:17:37.570 --> 01:17:37.870
Gullett, Brian
Thing.

01:17:39.660 --> 01:17:42.280
Gullett, Brian
Brad and others mentioned wildland fires.

01:17:43.230 --> 01:17:45.180
Gullett, Brian
Excuse me on the left, you see uh.

01:17:46.310 --> 01:17:59.740
Gullett, Brian
A prescribed fire, which was in Utah in cooperation with the United States far services. Basically was a a. A tree replacement or canopy burn and so it's actually simulated a a a wildfire.

01:18:00.640 --> 01:18:05.420
Gullett, Brian
The bottom is the recent flights done with the US Geological Survey.

01:18:06.360 --> 01:18:12.030
Gullett, Brian
The second of 22 campaigns this year, sampling and the Kansas Flint Hills.

01:18:13.960 --> 01:18:31.410
Gullett, Brian
Top middle you see the officer research and development. That's our colibri. That's what we call our sampling package and you can see that it's pretty elaborate. It's strapped onto the bottom of a DJI M 600, there the platform that we have used almost exclusively but not quite.

01:18:32.500 --> 01:18:47.670
Gullett, Brian
We've also done work with the joint munitions command and several army facilities to measure emissions from Detonations. The picture on the top right shows recent work done in New Mexico obviously.

01:18:47.720 --> 01:18:54.280
Gullett, Brian
Uhm the emissions here are the measurements here are important because these sites, which are.

01:18:54.690 --> 01:19:09.230
Gullett, Brian
Uh tasked with demilitarization of obsolete or unsafe. Ordinance are limited in the amount of ordnance that can process by emission measurements and for the first time in.

01:19:10.320 --> 01:19:13.770
Gullett, Brian
We've been able to actually measure these emissions using drones.

01:19:15.010 --> 01:19:34.650
Gullett, Brian
The bottom right is actually some work done with the US Coast Guard Research and Development

Center and their pilots. There you can see them in the picture measuring plumes from measuring missions in plumes from oil fires on water so those are some of the specific applications. My my team has worked on.

01:19:36.110 --> 01:19:47.070
Gullett, Brian
Uh we have an upcoming plume dispersion project and very excited about this is a project joined by Noah modelers.

01:19:47.120 --> 01:19:49.760
Gullett, Brian
Some Department Eerier Bessie.

01:19:49.800 --> 01:19:55.650
Gullett, Brian
The EPA 's Office of Emergency Management and the USGS.

01:19:56.890 --> 01:19:57.300
Gullett, Brian
Uh.

01:19:58.370 --> 01:20:17.580
Gullett, Brian
Flight pot pilots so we are going to actually do transects through an oil fire plume as an example to measure the dispersion. The local dispersion of these plumes and no is going to use their high split dispersion model too.

01:20:18.030 --> 01:20:47.930
Gullett, Brian
Uh calibrate and improve the model. I think this is really exciting. This is a real game changer because this is the first time, using UA using uas or any platform that we've been able to obtain these these 3 D spatial and temporal data of emissions and so we'll be able to use those emissions put them into the model and predict downwind dispersion and hopefully inform.

01:20:48.110 --> 01:21:18.250
Gullett, Brian
On scene coordinators about the potential for hazards to workers in the area and the download public and obviously I. I went to highlight. This project because it's probably the one that requires the most critical data on weather monitoring. So obviously I can measure the emissions extremely well. But what I can't do so far. And this gets to some of our needs, is to be able to predict the meteorological conditions.

01:21:18.310 --> 01:21:21.000
Gullett, Brian
At at elevation and near the site.

01:21:23.670 --> 01:21:41.880
Gullett, Brian

So this is sort of a concept this diagram here. It's sort of a concept of what we hope to do to disturb to determine the dispersion coefficients throughout the plume. Both horizontally and vertically and then to put them into the dispersion model so this is probably our greatest need right now for.

01:21:41.940 --> 01:21:52.220
Gullett, Brian
A local weather data, which obviously won't be helpful. If we're looking at automated weather data from a weather station miles away.

01:21:55.490 --> 01:22:25.360
Gullett, Brian
So this is a project we're hoping to we'll probably be doing at the University of Alaska and Fairbanks at their poker. Flat research range. This picture on the right is actually the Mobile Bay facility, but will be doing an oil burn on water. I mentioned the participants earlier and we're we're particularly looking for an ability to improve our localized mereological data because once we have the the fine detail on the emissions.

01:22:25.600 --> 01:22:37.990
Gullett, Brian
Obviously, the thing that will be most lagging then at that point as these local meteorological data. And I mentioned some of these these parameters below the lapse rate went velocity turbulence, etc.

01:22:40.250 --> 01:22:40.880
Gullett, Brian
Uhm.

01:22:42.280 --> 01:23:02.540
Gullett, Brian
Yeah, again. Some Contacts as people have some ideas and thoughts and we'd like to collaborate on the project. I'm quite interested in that I'm I'm actually a part 107 certified pilot. But since my agency as a whole has us grounded have to rely on others, and I I believe that will be from the.

01:23:02.920 --> 01:23:08.050
Gullett, Brian
Uh good grace of the US Geological Survey their pilots will be flying with them again.

01:23:10.550 --> 01:23:12.230
Gullett, Brian
Nancy that's what I have thank you.

01:23:13.810 --> 01:23:17.070
Mendonca, Nancy (HQ-EO000)
Thank you very much questions for Brian.

01:23:24.130 --> 01:23:26.120
Mendonca, Nancy (HQ-EO000)
Either warn everyone out.

01:23:26.630 --> 01:23:26.960
Mendonca, Nancy (HQ-EO000)
Or.

01:23:29.040 --> 01:23:31.640
Gullett, Brian
I think I just answered everybody 's questions that's

01:23:32.270 --> 01:23:32.710
Gullett, Brian
that's all.

01:23:34.900 --> 01:23:47.090
Mendonca, Nancy (HQ-EO000)
No, that sounds great. Thank you very much hope we can stay on a little bit longer with us and with that. I will turn it over to Austin Cross from the National Weather Service within the Department of Commerce.

01:23:53.800 --> 01:23:59.250
Austin Cross (Guest)
All right good morning, good afternoon and I don't know if my screen sharing is working there.

01:23:59.760 --> 01:24:00.300
Mendonca, Nancy (HQ-EO000)
Yes.

01:24:00.540 --> 01:24:20.850
Austin Cross (Guest)
OK, great, so a little bit different in that were not so much a user of the weather data. But more a creator of it. So a little bit of background about us. The aviation weather center part of the National Weather Service. We have a a large staff of forecasters that produce.

01:24:21.300 --> 01:24:46.330
Austin Cross (Guest)
Uh aviation forecasts and warnings, both domestic and international and in partnership with the UK Met Office. We also operate A. The aviation weather testbed to help facilitate research to operations so trying to pull you know more of the the cutting edge things into our operations get them out to users and we also operate aviationweather.gov.

01:24:46.960 --> 01:25:18.280
Austin Cross (Guest)
So kind of going towards the question of observations and forecasts. We we do move a lot of data. We're receiving you know observations from from the A Saucisson de Vos is out there, but also maisonet data international observations course. The Noah computer models as well as international models to both benefit our forecast, but also to help disseminate that information and we also facilitate.

01:25:19.080 --> 01:25:31.810
Austin Cross (Guest)

The entry of pilot reports so people can go onto our website and enter a pilot report directly there and get it out to all users not just on our website and our forecasters, but out to the world as well.

01:25:33.270 --> 01:25:50.890
Austin Cross (Guest)
So as I mentioned we have forecasters that are are publishing warnings advisories forecasts and also displaying all this information on our website, aviationweather.gov, which I'll talk a little bit about more as well as sending out raw data. So so there's been some discussion about 4 flights in the chat.

01:25:52.240 --> 01:25:58.130
Austin Cross (Guest)
Definitely they're using some of our data and it's becoming more of a thing I think that.

01:25:59.160 --> 01:26:20.880
Austin Cross (Guest)
Various end user groups whether it's private companies or perhaps agencies developing GIS portals wanting to work with some of that raw data. Now there's a big push within the FAA to get more of the the data so that it can be repackaged in the ways that work best for users and we definitely want to help facilitate that.

01:26:23.740 --> 01:26:32.860
Austin Cross (Guest)
Specifically, though for a low altitude users. We operate the hems tool that helicopter emergency medical services tool that came up earlier.

01:26:34.130 --> 01:26:49.670
Austin Cross (Guest)
This has been around since about the year 2000 that went operational just maybe 5 years ago, or so and the idea to have one tool where you can get all the weather information that you might need whether it's observation ull.

01:26:50.500 --> 01:26:51.980
Austin Cross (Guest)
You know from the.

01:26:52.460 --> 01:27:13.120
Austin Cross (Guest)
Come meet our stations or satellite radar data as well as model data specifically targeted for that surface to 5000 foot level to really serve helicopter users but also obviously we're seeing a huge increase in uas activity and using some of that data.

01:27:17.790 --> 01:27:40.540
Austin Cross (Guest)
We definitely understand things can be improved. I think that's one of the things that I'd like to get out of today's session is is hearing from the the different groups that it's it's been great to hear what our government partners are up to in the field of view as understand their needs better, but here are a few of the themes that we've kind of picked up over the last several years of things that we need to work on.

01:27:41.270 --> 01:28:08.850
Austin Cross (Guest)
Uh definitely hearing a lot about the need for mobile that folks are using tablets and phones whether it's you know on the go on. On the way to the airport or or whether it's actually in the cockpit, especially helicopter operations near the ground actually able to to get reception, but can definitely see how you're out in the field with uas and also have your mobile device there. You don't want to necessarily call back to.

01:28:09.340 --> 01:28:26.970
Austin Cross (Guest)
Uh we had office to get that information, but to be able to get it on the go thought was kind of funny in the Apple product launch of the new iPad mini last month. They actually highlighted aviation uses is one of the the key users of that that form factor of tablet.

01:28:27.790 --> 01:28:43.780
Austin Cross (Guest)
Uh we also want to increase the Accessibility to make things easier to use there's a lot of information on our website spread across so many different pages and package and different ways. We want to make it easier for users to get directly to what they need to accomplish their mission.

01:28:44.550 --> 01:28:58.010
Austin Cross (Guest)
We want to have a more consistent pictures, so the decrease the number of different depictions of the same information that have have one way to to get at it and be able to overlay with the other information you need rather than.

01:28:59.320 --> 01:29:18.050
Austin Cross (Guest)
Having to pull together different sources and also increase the consistency of the say the forecast message itself that working better with all the different offices within the National Weather Service to have you know one forecast and not have any disagreement that can lead to confusion?

01:29:19.340 --> 01:29:45.150
Austin Cross (Guest)
And then take advantage of the improved numerical weather predictions had there's been discussion about higher resolution modeling going down to sub one kilometer. It'll be definitely a big challenge for us to try to get to that level. But you know, we're seeing things like the the new regional ensemble model that's gonna be coming out of the National Weather Service in a few years, so really want to hit the ground running with that data.

01:29:45.200 --> 01:29:47.470
Austin Cross (Guest)
Uh uh and have it.

01:29:48.200 --> 01:30:00.060
Austin Cross (Guest)

You know, not only the the data directly from the model, but also the the various post processing to deliver things like turbulence information derived from the the winds within there.

01:30:03.000 --> 01:30:22.820
Austin Cross (Guest)
We also operate the aviation weather testbed so helping to get this cutting edge stuff into operations, but also it's been an increasing focus of closing the loop with the end user so getting feedback directly from pilots and dispatchers and and folks that are flying uas is.

01:30:23.490 --> 01:30:42.800
Austin Cross (Guest)
Come here directly from them about what they need what what they're struggling with and so, so meetings like this are especially useful, but the more that we can get folks involved in some of our evaluation activities as we develop new capabilities. Make sure we're on the right track make sure we're meeting the needs.

01:30:43.890 --> 01:30:59.370
Austin Cross (Guest)
And we do this in collaboration with the FAA 's aviation weather demonstration and evaluation services group, so they're human factors experts that can help us understand how the users are taking advantage of our products and services.

01:31:00.660 --> 01:31:10.460
Austin Cross (Guest)
So with all that in mind. We've been doing a lot of work in the last year on overhauling our website, making it more mobile friendly trying to

01:31:11.470 --> 01:31:17.870
Austin Cross (Guest)
develop it so that it. It works first and foremost on mobile devices and then scale it up to desktops.

01:31:18.510 --> 01:31:34.720
Austin Cross (Guest)
Uh you know more than half of Internet traffic. These days is actually through mobile devices and you know, there's there's no reason to develop a website that that works at a desktop and then struggle to use it on your phone. We want it to work across all platforms.

01:31:36.420 --> 01:31:58.180
Austin Cross (Guest)
And more importantly for low altitude trying to combine our successful. GFA, the graphical forecasts for aviation tool that offers a great one stop shop kind of framework to view forecast and observation. Ull information combine that with the hems tool so that you have one place. You can go and get all of that data so that.

01:31:58.780 --> 01:32:12.060
Austin Cross (Guest)
Uhm get get the overall weather picture and then move on to the the specific needs about a particular

altitude. You might be flying at so this has been one of our key focus is. We haven't done a lot of work in the.

01:32:13.960 --> 01:32:43.990
Austin Cross (Guest)
The the existing hamstall, saving that up for this new website capabilities, so we're still using the old name of of hems even though that community is evolved into helicopter air ambulance services but we also want to encompass the the larger community that. Obviously goes beyond helicopter usage. So here's just a few screenshots of what the the site is looking like, at this time. It's still very much in development, but we hope to have this experimentally available next year.

01:32:44.830 --> 01:32:55.280
Austin Cross (Guest)
And then you know, see how the user valuation goes and probably year after that, or so have this capability take over the existing website.

01:32:57.860 --> 01:33:04.830
Austin Cross (Guest)
And I believe that's all I have at this time, so I got my contact information, there and definitely happy to take any questions that folks may have?

01:33:15.230 --> 01:33:18.380
Mendonca, Nancy (HQ-EO000)
Any questions for Austin I'm not seeing any in the chat.

01:33:27.570 --> 01:33:30.130
Mendonca, Nancy (HQ-EO000)
Austin their arm. Thank you very much. I appreciate it.

01:33:30.900 --> 01:33:39.820
Austin Cross (Guest)
We absolutely honest, I see comment about NASA. ATM testbed definitely we're we're all on board for across testbed collaborations so please do get in touch.

01:33:33.720 --> 01:33:33.920
Kopardekar, Parimal H. (ARC-A)
Yeah.

01:33:39.420 --> 01:33:40.230
Kopardekar, Parimal H. (ARC-A)
Yeah, so.

01:33:41.060 --> 01:33:45.100
Kopardekar, Parimal H. (ARC-A)
Thank you, yeah will will connect well with you Austin.

01:33:45.790 --> 01:33:49.860
Kopardekar, Parimal H. (ARC-A)
And it would be great to kind of showcase how the future.

01:33:50.400 --> 01:34:05.550
Kopardekar, Parimal H. (ARC-A)
Uh aviation would work with weather resilient operations, so as we are looking at an entire small drones. All the way to the commercial space launches and hypersonic supersonic.

01:34:06.260 --> 01:34:15.040
Kopardekar, Parimal H. (ARC-A)
An Urban Air mobility that Nancy leads so looking forward to having that conversation work will work through Nancy to set that up.

01:34:16.090 --> 01:34:17.400
Austin Cross (Guest)
OK, wonderful thank you.

01:34:19.380 --> 01:34:27.440
Austin Cross (Guest)
And I see a question from Tom George about the the change of the the name. Yeah, we've sort of been saving up the name change, we you know, we understand.

01:34:27.890 --> 01:34:33.770
Austin Cross (Guest)
A helicopter area ambulance is the the term for that specific community now but.

01:34:33.820 --> 01:34:52.580
Austin Cross (Guest)
Uhm we're we're really excited about this kind of overhaul of the the broader website and so changing it to not just be the The The Hot tool. The HAA tool, but to make it GF a low altitude to make it more encompassing of all the different users.

01:34:53.090 --> 01:34:55.500
Austin Cross (Guest)
Uh in that in that space.

01:35:00.990 --> 01:35:24.580
Mendonca, Nancy (HQ-EO000)
No thank you so that concludes this. The session for were primarily focused on operations and with that. I will queue it over to PK and I will let him introduce himself. I've if anybody by chance doesn't happen to know him already and I'm hoping Steve Bradford has been able to join us. So I haven't been able to Scroll down through the attendees list. But Steve if you're on please join us.

01:35:25.900 --> 01:35:26.590
Bradford, Steve (FAA)
I'm here.

01:35:28.300 --> 01:35:29.470
Bradford, Steve (FAA)
Come on, I'm here.

01:35:31.890 --> 01:35:33.330
Mendonca, Nancy (HQ-EO000)
Thank you very much.

01:35:34.700 --> 01:35:47.930
Mendonca, Nancy (HQ-EO000)
So I I'm I pulled together 2 luminaries in the field who hope to talk about the vision and thoughts of the future for aviation weather so thank you. Both for the time and joining us.

01:35:53.450 --> 01:35:54.770
Bradford, Steve (FAA)
PK you're muted again.

01:35:53.820 --> 01:35:55.970
Kopardekar, Parimal H. (ARC-A)
Absolutely thank you. Thank you for inviting us.

01:35:58.150 --> 01:36:03.540
Bradford, Steve (FAA)
I think I think I thanking you because I I got on for like 15 minutes and going well.

01:36:05.220 --> 01:36:06.950
Bradford, Steve (FAA)
Where are we here but anyway so?

01:36:10.590 --> 01:36:11.130
Bradford, Steve (FAA)
I guess.

01:36:12.600 --> 01:36:16.930
Bradford, Steve (FAA)
I guess why we're here is because we're we're we're concerned.

01:36:17.970 --> 01:36:26.770
Bradford, Steve (FAA)
We're not concerned. We're we're looking for opportunities to an increasingly improve the low altitude weather for those who need to.

01:36:27.390 --> 01:36:38.670
Bradford, Steve (FAA)
Have observations, etc based on our current rules, so does every Vertic Port have to have on a sauce or what do they have to have or can we can we get to some sort of.

01:36:40.490 --> 01:36:43.010
Bradford, Steve (FAA)
Crowd based sensor performance based.

01:36:44.150 --> 01:36:47.570
Bradford, Steve (FAA)
Conditions that places and that's the kind of thing we worry about 'cause.

01:36:50.010 --> 01:36:54.290
Bradford, Steve (FAA)
I just remember that our our typical certified sensors are not all that cheap.

01:36:55.540 --> 01:37:00.390
Bradford, Steve (FAA)
And do I need you know how how much are VR? Do I need if I'm flying.

01:37:01.550 --> 01:37:02.920
Bradford, Steve (FAA)
Glow 500 feet.

01:37:03.520 --> 01:37:07.780
Bradford, Steve (FAA)
Or what do I need if I'm staying below 3 or 43 or 4000 feet.

01:37:09.290 --> 01:37:18.720
Bradford, Steve (FAA)
Does that does your previous actually? Give me what I need if I'm flying in that range and I don't know I just I see.

01:37:19.790 --> 01:37:35.450
Bradford, Steve (FAA)
If a I'm takes off will have more and more points of departure and landing for commercial operations. And I'm just concerned that can weather keep up with all that demand, with at a cost that doesn't inhibit.

01:37:36.080 --> 01:37:36.980
Bradford, Steve (FAA)
The industry.

01:37:37.680 --> 01:37:39.380
Bradford, Steve (FAA)
Or if

01:37:41.450 --> 01:37:48.200
Bradford, Steve (FAA)
God bless hope not the FAA is required to provide resources at all those vert imports so.

01:37:48.990 --> 01:37:52.320
Bradford, Steve (FAA)
That's kind of where it's one of the gaps. I see this is.

01:37:53.380 --> 01:37:59.960
Bradford, Steve (FAA)
Big clear constant picture at the low altitudes for for our operators PK? What do you think?

01:38:02.780 --> 01:38:13.010
Kopardekar, Parimal H. (ARC-A)
Yeah, absolutely. I think as a as we are working with collaboratively with FFA has one initiative for info. Centric may ask one of the big.

01:38:14.120 --> 01:38:44.880
Kopardekar, Parimal H. (ARC-A)
Delays in the National Airspace System 25% aircraft get delayed out of those, 75% get delayed due to weather and as we're increasing the diversity and density and scalability and aviation everywhere. All those wonderful mantras. We see that weather will continue to be interesting aspects to ensure resiliency of aviation so, based on the current delay statistics. I think we need to take whether seriously and.

01:38:45.380 --> 01:39:15.730
Kopardekar, Parimal H. (ARC-A)
As a phase in for centric NASCAR perspective for 2035 and NASA 's future. Vision 2045 and beyond. We need to figure out how to integrate. The weather information provided and get 3rd party service providers to generate weather data weather predictions at the lower altitude at the places where we don't have a good understanding of whether through some novel means of weather predictions and then share that information.

01:39:15.950 --> 01:39:38.060
Kopardekar, Parimal H. (ARC-A)
Are you tall about sharing and caring about airspace users so I think it will be great to figure out? How to us. They were saying crowdsourcing collecting the data through novel means predicting their models and then sharing that information for everybody 's benefit to ensure the safety and and also reduce the demand capacity imbalance or future.

01:39:39.130 --> 01:39:40.030
Bradford, Steve (FAA)
So dumb.

01:39:41.280 --> 01:39:44.550
Bradford, Steve (FAA)
Nancy how close do, I have to stick to small uas or AM?

01:39:46.410 --> 01:39:53.100
Mendonca, Nancy (HQ-EO000)
Do you don't I oh it's always great to hear from you and and understand the thinking of the agency going forward.

01:39:51.510 --> 01:39:52.320
Bradford, Steve (FAA)
Why is it so?

01:39:53.900 --> 01:40:00.970
Bradford, Steve (FAA)
So here's here's some of those things that I don't understand come in maybe you all could fix it for me is.

01:40:01.020 --> 01:40:01.490
Bradford, Steve (FAA)
Ah.

01:40:03.850 --> 01:40:08.530
Bradford, Steve (FAA)
What is the end goal for our collection of of weather information from the aircraft so?

01:40:12.840 --> 01:40:19.760
Bradford, Steve (FAA)
Yeah, I'm gonna bring up my favorite topic. 'cause I'm sure that people on here pireps. I want to improve the ability to get good pireps.

01:40:21.180 --> 01:40:22.860
Bradford, Steve (FAA)
Is my goal too?

01:40:23.790 --> 01:40:46.260
Bradford, Steve (FAA)
To have thousands of Pireps, which are then sorted and then provided to pilots or the Pireps. Really, the end goal of Pireps is to improve your state of the atmosphere model. I don't understand and so, if it's a state of the atmosphere model. I constantly embattled constantly getting better with constantly trying to figure out how do we actually?

01:40:47.480 --> 01:40:49.320
Bradford, Steve (FAA)
Provide better information.

01:40:51.000 --> 01:40:54.970
Bradford, Steve (FAA)
2 pilots so when I get back and then I'm gonna take myself turbulence now.

01:40:55.980 --> 01:41:11.470
Bradford, Steve (FAA)
How do I in the AM world? How would I describe turbulence which I actually think they'll probably experience quite a bit of it? How would I how would I describe turbulence from one pilot to the next if if I collect the data and should I collect the data and how would I collect the data.

01:41:13.050 --> 01:41:13.490
Bradford, Steve (FAA)
Is it?

01:41:14.760 --> 01:41:15.380
Bradford, Steve (FAA)
Now, though.

01:41:16.220 --> 01:41:28.780
Bradford, Steve (FAA)
Yeah, yeah, I'm crowd will probably have a DSP do I cut on a DSP? Am I if I try to collect some other ready. Eddy dissipation rate? What is our goal for A to provide like turbulence or or I see how do I click the icing?

01:41:30.090 --> 01:41:34.710
Bradford, Steve (FAA)
I I think we're we're still struggling with how to help GA.

01:41:35.960 --> 01:41:47.180
Bradford, Steve (FAA)
And they tend to be a little higher. What am I gonna do with the the 2 or 3000 footers in the city 'cause. He ain't gonna get much higher than that, if they're flying into Class B airspace so I think that's a gap.

01:41:48.430 --> 01:41:59.040
Bradford, Steve (FAA)
I I'm still fastened only get back. I'm still fascinated by Pireps which to me are like procedural separation as I get humans to tell me their best estimate.

01:42:00.110 --> 01:42:05.860
Bradford, Steve (FAA)
And I notice that we don't do procedural less procedural separation very many places. We figured out how to?

01:42:08.070 --> 01:42:21.450
Bradford, Steve (FAA)
Move a step beyond do. I really want Pireps If I do? Do I really want to put him in do? I want to adjust them and put them into another product or do? I really want to give Pirates back to pilots. One is our end goal, and I don't know.

01:42:23.050 --> 01:42:23.470
Bradford, Steve (FAA)
I'm

01:42:24.730 --> 01:42:28.380
Bradford, Steve (FAA)
I'm constantly struck by we try to get better at what we do today.

01:42:28.960 --> 01:42:29.450
Bradford, Steve (FAA)
Uhm.

01:42:31.430 --> 01:42:38.450
Bradford, Steve (FAA)

Because we've always done it is that the real gun goal here and there's those are kind of things, I think about when we get to infant centric.

01:42:42.000 --> 01:42:46.200
Bradford, Steve (FAA)
Yeah, so somebody told me they have both a tactical in his strategic OK.

01:42:47.160 --> 01:42:51.270
Bradford, Steve (FAA)
Who actually who actually makes sure that pireps are passed on to other people today?

01:42:57.770 --> 01:43:07.530
Bradford, Steve (FAA)
Or am I using the pirap to to help fill out my my picture of the atmosphere is there a requirement for.

01:43:09.530 --> 01:43:16.950
Bradford, Steve (FAA)
Is there a data feed for everybody to get the pireps and do? I filter like notams or? What's my end goal, a high altitude?

01:43:17.970 --> 01:43:21.010
Bradford, Steve (FAA)
Airlines will share pireps overhead cars with the airline.

01:43:22.210 --> 01:43:50.230
Bradford, Steve (FAA)
Where do they get their I mean? I'm not? I'm not discounting pireps as a gap filler but is it pireps or is it the gap filler. I want really want. Those are the kind of things I. I concern myself with because, with machine learning with natural language processing. We can actually convert that into usable data and build it into our into our models. So what is our end goal here as we go forward and try to get to infra centric? I like I'm still worried about.

01:43:50.930 --> 01:44:09.800
Bradford, Steve (FAA)
The 500 feet below that 2 who has to who who says that whether it's good enough or are. We gonna come up with something performance based standard where if somebody can provide the weather to meet a standard. We qualify them to provide the weather. I'm just curious and these are the kind of gaps. I wonder I worry about.

01:44:11.300 --> 01:44:13.960
Bradford, Steve (FAA)
Bill probably will tell me I'm worry too much. But.

01:44:15.060 --> 01:44:17.900
Bradford, Steve (FAA)
That's where I'm at PK what do you think?

01:44:20.440 --> 01:44:41.270
Kopardekar, Parimal H. (ARC-A)

I think uh to work that's done by industry and the novel prediction models as well as the Europe type of activity. We started so sort of instantiation of Pi Rep, but for unmanned or automated systems is.

01:44:41.510 --> 01:45:12.100
Kopardekar, Parimal H. (ARC-A)
Is one option to consider so if we have automated systems then? It gets digitized it gets? Sent into a repository or in a cloud based platform and then that gets distributed or be access. So I'm wondering you know, so we, we put together this concept called Europe, which is sort of instantiation of Pirette for small drones, but I there is nothing that prevents it from being a automated representation collection and then distribute redistribution.

01:45:13.240 --> 01:45:17.470
Bradford, Steve (FAA)
So and I I see the comment that we, we brief pilots daily using pireps.

01:45:18.310 --> 01:45:18.790
Bradford, Steve (FAA)
Uh.

01:45:19.740 --> 01:45:32.950
Bradford, Steve (FAA)
If we could build that with other data, which we just heard about from National Weather Service wouldn't that be a better picture. Can I use pireps to kind of validate and fill in gaps or do we really want?

01:45:34.080 --> 01:45:52.050
Bradford, Steve (FAA)
We're taking the content for Pirates is is verbal briefing the best way of getting that back to people, you can. Tell me I mean, I've just had. I just sit here and ask myself questions because perhaps Pirates had low altitude are different than pireps in at higher altitudes, but

01:45:53.940 --> 01:45:54.450
Bradford, Steve (FAA)
I

01:45:55.690 --> 01:45:57.940
Bradford, Steve (FAA)
I have I have the CR?

01:45:59.610 --> 01:46:09.320
Bradford, Steve (FAA)
I think I count 5 initiatives on pirate within the agency and I'm not quite sure how they all linked together and so I asked myself these questions and these are not gaps.

01:46:09.980 --> 01:46:14.790
Bradford, Steve (FAA)
Oh, that's what it that's what it chief scientist does he. Still, he says. Oh, I don't want these things fit together.

01:46:15.910 --> 01:46:19.710
Bradford, Steve (FAA)
And I don't have the answer, but I wasn't here to giving answers.

01:46:21.500 --> 01:46:33.630
Mendonca, Nancy (HQ-EO000)
Steve we're seeing Tom talked about putting sensors on particularly the S. Uas is to support whether current observations do you see any roadblocks to being able to do that more?

01:46:34.400 --> 01:46:38.330
Mendonca, Nancy (HQ-EO000)
A picture of a ubiquitously and then being able to use the data.

01:46:39.190 --> 01:47:00.470
Bradford, Steve (FAA)
Well, I I would think that there are certain observations. They can do natively if they have basically the heart and soul of many of these machines as the cell phone and the cell phone actually does collect some observations and you know they can have accelerometers. They can do things they could actually collect data even with the current technology now could should we expand it.

01:47:01.120 --> 01:47:01.810
Bradford, Steve (FAA)
Potentially.

01:47:03.020 --> 01:47:07.000
Bradford, Steve (FAA)
They probably don't do very good job on took temperature and humidity, but OK.

01:47:07.700 --> 01:47:10.380
Bradford, Steve (FAA)
Uh I think the am crowd.

01:47:11.100 --> 01:47:11.980
Bradford, Steve (FAA)
Definitely.

01:47:12.690 --> 01:47:19.390
Bradford, Steve (FAA)
We should have expectations if they wish to fly other than VFR and IFR expectations that they?

01:47:20.110 --> 01:47:21.840
Bradford, Steve (FAA)
That, they contribute to other.

01:47:22.840 --> 01:47:43.540
Bradford, Steve (FAA)
Because they're gonna want special operations do. I try to do something in BV loss? Is it turn out does it turn out that the BB loss perform performance really needs better weather and do then I I add

contributions. I don't know. Those are all good questions. We shouldn't need to ask ourselves, especially in BB loss rather quickly.

01:47:45.400 --> 01:47:49.290
Kopardekar, Parimal H. (ARC-A)
I also think that the way ikle characterization.

01:47:50.050 --> 01:47:51.020
Kopardekar, Parimal H. (ARC-A)
As to which

01:47:51.610 --> 01:48:10.770
Kopardekar, Parimal H. (ARC-A)
when conditions the vehicles can safely operate so we have seen like particularly small drones in in Reno. When we were doing testing at 5:00, 1080 feet or so and we had a headwind and with 98 degrees all of a sudden the battery.

01:48:11.740 --> 01:48:43.450
Kopardekar, Parimal H. (ARC-A)
Could go barely quarter mile you know, so we, we lost was? What was expected. But it we couldn't do that. The wind can wind and the air density and thought temperature really made a significant impact so understanding the impact of the weather and environmental conditions on vehicles performance characteristics is something really critical and that's something we need to have the system ready before they depart so that we know whether the mission is going to be completed.

01:48:43.730 --> 01:48:45.360
Kopardekar, Parimal H. (ARC-A)
Or not you know so.

01:48:46.610 --> 01:48:53.450
Bradford, Steve (FAA)
So I'm getting all these good these good comments are clearly. I've I have scratched an itch here or something.

01:48:56.100 --> 01:49:00.740
Bradford, Steve (FAA)
The other thing that I think we need to consider going forward is that?

01:49:01.870 --> 01:49:04.770
Bradford, Steve (FAA)
And this is a mess. This could be a massive amount of information.

01:49:05.640 --> 01:49:08.490
Bradford, Steve (FAA)
So do I hop back haul it to some giant?

01:49:09.800 --> 01:49:10.440
Bradford, Steve (FAA)
Uh.

01:49:11.550 --> 01:49:15.630
Bradford, Steve (FAA)
Super computers sitting in College Park, not more than a mile and a half from me.

01:49:16.720 --> 01:49:26.970
Bradford, Steve (FAA)
Or is do we actually take care? Do we start looking at more edge. Computing for the local forecast. And because in the 5 G. We should be able to support.

01:49:27.470 --> 01:49:28.060
Bradford, Steve (FAA)
Uh.

01:49:29.120 --> 01:49:35.020
Bradford, Steve (FAA)
Quicker local local computing and then the results. Some of the results get back called to the big models, I mean.

01:49:36.140 --> 01:49:40.140
Bradford, Steve (FAA)
So, in that does to do with the observations as far as the pireps I'm.

01:49:41.040 --> 01:50:12.310
Bradford, Steve (FAA)
I I I understand Pireps I understand the need to get the information, but is the representation of the information best as a pilot report or can we use it or are we trying to fill out our state of the atmosphere models that we're also building through the other things? What is the consolidated picture 'cause I heard that our goal is to have a consolidated picture of the current state and the future but now I have it. So is it important to keep the disparate sources and tell people about the disparate sources.

01:50:12.480 --> 01:50:28.270
Bradford, Steve (FAA)
Or do I need to figure out how to combine all this into this unified better picture and that's what guess what? I'm asking is my end goal to Reread Pireps or is my end goal to have a an improved state of the atmosphere picture.

01:50:21.840 --> 01:50:22.090
Kopardekar, Parimal H. (ARC-A)
OK.

01:50:30.080 --> 01:50:32.370
Mendonca, Nancy (HQ-EO000)
I'm a question from Dave coach far.

01:50:35.950 --> 01:50:37.690
Mendonca, Nancy (HQ-EO000)
Do you wanna come off mute and ask?

01:50:38.350 --> 01:50:39.560
Dave Kochevar (NWS) (Guest)
Thanks, Nancy can you hear me?

01:50:40.540 --> 01:50:44.360
Bradford, Steve (FAA)
Absolutely and you're gonna you're gonna school me so I'm happy.

01:50:41.680 --> 01:50:42.630
Dave Kochevar (NWS) (Guest)
Wonderful.

01:50:45.210 --> 01:50:49.950
Dave Kochevar (NWS) (Guest)
Oh, I don't know about that. I just I just have some thoughts based on the the questions and the point you made.

01:50:52.140 --> 01:50:57.080
Dave Kochevar (NWS) (Guest)
You know, so I think the back to your initial question on this site in my opinion.

01:50:57.810 --> 01:51:03.580
Dave Kochevar (NWS) (Guest)
The end goal here should really be a true end to end monetization of the Pirates system.

01:51:04.250 --> 01:51:10.000
Dave Kochevar (NWS) (Guest)
So starting with automation with their traffic in the creation of the pirate to.

01:51:11.200 --> 01:51:16.220
Dave Kochevar (NWS) (Guest)
To support a significant increase in the amount of Pirates going into the system.

01:51:17.390 --> 01:51:18.120
Dave Kochevar (NWS) (Guest)
And.

01:51:18.870 --> 01:51:23.580
Dave Kochevar (NWS) (Guest)
Modernizing the type of information that we can put into a pirate to include.

01:51:24.650 --> 01:51:33.250
Dave Kochevar (NWS) (Guest)
Potentially pictures or video or adding this Cdr type data or any other in flight type data to The Pirate.

01:51:34.470 --> 01:51:35.240
Dave Kochevar (NWS) (Guest)
And then

01:51:36.230 --> 01:51:40.010
Dave Kochevar (NWS) (Guest)
the reason I say end to end is that would require a pretty substantial.

01:51:41.070 --> 01:51:50.210
Dave Kochevar (NWS) (Guest)
Uhm monetization on the dissemination piece to add this significant amount of information to that pilot report.

01:51:51.270 --> 01:51:56.980
Dave Kochevar (NWS) (Guest)
But I think it's a great point to where you know if you look at the pirate system as we have it today.

01:51:57.570 --> 01:51:58.810
Dave Kochevar (NWS) (Guest)
It has gone through.

01:51:59.450 --> 01:52:06.250
Dave Kochevar (NWS) (Guest)
Very little monetization in the 10 plus years I've been working aviation Alaska here.

01:52:07.020 --> 01:52:09.550
Dave Kochevar (NWS) (Guest)
And so it's a It's a very critical.

01:52:10.400 --> 01:52:24.810
Dave Kochevar (NWS) (Guest)
A service that both we need as aviation forecasters, but also the operators and the pilots. You know desperately need the information in the pilot report but they desperately need more information.

01:52:25.460 --> 01:52:27.350
Dave Kochevar (NWS) (Guest)
Then what's currently provided in there.

01:52:27.990 --> 01:52:32.620
Bradford, Steve (FAA)
OK, so I I apologize 'cause, I I do realize that Alaska is a uh.

01:52:28.070 --> 01:52:28.640
Dave Kochevar (NWS) (Guest)
And.

01:52:34.170 --> 01:52:38.300
Bradford, Steve (FAA)
It's not a rich multiple source of data.

01:52:39.280 --> 01:52:42.480
Bradford, Steve (FAA)
As you do have some lower 48 environments right.

01:52:43.220 --> 01:52:50.470
Bradford, Steve (FAA)
So then the question is, is you really can you call him a pirate but do you really wanna you wanna have it some so automated you really wanna link?

01:52:51.070 --> 01:52:54.880
Bradford, Steve (FAA)
You wanna link aircraft data with the pilots observations?

01:52:56.970 --> 01:52:59.860
Dave Kochevar (NWS) (Guest)
I think that's one way you know, but you made it.

01:52:59.230 --> 01:53:22.170
Bradford, Steve (FAA)
Because you know the the the pilot 's gonna. Give me an opinion on the turbulence. Cdr is going to give me a a measurement and so, if I try to collect it. So my collecting both the human and the machine 's observation of the current location and automating would be good because then you don't you're not guessing where the location is correct.

01:53:23.400 --> 01:53:36.000
Dave Kochevar (NWS) (Guest)
Oh yeah, absolutely and you know the technology is certainly there with a lot of the this. You know in. In flight screens use of iPads. You know things like that. The you know it's simple information as to.

01:53:37.630 --> 01:54:04.410
Dave Kochevar (NWS) (Guest)
Time, and location, you know is is is really, really are early available. However, if you look at the whole pirate system. As far as the life of a pirate and how would still produce today in 2021. It's still very you know pilot gives specific conditions over the radio dare traffic, which is written down on a piece of paper, which might go through 3 or 4 sets of hands before it's publicly disseminated.

01:54:05.500 --> 01:54:29.040
Dave Kochevar (NWS) (Guest)
So there there's a real need in there for for true monitorization of the creation of a pirate this as I. I think an important first step. You know before we do anything regarding automation of in flight data or anything else, I I think the the first step here is just taking this system way that we have right now and trying to get a faster.

01:54:29.690 --> 01:54:42.870
Dave Kochevar (NWS) (Guest)
End to end creation of a pirate pie. I think would be a huge, huge help in both supporting the pilot and the air traffic control or trying to get this into the system because it's a huge workload on their part.

01:54:43.730 --> 01:54:47.290
Bradford, Steve (FAA)
OK, well, I I'm sorry. I took us into Pireps 'cause That's been my later that's why.

01:54:48.680 --> 01:54:57.150
Bradford, Steve (FAA)
It's Randy Basaglia that's my latest latest crusade is trying to figure out pireps, but I I also I'm also interested in about.

01:54:58.690 --> 01:55:00.180
Bradford, Steve (FAA)
Local forecasts.

01:55:00.950 --> 01:55:01.730
Bradford, Steve (FAA)
4.

01:55:02.730 --> 01:55:11.070
Bradford, Steve (FAA)
And I'm talking you know you know, uh 23 miles 4 miles of airspace where somebody wants to be operating either.

01:55:13.400 --> 01:55:27.850
Bradford, Steve (FAA)
Which is beyond visual line of sight by the way since? What's that's 400 feet. I mean where they want to operate. Maybe in inspection, etc? How do I get them better weather information about what's occurring 3 miles away, etc?

01:55:29.100 --> 01:55:29.650
Bradford, Steve (FAA)
Uhm.

01:55:31.040 --> 01:55:44.300
Bradford, Steve (FAA)
Because we know that we know that local conditions, especially in the summer are very local, especially on the East Coast and so how do I? How do I help them understand? What's coming before they they look at the?

01:55:44.950 --> 01:55:53.700
Bradford, Steve (FAA)
The next red mosaic and see that there's a big storm that they just flow into I mean? How do we? How do we improve that for these operators?

01:55:56.660 --> 01:55:57.800
Kopardekar, Parimal H. (ARC-A)
So can, we

01:55:56.790 --> 01:55:57.300
Bradford, Steve (FAA)
In in

01:55:58.300 --> 01:56:03.770
Bradford, Steve (FAA)
it can it can, we actually get to local local sensing or local observations and local computing.

01:55:58.950 --> 01:55:59.990
Kopardekar, Parimal H. (ARC-A)
So what we

01:56:02.050 --> 01:56:02.510
Donald Berchoff
I would.

01:56:03.370 --> 01:56:08.210
Donald Berchoff
This is Don I've had my hand up. I love to answer your question Steve or help you answer it.

01:56:08.390 --> 01:56:10.110
Bradford, Steve (FAA)
Good answer my question done.

01:56:10.420 --> 01:56:11.310
Donald Berchoff
How you doing?

01:56:12.320 --> 01:56:13.330
Bradford, Steve (FAA)
Now clearly I.

01:56:14.780 --> 01:56:16.170
Bradford, Steve (FAA)
I've just spitballing here.

01:56:16.540 --> 01:56:24.150
Donald Berchoff
Yeah, so, so I think PPK and and Steve I think the first thing is important to recognize that.

01:56:24.840 --> 01:56:44.460
Donald Berchoff
We've been looking at this not just through weather, but the group has been looking at this for about 3 years right. We we understand you know the BV loss challenges coming up right and you know pilots supposed to have knowledge it or whether they're flying in right? Which is impossible. If you have a drone and you're sitting in a dispatch center flying right.

01:56:44.810 --> 01:56:54.080
Donald Berchoff
Uh current weather systems aren't granular enough so the picture that the pilots going to have in that dispatch center may not be accurate. You may think it's accurate, but it may not be.

01:56:54.730 --> 01:57:23.980
Donald Berchoff
Uh we have limitations in radar right. We know some radar attenuates. You know, we had, we got a vapa rated cooling and all kinds of things, so it may not be raining weather radar, saying it's raining, it may be raining weather radar is saying it's not raining, there's a lot. We you know, I think we have to look at this holistically that our current sensing system, is not going to support granularity at the scale. That's going to be required to have what I consider productive and efficient PV loss operations right so today.

01:57:24.560 --> 01:57:27.370
Donald Berchoff
You know for my 35 years experience in the business, right?

01:57:28.740 --> 01:57:59.210
Donald Berchoff
Probably about 40% roughly 30 to 40% of all manned aviation missions that are delayed or impacted by what we think is out there in the air space and weather could have flown right so that just shows you the amount of error. We have already in our systems and some of this is you know is there turbulence out there. Severe is there, I sing out. There you know our algorithms are not that good, I mean, you know, I'm going to be straight up. I mean, I've been this has been frustrating to me for 35 years and that's because we don't have data.

01:57:59.260 --> 01:58:29.530
Donald Berchoff
Right so you know the first problem we have is is that we're going to run models at a higher resolution. But we're not adding new data right so all we're doing is moving the deckchairs around you know visualizations look good, but you know, there's only so much going to get out of machine learning. If you don't have a training data set to put in there right So what we're doing is we're using models as training data sets for models right so that's that's the first thing I want to put out there is that to solve this problem we're not going to solve it conventionally.

01:58:29.720 --> 01:59:00.020
Donald Berchoff
They've been doing this right and and we're not going to be able to put that on the Weather Service 'cause. They're not going to be able to solve this problem, by themselves and you know, I know this because me and used to talk about many years ago. You know the next Gen, which you know, I helped write the weather conops for that. In 2005 and we just got our first program at right for and it's not even getting into the real challenge is a resolution and there's been problems. The Department of Commerce is not going to take on a mission that they're not funded.

01:59:00.140 --> 01:59:16.690
Donald Berchoff
Or as we know and so we've got to re look at this whole thing right so I I break. I start with that now? How do we solve you know we're going to have it be be lost missions next year. I'm hoping you guys you know, we'll get this through here and the Rules Committee and would get out the next guidance on BV loss.

01:59:17.910 --> 01:59:46.240
Donald Berchoff
But I'm little concerned that we have been discussing whether enough in there and and and so we have this kind of imagination of of how we're going to do BV loss. But we really have a weather solution yet now. The answer to that is. There is solutions out there, but we have to look at the way the business model is today right and you know First off we got to get more data right. We gotta get data and and and we got to change the standards around certifying instruments.

01:59:47.060 --> 02:00:13.300
Donald Berchoff
Versus Certifying data Kate standard right so one of the things we're working on ASTM which I'm leading that weather group is we want to come back to the Rules Committee and say, Hey, we need to change from certifying instruments for whether it's a certifying data performance right and as you know, Steve you're a smart guy you know, we have ways of doing that without having to have sensors checking sensors right so that's number one number 2 is we need to.

02:00:13.350 --> 02:00:43.900
Donald Berchoff
To come change the rules around 3rd party providers right. We had a you know today. The operators are required to certify that a weather company or 3rd party. Izzy wins certified. We gotta flip that right because we have too many operators. Now we don't have like 6 airlines anymore right. We we got Lotsa OEMs, a lot of operators. So we've got to figure out how to build a system where S DSPS whether SDS peas right? Which your

02:00:44.400 --> 02:01:11.510
Donald Berchoff
along with the UTM concept that you guys develop? Which I love is we gotta federate you know we gotta we gotta you know provide a Federated system for Weather Service providers to contribute right. And so we got to set the standards and we got to make it easier for these weather companies to play but still be held to a standard right and and and how we do that? Who knows right well. We'll work through that so we gotta get data. We've got to incentivize people.

02:01:11.130 --> 02:01:12.110
Kopardekar, Parimal H. (ARC-A)
You're on mute you.

02:01:12.930 --> 02:01:13.870
Kopardekar, Parimal H. (ARC-A)
If you are saying your.

02:01:13.010 --> 02:01:34.930
Donald Berchoff
We got incentivized people we gotta incentivize local, state municipalities and private sector to get sensors out there. We've got to click that data. We gotta stand up. We gotta check it against a standard and we got to make it available and they cannot go back to the big FAA computer in the Sky or the National Weather Service computer desk. I 'cause that's another 15 year project right so that's kind of where I'm coming.

02:01:18.570 --> 02:01:18.840
Bradford, Steve (FAA)
Yep.

02:01:20.030 --> 02:01:20.430
Bradford, Steve (FAA)
Yep.

02:01:32.940 --> 02:01:33.280
Bradford, Steve (FAA)
Yep.

02:01:33.330 --> 02:01:34.960
Kopardekar, Parimal H. (ARC-A)
Yeah, so I

02:01:34.190 --> 02:01:38.950
Kopardekar, Parimal H. (ARC-A)
So why, why solution to this is that every post office, we should put sensors.

02:01:36.320 --> 02:01:42.840
Bradford, Steve (FAA)
because we had 2 minutes, but but I Don. Thank you for articulating what I was trying to have in a round.

02:01:43.220 --> 02:01:46.850
Donald Berchoff
Yeah, I know that that's why I was helping you and you wanted to hear somebody else.

02:01:45.590 --> 02:01:51.310
Bradford, Steve (FAA)
Yeah, so, so I didn't know if I really wanted to say we need public, private partnerships. We need to.

02:01:51.910 --> 02:01:55.330
Bradford, Steve (FAA)
Embrace the industry, we have to get to performance based standards.

02:01:57.240 --> 02:02:22.010
Bradford, Steve (FAA)
In everything I mean, I I've honestly got it and I'm sitting here with the pireps discussion. There are people who've got mobile mobile apps that are helping pilots think? Why don't they put power apps in their mobile apps and in approved that is supposed to mean spending all my time trying to figure out how to do natural language processing invoice, but anyways PK. You we got we got 2 minutes and it's all yours.

02:01:58.380 --> 02:01:58.750
Donald Berchoff
Right.

02:02:10.450 --> 02:02:10.840
Donald Berchoff
Right.

02:02:22.690 --> 02:02:45.650
Kopardekar, Parimal H. (ARC-A)
No, no, I I I love Dons passion along with everybody else in on this day was comment. So I I think we, we can modernize it. We need to, like a systems. View pre departure issues or different than during you know in flight. Different types of vehicle characterization and they they impact differently. The weather data so I think we can do this.

02:02:46.350 --> 02:03:15.910
Kopardekar, Parimal H. (ARC-A)
A lot to work with I mean, I I think Steve 's thought. Our PPP is great and I personally. This is my personal opinion. Every post office. We can put a sensor and Kate. Whole bunches of post offices are everywhere, including remote places in Alaska. So we, we really we can, we can make a big difference. You know the NASA doesn't need to do that. Every doesn't do that private industry can work collaboratively with you guys you know with us and we can.

02:03:16.110 --> 02:03:20.980
Kopardekar, Parimal H. (ARC-A)
Set up we can do the research to figure out how that all gets integrated this performance.

02:03:18.650 --> 02:03:19.540
Bradford, Steve (FAA)
OK, so uh.

02:03:20.490 --> 02:03:25.030
Bradford, Steve (FAA)
So Nancy before we go. I have to do 2 things one. These are all the opinion of Steve Bradford.

02:03:22.180 --> 02:03:23.370
Kopardekar, Parimal H. (ARC-A)
People have to be.

02:03:26.760 --> 02:03:28.020
Bradford, Steve (FAA)
And actually I pay.

02:03:27.880 --> 02:03:33.590
Mendonca, Nancy (HQ-EO000)
And that's and Steve that's why I invite you 'cause I know you will share those sister most interesting.

02:03:33.840 --> 02:03:40.490
Kopardekar, Parimal H. (ARC-A)
What are The funny thing is still not using FAT shirt if I logo doesn't even exist so you know?

02:03:33.920 --> 02:03:35.160
Bradford, Steve (FAA)
And and uh.

02:03:41.430 --> 02:03:42.230
Bradford, Steve (FAA)
And dumb.

02:03:43.250 --> 02:03:44.870
Bradford, Steve (FAA)
And I appreciate it because.

02:03:46.220 --> 02:03:56.270
Bradford, Steve (FAA)
Now, if I would have prepared better. I went I had a bunch of slides so we wouldn't have got into this conversation, but I didn't. I I decided what I wanted to talk about and then we just got into it, but

02:03:57.510 --> 02:04:00.310
Bradford, Steve (FAA)
I hope I didn't sound crazy, but I think that.

02:04:01.540 --> 02:04:32.310
Bradford, Steve (FAA)
I hate to chase trying to prove something that's old. Let's figure out how to prove something new, and I hate to chase how am I going to provide better service as the FAA when I really don't think it's affordable, and how are we going to get to performance based and and make this a little bit more open for the new entrance 'cause honest to God. It's different between flying to a something with this trip and flying to a small piece of land. You know 12 by 12 or 20 by 20 or even 50 by 50.

02:04:32.360 --> 02:04:35.490
Bradford, Steve (FAA)
So OK, Nancy will give it back to you.

02:04:37.600 --> 02:04:52.290
Mendonca, Nancy (HQ-EO000)
No thank thank you very much and I thought the discussion was interesting, too because there's things. There's a lot of lessons learned going forward. On on things to do better and and imply so no. I appreciate any last questions from anybody before we go to a break.

02:04:53.190 --> 02:04:54.990
Mendonca, Nancy (HQ-EO000)
Except for you, Don know questions from you.

02:04:55.550 --> 02:04:59.560
Donald Berchoff
No, I just wanna say Steve I hope I didn't disrupt things, too much. I you know, I just want.

02:04:59.030 --> 02:05:04.580
Bradford, Steve (FAA)
No no no no no no no. I appreciate it, but helping me bail, it out with more succinct language.

02:05:05.910 --> 02:05:20.530
Donald Berchoff
And I think we could do this together. I really think the technology 's there. This their ability to move data around and the Sanders are there everything? Is there right? We just kind of look at this as a new architecture for the future. I think we could do this. I really do you know?

02:05:22.900 --> 02:05:31.390
Bradford, Steve (FAA)
Yep, I think so, too I'm reading all these comments. That being I'm being schooled at things I know about but I've kind of gotten really, really.

02:05:32.900 --> 02:05:44.420
Bradford, Steve (FAA)
Once again we, we, we, we chase were chasing I think we're chasing suboptimal solutions, sometimes but that's just me, but Randy I. I do agree Grammy. I'm glad glad you and I agree that we need to work together.

02:05:45.430 --> 02:05:46.940
Bradford, Steve (FAA)
And with that we're done.

02:05:48.680 --> 02:06:15.050
Mendonca, Nancy (HQ-EO000)
Right on thank you. Everyone Steve PK. Thank you again, sincere appreciations. Again, I do. I do know how busy you guys are so. Thank you for your time and now folks. We got AMA 20 minute break and we will be back at 1:50 and will this next session, will be focused on the research going on in aviation weather going on across the federal government 's federal agencies. So thanks very much and we'll see you all back in 20 minutes.

02:05:55.110 --> 02:05:56.070
Kopardekar, Parimal H. (ARC-A)
Thank you Nancy.

02:05:57.710 --> 02:05:58.330
Kopardekar, Parimal H. (ARC-A)
Thank you for?

02:24:34.810 --> 02:24:43.760
Mendonca, Nancy (HQ-EO000)
Welcome folks is it as folks come back from the break. Uh my hope you had a chance to recharge or re re caffeinate and or your beverage of choice.

02:24:43.810 --> 02:25:13.930
Mendonca, Nancy (HQ-EO000)

Right I hope folks are learned as much as I did from the first 2 sessions. I definitely didn't anticipate that not many folks were were bored or or or caught in a couple extra or did a lot of Multitasking as it were so with that. We will kick off the second session well looking forward to hearing about the different research and efforts going with along across the federal agencies and with that I will turn it over to Karen Olson from.

02:25:13.980 --> 02:25:23.150
Mendonca, Nancy (HQ-EO000)
FAA 's I missed it was, it's a US office. My apologies on on that in the agenda so with that Karen over to you.

02:25:23.760 --> 02:25:27.950
Olson, Kerin (FAA)
Great thank you Nancy and let me pull my slides up here.

02:25:30.000 --> 02:25:31.450
Olson, Kerin (FAA)
Give me one second.

02:25:39.210 --> 02:25:41.940
Olson, Kerin (FAA)
And are you all able to see this just wanna.

02:25:44.820 --> 02:25:45.200
Matt Fronzak
Yes.

02:25:45.340 --> 02:25:49.240
Mendonca, Nancy (HQ-EO000)
Yes, there, they're not in presentation mode right now, but we can see him.

02:25:52.880 --> 02:25:53.950
Olson, Kerin (FAA)
Alright, How about that.

02:25:55.180 --> 02:25:55.890
Mendonca, Nancy (HQ-EO000)
Perfect.

02:25:56.200 --> 02:26:27.210
Olson, Kerin (FAA)
Alright, thank you so my name is Karen Olson and I am with the FAA S. Uas integration office and I managed the uas strategy planning and communications branch within the research engineering analysis division and we are responsible for working with within lines of business from across the FAA to identify and plan the research. That's needed to deliver the data and results needed to inform FAA milestones for Uas.

02:26:27.270 --> 02:26:35.010
Olson, Kerin (FAA)

Integration and advanced air mobility and so today, I will discuss that research strategy and how whether fits into it.

02:26:38.850 --> 02:26:52.740
Olson, Kerin (FAA)
So you can see here this represents that research strategy for uas and AM and I'm going to briefly walk through this. In the interest of time today, but basically the research is phased by operational capability.

02:26:53.910 --> 02:27:23.960
Olson, Kerin (FAA)
And you can see, those operational capabilities represented on this stair steps starting with OPS over people that operational capability is grayed out because research has has played its part in informing the observer people. The final rule. Earlier this year. And so when the FAA. We are setting our sights on the more advanced operational capabilities. Now, including beyond visual line of Sight. This is an agency priority and kind of moving up the staircase, you see the small package delivery.

02:27:24.020 --> 02:27:52.420
Olson, Kerin (FAA)
The integrated operations, the routine and scheduled operations and then the large cargo delivery followed by a passenger transport operations and it's really in these upper tiers here where we see the strategy extending beyond uas to include AM operations with Umm operations as a subset and so when it comes to research. The research is being identified and classified according to these operational capabilities.

02:27:54.420 --> 02:28:26.080
Olson, Kerin (FAA)
And then within the FAA S uas and am research portfolio. We're also implementing a research framework where you have research at the foundation of uas and am integration and so research is needed in key focus areas to address challenges and to develop products and inform the outcomes needed for integration and so this framework kind of provides a a schema for categorizing and classifying research and also in identifying gaps.

02:28:26.370 --> 02:28:45.290
Olson, Kerin (FAA)
Or areas where research is still needed and so you can see a lot of the technical focus areas listed here. I will point out that weather is one of these key focus areas against which we are prioritizing research within the FAA S uas and am research portfolio and so within this focus area.

02:28:45.350 --> 02:29:03.390
Olson, Kerin (FAA)
Uhm the weather research informs outcomes such as standards and requirements and capabilities and systems for example, addressing the impacts of weather on uas performance or technologies for the identification distribution and display of weather information.

02:29:06.210 --> 02:29:36.530
Olson, Kerin (FAA)
So, in terms of research collaboration. This represents our network of internal and external research

partners. We have quite a lot of coordination across other government agencies definitely working on research challenges that are shared of by departments across the federal level within several venues, including the uas executive committee and their science and research panel where the FAA and several other agencies come together to share research and to jointly.

02:29:36.710 --> 02:30:07.200
Olson, Kerin (FAA)
Tackle those uas integration challenges we also work with academia through the FAA center of excellence for uas research or ashore and with industry through uas test sites through pilot programs and interfacing through standards. Development organizations and we also collaborate on research internationally and hold regular exchanges with other Civil Aviation authorities and other research organizations from across the globe so.

02:30:07.480 --> 02:30:38.380
Olson, Kerin (FAA)
When it comes to defining research, including weather research within the FAA of course, there's the uas integration office. We must coordinate across the agency across all lines of business, including aviation safety and the next Gen organization. Air traffic airport security policy you name. It really every uas research stakeholder within the FAA. We're interfacing with them on a regular basis, holding regular exchanges and promoting that collaboration.

02:30:38.570 --> 02:31:00.740
Olson, Kerin (FAA)
Really to understand what are the unique research needs of each office to ultimately plan and identify research to to provide them with the data that they need to inform their pieces of that. Uas integration puzzle so in terms of whether research definitely collaborating with these stakeholders as well as collaborating with the weather.

02:31:00.790 --> 02:31:12.260
Olson, Kerin (FAA)
There are some community of interest and so it's really through these exchanges that again were able to identify the research and map it back to that uus and am integration research strategy.

02:31:14.640 --> 02:31:44.590
Olson, Kerin (FAA)
So here's just a summary of some of the research that has been identified as a result of these exchanges. This represents research that is underway or is being planned within the FAA as identified by those sponsoring lines of business as well as some of our research conducted by by research partners that we're tracking so there are still areas where research is needed, particularly in the areas of data collection and analysis capabilities required for.

02:31:44.650 --> 02:31:51.240
Olson, Kerin (FAA)
Each of these operational capabilities and again, the the data from these efforts will go on to inform.

02:31:52.830 --> 02:32:05.460
Olson, Kerin (FAA)

Informed those those products those standards that was the policy and and other things that the FAA decision makers will need to safely and securely integrate uas and am so.

02:32:05.840 --> 02:32:15.330
Olson, Kerin (FAA)
Uh I think that's that's about it and I think you'll hear from some other FAA folks this afternoon on some additional weather research.

02:32:16.300 --> 02:32:19.910
Olson, Kerin (FAA)
So I'll I'll end there and I'm happy to take any questions.

02:32:30.720 --> 02:32:41.180
Mendonca, Nancy (HQ-EO000)
Not seeing any in the chat, though Karen it. It seems to me from an outside observer that you're kind of the central coordinating point within the FAA for aviation weather research.

02:32:41.880 --> 02:33:00.870
Olson, Kerin (FAA)
So we are the central point for uas and am research were definitely pulling those stakeholders. You know related to all all research needs that will inform uas weather definitely being a key a key aspect of that and so you know, we, we definitely.

02:33:02.580 --> 02:33:18.790
Olson, Kerin (FAA)
Frequently you know collaborate with those weather stakeholders and you know they come to our our roundtable meetings and really exchange. The ideas and the the research priorities and and have the opportunity to discuss those with other research stakeholders from across the agency.

02:33:22.440 --> 02:33:29.600
Mendonca, Nancy (HQ-EO000)
Thank you. I'm no from Randy in the chat if you could pull up your last slide again and a question from Don Birch off.

02:33:30.760 --> 02:33:33.760
Donald Berchoff
Yeah, so am I on.

02:33:34.480 --> 02:34:04.450
Donald Berchoff
See here, yeah, so look at your slide you know, these are all you know really important areas. I think what you know, I think we gotta think about here is you know how much more research is required to really figure out some of these answers because a lot of folks have been in the field already experiencing what these are some of these issues like? What are the viable meteorological data collection analysis capabilities? I hope you know?

02:33:35.600 --> 02:33:36.040
Olson, Kerin (FAA)
Yep.

02:34:04.500 --> 02:34:18.620
Donald Berchoff
My my whole focus. I think is on how do we get the research programs to focus on the problems that private sector and others can't solve themselves right and some of that revolves around.

02:34:19.010 --> 02:34:40.760
Donald Berchoff
Uh if we were to say have it data performance standard weather instead of certified standard? What kind of what do we? How do we do that? What's the research required to understand how we would set that up? How would we put methods and standards around how that would happen who would do it? How do we?

02:34:41.540 --> 02:34:50.320
Donald Berchoff
Allow 3rd party providers to know that they meet a standard that they can contribute to the ecosystem with utms.

02:34:50.720 --> 02:35:22.760
Donald Berchoff
Uh you know, these are the things that I think we need to get into our research mindset around whether because again I I just I know research money is limited. You know, I used to be in the government and I just want to make sure that we're not putting money into research for things we kind of know already but that we need to solve the bigger issue around how we going to really build a new system. Around this whole business model and how does the government oversee that ensure its who are practicing the right standards validating?

02:35:22.890 --> 02:35:46.080
Donald Berchoff
That's what companies are doing is real you know, we don't want any Tom **** or Harry to be able to develop an application that isn't being checked against a standard because we know that that that could be deadly, so that's kind of my input on this. I just like to see more emphasis on the bigger picture and research required to help really transform the industry like Steve and I were talking about earlier.

02:35:46.640 --> 02:35:58.480
Olson, Kerin (FAA)
Yeah, thank you for that that is great input and we're we're always you know open to you know learning more in hearing more about the ideas and the needs from others within the community and I would just add that some of these.

02:35:46.860 --> 02:35:47.350
Donald Berchoff
Yeah.

02:35:59.450 --> 02:36:20.250
Olson, Kerin (FAA)
I do represent kind of summary questions you know, there's a lot more like detailed research questions within some of these that I think might answer some of those questions, but again we're we're opening or open to understanding and learning more beyond the FAA community what? What what research needs are out there thanks.

02:36:22.900 --> 02:36:30.740
Mendonca, Nancy (HQ-EO000)
I'm uh carrying a quick question from Bruce Baker in the chat and then I'll I'll turn it over to Kevin Johnston.

02:36:36.100 --> 02:36:38.740
Mendonca, Nancy (HQ-EO000)
So the question from Bruce is Oh God for God.

02:36:36.260 --> 02:36:36.830
Johnston, Kevin L (FAA)
Yeah, it's

02:36:39.170 --> 02:36:45.470
Johnston, Kevin L (FAA)
so I was just gonna ask Jennifer too. I sent her my slide deck so I'm kind of hoping she can drive.

02:36:47.070 --> 02:36:55.200
Mendonca, Nancy (HQ-EO000)
OK, I'll as Jennifer pulls it up. I'm Karen. The question from Bruce Baker was what is the time frame to begin the BB loss operations for weather research?

02:36:56.140 --> 02:37:21.790
Olson, Kerin (FAA)
Yeah, so I mean, some of that research is underway underway. Now I mean, we know that the Delos Rulemaking Committee and is actively underway now and so we've shared with the the rulemaking committee. A lot of the relevant beyond visual line of sight research, for their consideration, so you know within our division.

02:37:22.080 --> 02:37:30.820
Olson, Kerin (FAA)
You take a 5 year look at these needs and our planning looks at the yeah, rolling 5 year window, so it's definitely focused on the near term.

02:37:40.180 --> 02:37:44.030
Mendonca, Nancy (HQ-EO000)
Thank you. Jennifer do you have it or do I need to pull our?

02:37:45.350 --> 02:37:53.490
Jennifer Jaquin
Look at it and pull it up. I do have bruises but I think next. We're going with Kevin Johnston. Yeah, yes.

02:37:45.650 --> 02:37:45.940
Jennifer Jaquin
What?

02:37:51.010 --> 02:37:51.390
Mendonca, Nancy (HQ-EO000)
It's

02:37:52.330 --> 02:37:54.850
Johnston, Kevin L (FAA)
yeah, I sent you yesterday?

02:37:55.450 --> 02:37:57.650
Jennifer Jaquin
Yeah, oh sure I can share it now.

02:37:58.050 --> 02:38:13.870
Johnston, Kevin L (FAA)
OK, great, thanks, yeah, my presentation is kind of like a a hybrid if you will to to address basically the session session questions on what research we're doing 'cause within Randy basses. Aviation weather research program, we do have.

02:38:14.550 --> 02:38:31.980
Johnston, Kevin L (FAA)
Uh some efforts going on that are uas related but I was also asked to talk about the weather community of interest and the uas special weather action team, so going to tackle both of these topics so as you heard yesterday got it go ahead to the next slide.

02:38:32.030 --> 02:38:47.740
Johnston, Kevin L (FAA)
Like uh from Bill Bauman, he he talked about the COI and what's the motivation? What's the challenge well across the FA. We've got a lot of silos of excellence that you know, dabbling in the weather business so go ahead, the next slide.

02:38:52.170 --> 02:39:14.450
Johnston, Kevin L (FAA)
And you see on the right excuse me the right side is bills weather division within next Gen, but within the Ato on the left side you see the green boxes and they deal with a lot of weather acquisition and onm responsibilities and then we also have our AFS friends taken on weather issues and I gotta let my dog out.

02:39:16.840 --> 02:39:17.270
Johnston, Kevin L (FAA)
Wow.

02:39:20.630 --> 02:39:24.600
Mendonca, Nancy (HQ-EO000)
Kevin we're gonna have to work with bill to add AUS to this chart.

02:39:28.810 --> 02:39:30.220
Bauman, William (FAA)
Well, maybe we'll consider that.

02:39:29.170 --> 02:39:31.280
Johnston, Kevin L (FAA)
Right it's it's a good point in that scene.

02:39:34.340 --> 02:39:35.360
Johnston, Kevin L (FAA)
Alright next line.

02:39:39.270 --> 02:39:45.460
Johnston, Kevin L (FAA)
And I think bill mentioned that there's authority. There's a actual FAA order ropes going backwards.

02:39:46.220 --> 02:39:56.440
Johnston, Kevin L (FAA)
Uh NFA order that basically has a guidance on what constitutes a community of interests and did we lose the slides.

02:39:59.590 --> 02:40:04.170
Mendonca, Nancy (HQ-EO000)
Think Jennifer might been trying to go out of into presentation mode.

02:40:04.910 --> 02:40:06.410
Mendonca, Nancy (HQ-EO000)
We're not yeah, we did lose them.

02:40:09.160 --> 02:40:10.560
Jennifer Jaquin
I will get them back.

02:40:10.940 --> 02:40:11.910
Johnston, Kevin L (FAA)
OK, no problem.

02:40:14.560 --> 02:40:33.850
Johnston, Kevin L (FAA)
Well then I'll just keep talking because basically yeah, there's an order that you know again establishes the The Enterprise Architecture Board and Bill has to report up. You know through that mechanism on the status of how well his COA is is behaving next slide.

02:40:41.330 --> 02:40:47.560
Johnston, Kevin L (FAA)
And yeah, so we've got a charter established Paul Fontaine is the executive sponsor that's bills boss.

02:40:48.160 --> 02:40:52.250
Johnston, Kevin L (FAA)
You see the Co chairs and that is support from Mitre.

02:40:53.760 --> 02:40:54.470
Johnston, Kevin L (FAA)
Excellent.

02:40:56.150 --> 02:41:09.520
Johnston, Kevin L (FAA)
And the beauty of the The weather see why is it's very well represented you see the different components of the FAA and it cuts across really all all different business lines within the FBI.

02:41:11.220 --> 02:41:11.850
Johnston, Kevin L (FAA)
Like slide.

02:41:14.630 --> 02:41:22.970
Johnston, Kevin L (FAA)
And the Red Bull it's really identify the real key purpose. I think of of the The The weather COI.

02:41:23.660 --> 02:41:27.350
Johnston, Kevin L (FAA)
And again take on the problems work to resolve them.

02:41:28.000 --> 02:41:33.390
Johnston, Kevin L (FAA)
Uh increase the information flow across the agency through through collaboration.

02:41:35.770 --> 02:41:36.460
Johnston, Kevin L (FAA)
Next slide.

02:41:39.000 --> 02:41:43.290
Johnston, Kevin L (FAA)
And right now there's a 8 different spots.

02:41:43.880 --> 02:41:56.030
Johnston, Kevin L (FAA)
And highlighted the winds standards and policy and the uas so I Co lead the uas with John Steventon and he's an AFS 400, but doing a lot of work with the standards of policy.

02:41:56.240 --> 02:42:00.070
Johnston, Kevin L (FAA)
Uhm swipe that's led by Gordy Rother.

02:42:01.010 --> 02:42:01.630
Johnston, Kevin L (FAA)
Which slide

02:42:06.790 --> 02:42:12.440
Johnston, Kevin L (FAA)
and just real quick on the squad so we've got 3 problem statements that were working?

02:42:13.070 --> 02:42:21.290
Johnston, Kevin L (FAA)
A 43 is the standards and right now that that's a big deal with analyzed whether standards.

02:42:21.810 --> 02:42:40.450
Johnston, Kevin L (FAA)
Uh you see another bullet there that we're interfacing with the Dons Group, there with the ASTM F 38. We just recently had a discussion on the standards work and we decided to continue that engagement at least on a monthly basis, so I think that's really good.

02:42:41.660 --> 02:43:01.380
Johnston, Kevin L (FAA)
44 is basically the weather information gaps so we know that the resolution of the information that's available today, really doesn't meet the uas operations and so we're going to take that on but we really need to understand those gaps before we figure out really where to where to apply the research.

02:43:02.390 --> 02:43:07.540
Johnston, Kevin L (FAA)
One of the things I was surprised that we didn't hear anything from Steve on this morning.

02:43:09.070 --> 02:43:40.200
Johnston, Kevin L (FAA)
Uh was the development of an enterprise architecture operational improvement and then the supporting activities that would would enable that for for qualifying weather information. So again the concepts are all indicating that we're going to have 3rd weather providers of information through the SDS peas and a new role and responsibility for the FAA will be. You know oversight of that and how we going to do it well. We've got a multi year plan basically through this operational improvement to figure out.

02:43:40.340 --> 02:43:42.100
Johnston, Kevin L (FAA)
What these processes will look like?

02:43:44.390 --> 02:44:06.880
Johnston, Kevin L (FAA)
Again, I mentioned the interface with the STM F 38 groups. So we'll do that and we've already identified that some what I think are important whether thresholds and I'm just going to pick on the precipitation intensity and then this is through the aircraft certification process and and so working with them. They've identified a threshold of like rainfall intensity half an inch.

02:44:07.720 --> 02:44:37.180
Johnston, Kevin L (FAA)
Uh per hour well that's pretty interesting because you know again went out, reached back to uh Weather Service and said hey do you even you know look at evaluate yourself for that kind of rainfall

intensity and they come back and said Oh yeah, we do. That's the lower threshold, but it's over 6 hours, so again. Now we're talking over an hour. So is that again resolution and information that we can take to the table that you know would help us hone in on necessary.

02:44:37.230 --> 02:44:38.080
Johnston, Kevin L (FAA)
Research.

02:44:39.090 --> 02:44:40.270
Johnston, Kevin L (FAA)
Uh next slide.

02:44:41.310 --> 02:44:42.490
Johnston, Kevin L (FAA)
You also slides again.

02:44:50.610 --> 02:44:51.980
Johnston, Kevin L (FAA)
Can you get the less light up?

02:44:52.520 --> 02:44:53.510
Jennifer Jaquin
So will do.

02:44:59.930 --> 02:45:26.470
Johnston, Kevin L (FAA)
And it's just summarized in some research that we've done early on 'cause. We really just started funding. Some uus focused activities and just this past summer completed 2 reports what I wanted to do since our funding is limited. You know, I wanted to get an understanding of what's going on out there. There is a lot going on 3 different testing and demonstrations and academia and so again not want to duplicate anything I think we

02:45:26.520 --> 02:45:34.580
Johnston, Kevin L (FAA)
wanted to get a feel for you know what's the baseline? What's ongoing now, so again not to duplicate and so that's been pretty much completed this summer.

02:45:35.300 --> 02:46:04.880
Johnston, Kevin L (FAA)
Uh our our first look at looking at a you know modeling and improving. The science and again. It was good to hear that this this morning. It seems like wind? Is is really the number one issue and concern so again. We're focusing with my tour here on microscale modelling of of wind and in a in an urban environment and again. We're hoping well not hoping really expecting that the the results will.

02:46:04.940 --> 02:46:32.950
Johnston, Kevin L (FAA)
Open up doors for other functional FA interests to support the The Integrated Research, said that Karen talked about and and again whether it's figuring out what kind of observation. Ull weather networks. We

need to looking at safety scenarios for risk based assessments, looking at training and also inform you know at the results should it be able to inform you know air space planning and and infrastructure requirements.

02:46:33.700 --> 02:46:49.800
Johnston, Kevin L (FAA)
And then also just wanted to mention 2 that the ceiling and visibility product development team within brandies. Portfolio has an activity ongoing right now where we're actually using drones to sample the atmosphere to improve forecasts of fog.

02:46:50.390 --> 02:46:51.830
Johnston, Kevin L (FAA)
And that's in the Cincinnati area.

02:46:52.850 --> 02:46:54.110
Johnston, Kevin L (FAA)
So that's all I had an answer.

02:46:57.070 --> 02:46:58.830
Mendonca, Nancy (HQ-EO000)
Thank you questions for Kevin.

02:47:03.860 --> 02:47:07.750
Mendonca, Nancy (HQ-EO000)
Kevin can you talk a little bit about the timeline for the operational improvement?

02:47:08.730 --> 02:47:09.040
Mendonca, Nancy (HQ-EO000)
Or.

02:47:09.520 --> 02:47:17.620
Johnston, Kevin L (FAA)
Right so it's part of the are what we call the next Gen segment implementation plan.

02:47:18.260 --> 02:47:21.790
Johnston, Kevin L (FAA)
And you know it's part of our life cycle planning process.

02:47:22.040 --> 02:47:25.190
Johnston, Kevin L (FAA)
Uh I think it's goes out 5 years at a time.

02:47:25.830 --> 02:47:31.500
Johnston, Kevin L (FAA)
This next cycle actually this, this oh, I will be uh approved.

02:47:32.090 --> 02:48:02.510
Johnston, Kevin L (FAA)
And submitted part of the sense that plan in February. So we've created some supporting activities

already around it and and it's it's projected to go out through 2029. So it's kind of a neat process. In that again. It rallies around the whole agency around this. This you know activity or series of activities that we, we gotta get you know performing to get this operational improvement in place so again. It's it's this process.

02:48:02.560 --> 02:48:08.770
Johnston, Kevin L (FAA)
Where we'll figure out how we will provide that oversight of these these 3rd party whether providers?

02:48:12.650 --> 02:48:16.950
Mendonca, Nancy (HQ-EO000)
Thank you Don to keep on schedule? Can I get you to put your question in chat?

02:48:17.590 --> 02:48:28.350
Donald Berchoff
And I will yeah, I was gonna make a statement I. I really love. What Kevin 's group is doing and and Gordy and and John Stephenson and I you know, I just wanted to say that.

02:48:37.310 --> 02:48:50.860
Mendonca, Nancy (HQ-EO000)
Thank you very much. Kevin thank you. Karen thank you. I think I forgot to thank you. And with that. I'm Walter Combs wasn't able to join us so calling Richie will be covering covering the next brief Pauline over to you.

02:48:52.060 --> 02:48:53.070
Reiche, Colleen K-CTR (FAA)
Great, thanks Nancy.

02:48:54.230 --> 02:48:57.350
Reiche, Colleen K-CTR (FAA)
One second, while I bring up the slides. Let me know when you can see that.

02:48:59.740 --> 02:49:00.250
Mendonca, Nancy (HQ-EO000)
Got him.

02:49:00.690 --> 02:49:01.360
Reiche, Colleen K-CTR (FAA)
Alright perfect.

02:49:01.870 --> 02:49:33.000
Reiche, Colleen K-CTR (FAA)
Uh so hi everybody, I'm calling Ricky I'm going to be talking today about a new prototype camera system that is, is being evaluated by the Alaska weather camera program in in Walter Combs and just for a little bit of context for those of you that may not be familiar. The Alaska weather camera program has has basically been around for over 20 years and it has been providing advisory weather services within the state of Alaska in the form of camera sites. Several 100 of them, actually across the state of Alaska.

02:49:33.480 --> 02:49:49.110
Reiche, Colleen K-CTR (FAA)
Airports mountain passes, it essentially critical junctures for aviation operations that have allowed pilots and other operators to essentially look before they fly and it has had demonstrated efficiency and safety gains in the state of Alaska.

02:49:49.820 --> 02:50:19.090
Reiche, Colleen K-CTR (FAA)
So I mentioned today, we're going to be talking about a new prototype camera platform that is, is currently being evaluated in the state of Alaska called the visual weather observation system or the V Wasps and basically the system and encapsulates both surface sensors as well as 360 degree cameras and as I mentioned there currently being evaluated at 4:00 test sites in the state of Alaska, which are shown on the right side.

02:50:19.820 --> 02:50:32.600
Reiche, Colleen K-CTR (FAA)
Those of you that may be familiar with some of these sites within the state of Alaska May. Note that the Palmer Airport does actually have a actually let me back up a second so the the ultimate goal with.

02:50:33.210 --> 02:50:54.970
Reiche, Colleen K-CTR (FAA)
In this view also valuation is that these systems would essentially augment and supplement the existing a sauce and a wasp network so that kind of the vision for this is that these systems would provide valuable advisory weather in locations that are currently without either any weather information or without sufficient weather information.

02:50:55.970 --> 02:51:26.720
Reiche, Colleen K-CTR (FAA)
So the reason that I wanted to note the polymer site here, which is is is located just North of Anchorage was essentially an initial key site for for the program and and that was the first site that was installed a little over a year ago and essentially deliberately so since it's in close proximity to the Alaska weather camera program, which is physically located in Anchorage, but also because there isn't a sauce at Palmer that essentially allowed for some initial you know testing invalidation against that system just to.

02:51:26.770 --> 02:51:35.850
Reiche, Colleen K-CTR (FAA)
To ensure that accuracy, but the other 3 sites that you see here are essentially true remote sites within the state of Alaska that currently do not have any.

02:51:37.150 --> 02:51:41.730
Reiche, Colleen K-CTR (FAA)
Any any type of whether there's there's no way sauce or a loss or or other advisory systems.

02:51:42.500 --> 02:51:54.490
Reiche, Colleen K-CTR (FAA)
Uhm so as I mentioned the the surface sensors at each of these locations encapsulates several key observations such as surface winds ceilings visibility present weather, etc.

02:51:55.520 --> 02:52:24.900
Reiche, Colleen K-CTR (FAA)
The system also contains 3 stages of of what are called self checks to ensure that the sensor performance so that ranges anywhere from the this? The sensors themselves? Which are essentially smart sensors, which can evaluate their own performance and evaluate voltage and things like that to self report if it's having any kind of issues with performance all the way to some software that will actually conduct data checks such as range.

02:52:24.960 --> 02:52:43.100
Reiche, Colleen K-CTR (FAA)
And persistence checks by looking at successive observations from each sensor and evaluating the variability against essentially realistic thresholds to determine if there could be a sensor issue if potentially if if the data doesn't look realistic in terms of the temporal variability.

02:52:44.490 --> 02:53:14.140
Reiche, Colleen K-CTR (FAA)
During this demonstration, we are engaging heavily with stakeholders within the state of Alaska, which include pilots dispatchers as well as the National Weather Service forecasters and others that was just kind of a a snapshot so throughout the demonstration, which began in early 2021. Roughly the beginning of May. We began to essentially conduct online surveys so in in 2 forms one of them being sort of an abbreviated.

02:53:14.200 --> 02:53:42.740
Reiche, Colleen K-CTR (FAA)
Kind of rating system kind of you know it. Only takes a minute or 2 for the users to respond to and and gives us insights into the utility of of various components of the V Wasps as well as any issues or challenges that they're experiencing and we also have a more detailed user survey that we've been conducting every few months, with them to get more detailed qualitative feedback on the performance and the benefits and in what which aspects are most useful to them.

02:53:43.830 --> 02:54:13.770
Reiche, Colleen K-CTR (FAA)
So, in terms of timeline, I mentioned that you know that this initiative began in early 2021 with the exception being that Palmer site. I mentioned the key site which was installed in early 2020 and the ultimate goal of this demonstration is to demonstrate the accuracy and operational benefit of the system so we essentially will be and are currently comparing the the meteorological data that comes out of the the surface sensors against comparison sources.

02:54:13.820 --> 02:54:43.330
Reiche, Colleen K-CTR (FAA)
That are in in close proximity or in some cases, far proximity to to these sites just to confirm the accuracy of the information. I mentioned the the user surveys that we're using to evaluate the operational benefit. We're also evaluating the system availability and reliability at each of the sites so essentially all of this information is actively being collected and will be rolled up in into a final report summarizing the performance in early 2022.

02:54:43.870 --> 02:54:58.850
Reiche, Colleen K-CTR (FAA)
And the ultimate goal there, even beyond once we've demonstrated the accuracy and operational benefit is to seek additional deployment of some of these systems in other locations in Alaska that are currently underrepresented in terms of weather.

02:55:00.830 --> 02:55:30.770
Reiche, Colleen K-CTR (FAA)
So I wanted to just give a a couple of screenshots here and this is certainly not holistic. I I just grabbed a couple components from some of the the website just to highlight some of the features of the system and and how we're displaying that to the users and some of the things that we've heard from the users so far in terms of you know what? What is useful to them so the image on the left here? Is is is basically one of the 360 degree camera images. I believe this is from the Healy River site and for those of you not in Alaska, they are.

02:55:30.830 --> 02:55:33.670
Reiche, Colleen K-CTR (FAA)
Have already been getting snow there for the last week or 2.

02:55:34.700 --> 02:55:43.350
Reiche, Colleen K-CTR (FAA)
So you can see here. I obviously I can't click on this. But it is full tilt pan zoom in in terms of the functionality of the camera image.

02:55:44.130 --> 02:56:16.000
Reiche, Colleen K-CTR (FAA)
Uhm another feature that is useful is is trend information for the surface observations, which I'm showing a snippet of in the bottom right and mentioned in the previous slide. There are quite a few other observations. Both raw observations like temperature and Dew Point as well as derived products like heat index. Wind chill things like that. But the users have indicated that they they really it. It's really beneficial to have this trend information, which goes back about 6 hours into the past, so they can look at.

02:56:16.110 --> 02:56:24.240
Reiche, Colleen K-CTR (FAA)
You know how much variability there is in in in certain factors or or certain data fields or how steady some of the data fields maybe.

02:56:25.220 --> 02:56:56.020
Reiche, Colleen K-CTR (FAA)
And then Lastly in the top right here is displaying the fact that the these prototype cameras that are installed now do have sort of night vision functionality and that is something that now that the days are starting to get shorter, especially in Alaska. It's it's dark a lot later in the morning. It gets dark earlier in the evening, so this functionality is something that's that's useful to them as they're planning for example, in the morning while it might still be be dark and and decisions or needing to be made about.

02:56:56.070 --> 02:57:26.220
Reiche, Colleen K-CTR (FAA)
Being able to complete the operations so that's all I had, and but I think the last thing I wanted to just say is, is in terms of kind of turning the corner into a potential future intersection with uas and Umm. I'm sure everybody here can appreciate the potential application of some of these these techniques. But I do want to point out that you know the vision for this is not necessarily that the FAA. Alaska weather camera program is going to go running out and installing these systems you know.

02:57:26.270 --> 02:57:36.230
Reiche, Colleen K-CTR (FAA)
In urban environments and everywhere to address every need for uas and Umm but really the the vision here is that this demonstration and the current.

02:57:36.700 --> 02:58:04.410
Reiche, Colleen K-CTR (FAA)
Uh in the current instance of this vast would essentially be a blueprint for something that industry. Other agencies any anyone else out there in the domain could essentially pick up and provide recommendations for you know if I need this kind of information. Here's how I could structure it. Here's the the type of information that would be useful. The types of systems that I could use etc. So thanks so much and I'll I'll stop here and see if there's any any questions.

02:58:13.780 --> 02:58:18.430
Mendonca, Nancy (HQ-EO000)
Calling it looks like one from Donald Eck if I pronounced that right.

02:58:15.990 --> 02:58:16.630
Reiche, Colleen K-CTR (FAA)
Myself.

02:58:20.230 --> 02:58:50.640
Reiche, Colleen K-CTR (FAA)
Yes, I see that, well the viwa system be able to provide a visibility estimate directly and and yes, that is correct so the viwa system does have a surface sensor that directly does provide a visibility measurement and I will also note that the I'm not sure if there's other folks that will be talking about the Villa algorithm or visibility estimate from image detection, but essentially that's another capability where visibility estimates in the future will be potentially.

02:58:50.690 --> 02:59:02.680
Reiche, Colleen K-CTR (FAA)
Available from the camera images where basically the algorithm could be run on directly on the camera images to provide a secondary visibility estimate to augment the the actual sensor visibility.

02:59:10.730 --> 02:59:15.240
Mendonca, Nancy (HQ-EO000)
Thank you very much with that, we'll turn it over to Bruce Baker.

02:59:25.370 --> 02:59:28.660
Mendonca, Nancy (HQ-EO000)
Bruce I'll let you introduce yourself also as part of it.

02:59:28.460 --> 02:59:57.190
Bruce Baker (Guest)
OK, yeah, I'm Bruce Baker. I'm with the Noah and it's the resources laboratory and my lab does a considerable amount of work trying to understand the boundary layer and in in in general. We have started looking at using uas is to probe the boundary layer because there's a definite data gap that can there's a slide. So when we talk about when I look at this data gap thing from our perspective.

02:59:57.490 --> 03:00:19.480
Bruce Baker (Guest)
It's really this a 10 meter up to probably 3 or 4 kilometers. We there's a there's a huge data gap in terms of Meteorological. Information there and that that that drives a lot of types of lot of weather. And yet we don't know a lot about it. So we thought that the US and itself was a good way to start trying to probe that particular area.

03:00:20.100 --> 03:00:23.590
Bruce Baker (Guest)
And we started back in about 2014 doing this.

03:00:24.190 --> 03:00:44.210
Bruce Baker (Guest)
And we've done a lot of process studies with Noah. We've looked at Adam gives you access to look at formation of tornadoes severe thunderstorms land surface processes that drive weather models and also a fun thing we actually were able to afford use them to help forecast for balloon festival.

03:00:44.870 --> 03:00:47.560
Bruce Baker (Guest)
And there's a New Mexico next slide, please.

03:00:48.740 --> 03:01:10.730
Bruce Baker (Guest)
So this is a this is what's happened. We we started out really as sort of nerdy signs. This wanted to look at the boundary layer, but we're transitioning now more into trying to understand how can we use these actually operationally to help improve weather forecast so we've got a test bed now that's situated just outside our lab is doing in Knoxville near Knoxville, Tennessee.

03:01:11.480 --> 03:01:38.050
Bruce Baker (Guest)
And it's gonna become a what one is gonna be really part of a whirlwind logical organization testbed internationally in terms of looking at how to use drones up or how to use you as Operationally. So this is where we operate from we have a mirror logical tower and other ancillary measurements. We used to validate measurements both on fixed wing and rotor aircraft. Both of which we can measure wind speed and wind direction with the next slide.

03:01:39.380 --> 03:02:03.860
Bruce Baker (Guest)
So this is an example of what we do, and we're we're actually in the middle of doing that now as we actually on a daily basis. We go out and do vertical profiles at that particular location. We've got a code to go up to one kilometer. So we've been but we're still within we haven't been within visual line of Sight. So, we, we have a culture that we fly and do vertical profiles, starting a little bit before sunrise and go to a little bit after sunset.

03:02:04.490 --> 03:02:13.270
Bruce Baker (Guest)
And we download those data and then the local weather forecast office is able to ingest those into their forecasting display system.

03:02:13.900 --> 03:02:14.510
Bruce Baker (Guest)
Next slide.

03:02:15.610 --> 03:02:37.330
Bruce Baker (Guest)
This is an example of the cross sections that we generate from that, but you can start to see the structure in places that you just couldn't see it before in terms of heating and cooling and how the land surface air land and air interacting with each other, which ultimately should help but hopefully we improve, some of the weather forecasting next next slide.

03:02:39.100 --> 03:02:54.890
Bruce Baker (Guest)
So what we've started this we just started this over the last year. We want to expand that to other NWS. Wfo 's we have a few that have shown interest that are in the Eastern region, and the thought is that we want to be able to.

03:02:56.050 --> 03:03:24.870
Bruce Baker (Guest)
Go ahead and introduce this concept, and other other W foes the key. There is no one really has that type of information as frequent as you can get obviously with his uas is there's a there's radiosondes, but they're launched like twice a day and they really don't stay right over the forecasting area. They're sort of go with where the wind is going so this whole point is to how can we assimilate these UA sobs and different types of?

03:03:25.470 --> 03:03:33.970
Bruce Baker (Guest)
Forecast models and the down the bottom. We have the high high resolution rapid refreshed model and a few others that we try to use next slide.

03:03:35.490 --> 03:04:06.560
Bruce Baker (Guest)
Here's an example where we actually have used a high resolution. Refresh model and we look at look at how that high split is our dispersion model so we look at the trajectory of a of a of a of a release here

and we look and see what happens if we just use the uas data or if we just used her model and uh right. But we also see that we actually can improve reality. If we integrate the uas data into the model itself, so we're actually working on.

03:04:06.620 --> 03:04:07.310
Bruce Baker (Guest)
Doing that.

03:04:08.520 --> 03:04:11.780
Bruce Baker (Guest)
More frequently and we also are going to start interacting with them.

03:04:13.230 --> 03:04:18.840
Bruce Baker (Guest)
The Weather Service in integrating it more into their into their decision support services system.

03:04:19.580 --> 03:04:20.140
Bruce Baker (Guest)
Next.

03:04:21.730 --> 03:04:52.540
Bruce Baker (Guest)
So next steps, we want to continue doing this routine. Yes, uh uas profiles along the Ravens. ONS continue understanding how we can use the high split and the and the US is for emergency response so there. You know air pollutant dispersion forecasts. But the key here is we really want to try to get it into a routine operational mode as opposed to be like doing uh you know, one week or 2 week experiment and just do a process study and that's I think where the true utility.

03:04:52.830 --> 03:04:59.280
Bruce Baker (Guest)
And importance for these new answers are really going to make a huge difference in and weather forecasts.

03:05:00.210 --> 03:05:09.310
Bruce Baker (Guest)
Excuse me next step or I'm sorry next slide. So I'd say if anything. Some of the challenges are really our ability to where we can fly and when we can fly.

03:05:10.260 --> 03:05:19.170
Bruce Baker (Guest)
We were We do have a waiver to go up to kilometre at Oliver Springs, but really we need to get probably up to 3 or 3 to 5 kilometres.

03:05:20.160 --> 03:05:23.020
Bruce Baker (Guest)
They're already doing that in Europe for example, in Switzerland, they already have.

03:05:23.080 --> 03:05:23.570
Bruce Baker (Guest)
The.

03:05:24.540 --> 03:05:40.390
Bruce Baker (Guest)
Uh autonomous flights up to 5 kilometers on a daily basis for the Swiss Med service and then think they're going to end up with a total of like 20 different autonomous sites specifically for improving the forecasts.

03:05:41.630 --> 03:05:42.940
Bruce Baker (Guest)
OK next next line.

03:05:44.030 --> 03:05:46.290
Bruce Baker (Guest)
So we want to continue to support our.

03:05:47.800 --> 03:05:58.500
Bruce Baker (Guest)
Process studies I think that's important to help understand how to help with initialization of the forecast models with sales, but also do this in a routine routine mode for.

03:05:59.260 --> 03:06:04.910
Bruce Baker (Guest)
How those models work as you move as a function of time I I think one of our key?

03:06:05.400 --> 03:06:22.210
Bruce Baker (Guest)
Uh things we need to move forward towards this you know semi autonomous or Thomas US is that's critical really do not only reduce the manpower, making more economical, but also you can do it more frequently and provide a lot more information overtime.

03:06:23.030 --> 03:06:40.140
Bruce Baker (Guest)
And the obvious one that we want to work with is that's resisted question actually as we really want to get to a point where we can do some safe be Delos OPS. That's also gonna be important to go to some higher altitudes just so we could get more information up around 3 kilometres.

03:06:41.650 --> 03:06:53.250
Bruce Baker (Guest)
So we want to keep sampling the boundary layer and weather conditions and try to try to use. These and other operational sense really to improve the weather or weather forecast for the for the Weather Service.

03:06:54.440 --> 03:06:55.440
Bruce Baker (Guest)
I think that might be it.

03:06:57.730 --> 03:07:00.200
Bruce Baker (Guest)
Anyway so that's what we're interested in.

03:07:04.810 --> 03:07:15.810
Mendonca, Nancy (HQ-EO000)
Bruce thank you dumb question in the chat for you. Have you explored? How to most beneficially sample. The atmosphere by uas depending on a given weather situation?

03:07:16.920 --> 03:07:41.800
Bruce Baker (Guest)
We well right now, we're we fly when we can. That's another constraint that we have in terms of wins fog clouds and rain. So we have done some of that when we were doing a a study in Alabama, looking at the formation of tornadoes and severe weather. We're actually was able to stay downstream from the system coming in.

03:07:42.180 --> 03:08:10.270
Bruce Baker (Guest)
And do vertical profiles in an area that we thought that that air Masters would come in and and kick off some severe weather and it did, and we could release map in the moisture feels as they propagate it towards the air where they're going to be kicked off and also what we're able to do you have a technique to use it IR camera to look at differential heating at the ground? Which is a big deal for convection and and severe storms and we were able to at least track some of that differential heating in.

03:08:10.780 --> 03:08:14.990
Bruce Baker (Guest)
Uh the strength of that to help understand where they might be kicked off.

03:08:24.740 --> 03:08:35.590
Mendonca, Nancy (HQ-EO000)
No thank you. I'm I'm gonna key over there's some more questions in the chat. I'm gonna keep if you don't mind taking those over there and I will turn it over to Melissa for her presentation.

03:08:35.790 --> 03:08:36.260
Bruce Baker (Guest)
OK.

03:08:36.360 --> 03:08:37.410
Mendonca, Nancy (HQ-EO000)
But thank you.

03:08:41.780 --> 03:08:43.150
Wagner, Melissa A.
Can you hear me OK?

03:08:44.730 --> 03:08:45.290
Mendonca, Nancy (HQ-EO000)
Yes.

03:08:45.520 --> 03:08:50.210
Wagner, Melissa A.
OK, I'm can you see let's see share?

03:08:51.400 --> 03:08:54.190
Wagner, Melissa A.
And can you see my screen alright?

03:08:56.910 --> 03:08:59.750
Mendonca, Nancy (HQ-EO000)
Yes, and it is it's now in presentation mode great.

03:08:57.690 --> 03:08:58.160
Wagner, Melissa A.
OK.

03:08:59.830 --> 03:09:10.020
Wagner, Melissa A.
OK hi my name is Melissa Wagner and today I'll be talking about uas in assessing severe weather impacts and use an atmospheric profiling.

03:09:11.340 --> 03:09:26.790
Wagner, Melissa A.
This work is supported by or work in collaboration with the national severe storms laboratory and since recently underwent a name change, where now the Cooperative Institute for severe and high impact weather research on operations.

03:09:27.760 --> 03:09:45.470
Wagner, Melissa A.
So, just to provide an overview of my talk, I will discuss UA isis, and damage assessments, and briefly touch upon atmospheric profiling. Most of my work focuses on damage assessments, and conclude by talking about some of the future work.

03:09:46.540 --> 03:10:16.350
Wagner, Melissa A.
So uas platforms can be very beneficial by assisting National Weather Service weather forecast offices as well as emergency managers by gaining access and remote locations or inaccessible in the case of a big events tornado outbreak. It can also help in going out and focusing on what should be prioritized, oftentimes in the case urban damage a lot of the focus is on that.

03:10:16.400 --> 03:10:21.210
Wagner, Melissa A.
And we can go out and do damage surveys in the rural areas.

03:10:21.830 --> 03:10:27.860
Wagner, Melissa A.
So this helps with resources and it can also help with disaster response and recovery.

03:10:28.740 --> 03:10:58.700
Wagner, Melissa A.
With a high resolution imagery it can help better characterize damaged impacts in particular, multi spectral imagery can help detect damage to vegetation that would otherwise go unnoticed. This is based off of the spectral response of a vegetation and near infrared bands. Red edge and to a lesser extent red so healthy vegetation will have a higher response or higher values compared to stressed.

03:10:58.990 --> 03:11:01.850
Wagner, Melissa A.
Damaged vegetation, which will have lower values.

03:11:02.930 --> 03:11:14.550
Wagner, Melissa A.
So this these aspects can really help us improve severe storm climatology, especially in rural locations as well as help with improving risk and disaster preparedness.

03:11:15.290 --> 03:11:35.170
Wagner, Melissa A.
And by better documenting a high wind impacts and correlating this information with the storm signatures that we see in radar as well as other observation systems, they can. This can help us improve our understanding of severe storm dynamics in the South East Southeast USA and in other areas.

03:11:36.400 --> 03:11:58.500
Wagner, Melissa A.
So for the damage surveys, we use, essentially 2 platforms, so we use the Skydio 2, which helps us collect aerial photos and videos. So we can see the extent of damage. We then have a quantum. Trinity F 90 plus so this is a fixed wing with vertical takeoff and landing capabilities.

03:11:59.660 --> 03:12:10.050
Wagner, Melissa A.
This allows us to do large scale mapping because it has a battery life of up to 90 minutes. We can map up to 700 hectares on one battery.

03:12:11.060 --> 03:12:21.610
Wagner, Melissa A.
It is equipped with a red edge. MX camera so this allows us to collect the multi spectral imagery as well as collect visible imagery at the same time.

03:12:23.460 --> 03:12:53.290
Wagner, Melissa A.
So this is just a no please shock of a of oblique image of the March 25th Sawyerville Centerville, Alabama tornado and this is just showing us some of the tree fall damage the white box corresponds to the images here on this slide roughly speaking, so the top image. We can see a true color composite and we can actually see that the IT detects this tree fall pattern.

03:12:53.350 --> 03:12:54.910
Wagner, Melissa A.
That we saw in the previous slide.

03:12:54.960 --> 03:13:25.070
Wagner, Melissa A.
Like the image and the lower left hand corner. This is a digital surface model and so this is essentially showing elevation. So we can see that the areas of trees that weren't affected have higher elevation values shown in the yellow whereas the areas with the tree fall pattern have lower values shown in the light blue to deep blue to some extent, some of this is also a function of the underlining characteristics.

03:13:25.790 --> 03:13:55.840
Wagner, Melissa A.
On the right column, we have the multi spectral imagery. So here in both slides the areas of tree damage or capture in the darker. Gray values, whereas the healthier vegetation is shown in the lighter lighter, Gray, so the top one is showing uh uh normalized difference vegetation index using the near infrared and red bands. The image on the bottom right is showing up is similar to the NDBI but instead.

03:13:55.900 --> 03:14:06.930
Wagner, Melissa A.
Using the near infrared band. It shows the red edge ban and this captures a slight more variability in the damage based off its sensitivity to chlorophyll content.

03:14:08.100 --> 03:14:33.100
Wagner, Melissa A.
And this is just another result is showing from the previous slide, so this is just taking a showing some of the values that across the across the damage path so this is uh transects extracting values at these points from left to right and as we can see with the healthier vegetation shown and in the lighter. The lighter Gray values, we can see that yes, indeed it does have.

03:14:33.470 --> 03:15:00.430
Wagner, Melissa A.
A higher index values of about 0.4 to 8.6 and within within the area of damage. We can see that yes, it has a lower values of about 0.2. Now, some of this is when you're looking at the transects. He's some of this is also a function of land cover type 2, so we do have it in the case of transects to that. It is going across grass so it does have lower values.

03:15:01.650 --> 03:15:31.000
Wagner, Melissa A.
The important part of this work too, is really the idea of institutional collaboration, so really working with the National Weather Service forecast offices in in the spring of 2021. We coordinated with a few of these offices. Amarillo Shreveport Lake Charles to name a few and with this effort. We were able to help identify 11 tornadoes or refine some of these damage paths so as Travis.

03:15:31.050 --> 03:16:01.620
Wagner, Melissa A.
Hot putter spoke about in the previous session is that this really allows us to do a desktop analysis. So,

we can do a more detailed assessment and help fill in the gaps of of the ground damage surveys. This also this work can also help better address the arbitrary assignment of damage ratings in rural locations. And we really want to be able to work with the emergency managers not just to be able to share the information, but also to be able to coordinate our efforts.

03:16:01.680 --> 03:16:13.020
Wagner, Melissa A.
And be able to gain access into some of these sensitive areas and if we can share some of this disaster information with those who are effective they can be able to use this information for insurance purposes.

03:16:13.870 --> 03:16:44.930
Wagner, Melissa A.
Now a big component of this work too, is really developing data sharing and data visualization when we are working with this data. We're really working with large volumes of data so we've come so a big effort that we've done is we've been working on developing a near real time image processing. So we've been working with the folks at Amazon. AWS and we've set up the Workflow That's needed to be able to process this imagery and then move it over to.

03:16:45.330 --> 03:17:15.080
Wagner, Melissa A.
As free products for visualization. We also have another effort where we're working in Google Earth engine code editors. So were similar to the Esri. We can also bring in some of that satellite imagery and ingest are uas imagery here in this slide. We can see this is a snippet of the sawyerville shot of the Sawyerville Tornado. This damage house corresponds in here to the Orthomosaic.

03:17:15.130 --> 03:17:22.780
Wagner, Melissa A.
In the uas imagery and we can see the same red marker in the Sentinel imagery that it's a I believe 10 meter resolution data.

03:17:24.120 --> 03:17:55.690
Wagner, Melissa A.
So another effort that we have going on similar to what Bruce Baker had talked about is really also doing atmospheric profiling. So this is using a copter sons to be able to do atmospheric sampling of the boundary layer, so doing vertical profiles to get temperature relative humidity pressure wind speed wind direction. A few other variables, not listed here. The idea is that you know it can help us gain information into pre storm environments as well as using this.

03:17:55.760 --> 03:18:06.550
Wagner, Melissa A.
Observational data to be ingested into force forecast models and really help with such a situational awareness and and prevent pre storm event environments.

03:18:07.840 --> 03:18:27.440
Wagner, Melissa A.
So, in terms of future work. We do have a big field campaign that will be starting in spring perils where

we will be doing using copter. Sans radar trucks, a whole host of different observation. Ull platforms as well as having post event.

03:18:27.490 --> 03:18:57.980
Wagner, Melissa A.
Uh uas work doing the damage surveys. The idea is with the damage. Surveys is not just really classifying damage. But it's also really trying to gain an insight of the role of land cover in these high wind impacts and to be able to use some of this information to help assess the land. Atmospheric interactions and again as I kind of discussed a little bit is the idea with atmospheric profiling really looking at those uh.

03:18:58.060 --> 03:19:28.250
Wagner, Melissa A.
Boundary layer evolutions and dynamics, which can help for modeling forecasting and really be apart of observation. Ull network so I'd like to leave. My contact information up. These are some of the folks that helped participate in the damage survey assessment that we did in spring 20. Cigales is really responsible for a lot of the COPD or selling work as well as Elizabeth Smith.

03:19:28.310 --> 03:19:29.310
Wagner, Melissa A.
Then Tyler Bell.

03:19:32.170 --> 03:19:34.760
Wagner, Melissa A.
No, I open the floor to any questions, you may have.

03:19:44.180 --> 03:19:45.720
Mendonca, Nancy (HQ-EO000)
Any questions for Melissa.

03:19:52.190 --> 03:20:02.190
Mendonca, Nancy (HQ-EO000)
Not seeing I'm not seeing any thank you. I hope I hope you're able to stay on a little bit in case somebody does have one in chat, but no thank you very much and great in great and interesting information.

03:20:04.560 --> 03:20:06.710
Mendonca, Nancy (HQ-EO000)
With that I'm gonna go ahead.

03:20:07.030 --> 03:20:08.250
Wagner, Melissa A.
I was just going to say thank you.

03:20:09.740 --> 03:20:13.870
Mendonca, Nancy (HQ-EO000)
Thank you come with that I'm going to turn it over to Tom Rubino.

03:20:15.910 --> 03:20:17.770
Rubino, Thomas (FAA)
K. Thank you Nancy.

03:20:19.610 --> 03:20:21.210
Rubino, Thomas (FAA)
Can you see my slides?

03:20:22.960 --> 03:20:26.710
Mendonca, Nancy (HQ-EO000)
Yes, they're not quite in presentation mode, yet up Nether in presentation mode.

03:20:27.480 --> 03:20:28.550
Rubino, Thomas (FAA)
OK, good.

03:20:29.510 --> 03:20:53.630
Rubino, Thomas (FAA)
So Hello everybody, I'm Tom Urbino. I'm the tbo integrated test environment lead. I work at the William J huge technical center at the Atlantic City airport in New Jersey and for those of you that don't know about the technical center. It's where we do our or primary place for research and development test and evaluation so we have a lot of Labs.

03:20:54.400 --> 03:20:59.980
Rubino, Thomas (FAA)
Uh I'm going to discuss a a weather simulation tool suite today.

03:21:00.450 --> 03:21:10.720
Rubino, Thomas (FAA)
Uhm that we call weather Information Services for Enterprise research or affectionately wiser. We discovered we needed this tool.

03:21:11.490 --> 03:21:17.030
Rubino, Thomas (FAA)
In preparation for testing trajectory based operations, I've.

03:21:17.950 --> 03:21:26.810
Rubino, Thomas (FAA)
I'm going to share with you, a little bit about the tool. I think you could see it. You'll be able to see its applicability towards AM and then I do have a slide.

03:21:27.780 --> 03:21:32.210
Rubino, Thomas (FAA)
On some work, we're getting into for Advanced Air Mobility.

03:21:33.520 --> 03:21:42.000
Rubino, Thomas (FAA)
Just quick background a few years ago. We were asked to make sure we were ready to the test environments were ready for trajectory based operations.

03:21:42.800 --> 03:21:51.820
Rubino, Thomas (FAA)
Uh and for those of you that aren't familiar with tbo. It brings a set of opera groups of operational improvements, too.

03:21:51.870 --> 03:22:00.490
Rubino, Thomas (FAA)
Uhm to areas of the country that can use them. The most so their implementation at tbo implementation plan was to.

03:22:01.210 --> 03:22:14.610
Rubino, Thomas (FAA)
Uh deploy tbo operational improvements to different regions and and and the regions were quite large, they divided up the country basically into 8.

03:22:15.270 --> 03:22:22.680
Rubino, Thomas (FAA)
Ah operating areas as they call him and the end result from a test point of view was that we had to.

03:22:23.190 --> 03:22:49.990
Rubino, Thomas (FAA)
Uh be able to create a test environment that was larger than where typically used to testing at the technical center and so there were gaps that we discovered. Ironically, the weather simulation capability was the number one cap. We thought if we had very limited capabilities to simulate weather scenarios in this enterprise environment.

03:22:50.650 --> 03:22:51.250
Rubino, Thomas (FAA)
Uhm.

03:22:52.280 --> 03:22:53.800
Rubino, Thomas (FAA)
Uh and and and.

03:22:54.720 --> 03:23:02.780
Rubino, Thomas (FAA)
The gap is significant because most of the benefits that tbo brings occurred during weather Scituate situation so.

03:23:04.270 --> 03:23:17.390
Rubino, Thomas (FAA)
The solution as we got into our implementation plan that solution. We discovered was the tool called wiser being designed by our aviation weather branch at the technical center.

03:23:18.010 --> 03:23:25.590
Rubino, Thomas (FAA)
Uh and the next few slides. I'm going to describe it. In a little more detail so you get the gist of.

03:23:26.600 --> 03:23:28.180
Rubino, Thomas (FAA)
Why it's important to us?

03:23:30.250 --> 03:23:36.960
Rubino, Thomas (FAA)
So wiser as it says there is a micro service framework it.

03:23:37.730 --> 03:23:48.800
Rubino, Thomas (FAA)
It has several functions. I'm going to discuss 2 that are important to us in the in the simulation world. That's the weather information management capability in a wet weather enterprise.

03:23:49.520 --> 03:23:50.530
Rubino, Thomas (FAA)
A playback.

03:23:52.270 --> 03:23:59.900
Rubino, Thomas (FAA)
For women, it's basically our our functionality that collects the data archives it.

03:24:00.510 --> 03:24:20.310
Rubino, Thomas (FAA)
And allows us to create weather cases that we can use for specific air traffic scenarios, and we can build those weather cases and and and store them in a library for the test community to use the weather enterprise playback capability.

03:24:21.770 --> 03:24:22.880
Rubino, Thomas (FAA)
Uh is

03:24:23.720 --> 03:24:31.120
Rubino, Thomas (FAA)
the the tool that allows us to integrate and and inject those weather cases into our simulation environments.

03:24:32.020 --> 03:24:32.550
Rubino, Thomas (FAA)
So.

03:24:34.420 --> 03:24:44.060
Rubino, Thomas (FAA)
Just so you get the full effect. We we envisioned you know, we have in in the The weather information management.

03:24:44.530 --> 03:24:45.160
Rubino, Thomas (FAA)
Ah.

03:24:46.280 --> 03:24:47.330
Rubino, Thomas (FAA)
Laboratory.

03:24:48.190 --> 03:24:52.080
Rubino, Thomas (FAA)
Uh it's ingesting routinely weather.

03:24:53.910 --> 03:24:57.850
Rubino, Thomas (FAA)
It has tools for us to develop weather cases.

03:24:58.280 --> 03:25:00.120
Rubino, Thomas (FAA)
Uh in particular.

03:25:01.750 --> 03:25:04.280
Rubino, Thomas (FAA)
You know the test community has all different.

03:25:04.710 --> 03:25:15.480
Rubino, Thomas (FAA)
Uh requirement somewhere and and and what type of scenarios are gonna have to develop we needed a an intelligent search capability that allow the?

03:25:16.710 --> 03:25:22.390
Rubino, Thomas (FAA)
That the folks that test community that aren't that savvy and understand understand weather.

03:25:22.790 --> 03:25:26.230
Rubino, Thomas (FAA)
Uh to be able to search through and develop these test cases.

03:25:26.740 --> 03:25:35.210
Rubino, Thomas (FAA)
Uh we rely heavily on our target generator facility group they are our experts and scenario.

03:25:36.850 --> 03:25:46.630
Rubino, Thomas (FAA)
Development for air traffic control scenarios, so they are the main users of this tool in creating these weather cases.

03:25:48.130 --> 03:25:51.400
Rubino, Thomas (FAA)
Here's just a quick picture on the left.

03:25:52.080 --> 03:26:17.400
Rubino, Thomas (FAA)
Shows some of the sensors that Wim pulls in and and Archives and some of the tools that the TGF folks

will use to to create the weather cases. They will eventually integrate them with the air traffic scenarios, so they play out in our test environment, the way we need them, too.

03:26:20.940 --> 03:26:22.210
Rubino, Thomas (FAA)
Weather playback.

03:26:23.310 --> 03:26:24.410
Rubino, Thomas (FAA)
Capability.

03:26:25.500 --> 03:26:32.110
Rubino, Thomas (FAA)
Again is the ability of the tool to be integrated into different labs, we are.

03:26:32.900 --> 03:26:39.380
Rubino, Thomas (FAA)
Like I I mentioned before we're developing this now, we have it integrated into a few labs, not all.

03:26:41.160 --> 03:26:43.580
Rubino, Thomas (FAA)
But the use of it is well.

03:26:43.630 --> 03:26:54.170
Rubino, Thomas (FAA)
Uhm is very fondly accepted in there, they're using it and wanted to want us to rush up the rust development as as soon as possible.

03:26:55.400 --> 03:27:05.560
Rubino, Thomas (FAA)
One of the things that the playback function has to do, if you could imagine a lot of the data that we were all the data that we collect is is from live.

03:27:06.170 --> 03:27:36.660
Rubino, Thomas (FAA)
Uh live data around the country at different times when we want to play it and uh scenario or simulation scenario, it needs to be re clocked that's one of the functions that wet takes care of. It also has to be formatted for each of the systems that are part of the simulation. So are in route automation system here am our terminal automation systems stars.

03:27:37.160 --> 03:27:45.460
Rubino, Thomas (FAA)
Our decision support systems TV FM all a lot of them, take the same weather, but it's all formatted differently and.

03:27:45.730 --> 03:27:54.400
Rubino, Thomas (FAA)
Uh that you know in the past when we tried to do this on single systems was very time consuming and this tool.

03:27:55.240 --> 03:28:03.430
Rubino, Thomas (FAA)
Is and will continue to as they develop it be just invaluable for for including whether into our scenarios?

03:28:08.550 --> 03:28:12.910
Rubino, Thomas (FAA)
Again here is just the picture showing a TGF.

03:28:14.230 --> 03:28:20.510
Rubino, Thomas (FAA)
Uh injecting the weather combined integrated weather air traffic control systems, too.

03:28:21.130 --> 03:28:22.800
Rubino, Thomas (FAA)
There's various labs that we have.

03:28:25.970 --> 03:28:36.050
Rubino, Thomas (FAA)
Now I'm going to switch to uh again. This is our tbo lab environment on the left and we're we have just about a year ago.

03:28:36.100 --> 03:28:36.870
Rubino, Thomas (FAA)
Well, uh.

03:28:39.890 --> 03:28:43.990
Rubino, Thomas (FAA)
Became involved in interagency agreement with NASA Langley.

03:28:44.470 --> 03:29:00.670
Rubino, Thomas (FAA)
Uh and the goal was to integrate their am advanced air mobility assets with R tbo integrated test environment. We're progressing well in that effort.

03:29:02.440 --> 03:29:03.740
Rubino, Thomas (FAA)
And just just to.

03:29:04.450 --> 03:29:07.080
Rubino, Thomas (FAA)
Go around this picture and this is.

03:29:07.690 --> 03:29:08.210
Rubino, Thomas (FAA)
Uh.

03:29:08.970 --> 03:29:11.680
Rubino, Thomas (FAA)
Second, the last side just so you know the.

03:29:13.070 --> 03:29:14.190
Rubino, Thomas (FAA)
The tbo.

03:29:16.040 --> 03:29:21.440
Rubino, Thomas (FAA)
Integrated test environment here is adapted for our Atlantic City Airport.

03:29:23.010 --> 03:29:24.410
Rubino, Thomas (FAA)
When we've

03:29:25.540 --> 03:29:42.480
Rubino, Thomas (FAA)
run tests with NASA Langley we can see their traffic as well as the traffic that we generated on our stars automation. That's our trade count on our terminal automation system. We can also see it in or out, the window lab, which is a.

03:29:44.070 --> 03:30:09.730
Rubino, Thomas (FAA)
Tower simulation lab, so you can see the uh the traffic that we're generating and it's quite interesting and exciting actually 'cause you can see the Umm vehicles that are being flown. They are simulators that NASA. Langley has they call him. The Umm Flyer, you could see them flying off of the parking garage.

03:30:09.790 --> 03:30:12.900
Rubino, Thomas (FAA)
Edge we converted it to avert a port.

03:30:14.430 --> 03:30:23.920
Rubino, Thomas (FAA)
That is at the technique at the Lantic City Airport. You could see it from the tower. View and as it departs and goes off to Atlantic City.

03:30:24.410 --> 03:30:42.300
Rubino, Thomas (FAA)
Uhm similarly from the Umm Flyer, they can see the the the air traffic in there out the window. Display in that in that simulated vehicle as well. So they could see the commercial traffic that we are generating in our lab that is.

03:30:42.900 --> 03:30:45.700
Rubino, Thomas (FAA)
Departing and arriving at Atlantic City Airport.

03:30:47.160 --> 03:30:47.720
Rubino, Thomas (FAA)
So.

03:30:50.610 --> 03:31:04.900
Rubino, Thomas (FAA)

You know the the down at the bottom kind of hidden away a little bit is one of the the lab gaps that we think is A is a big one. We need micro weather services. I guess as part of the SDSP.

03:31:05.340 --> 03:31:18.820
Rubino, Thomas (FAA)
Uh we have yet to find a tool to help us simulate that capability and and when and when we do, find it. We will also need to have it integrated with our.

03:31:19.400 --> 03:31:23.150
Rubino, Thomas (FAA)
Uh wiser capability as well 'cause you know when you.

03:31:23.960 --> 03:31:27.480
Rubino, Thomas (FAA)
Run a simulation in this environment, you're gonna need to have it all.

03:31:29.410 --> 03:31:37.480
Rubino, Thomas (FAA)
Coordinated and have it displaying the same weather throughout from all points of view. I'll be at the micro weather will be.

03:31:38.570 --> 03:31:47.360
Rubino, Thomas (FAA)
Be different for and and used differently in the Umm side of the world, but this environment.

03:31:47.900 --> 03:31:48.480
Rubino, Thomas (FAA)
Ah.

03:31:49.310 --> 03:31:51.150
Rubino, Thomas (FAA)
Is a good place to to work on?

03:31:52.460 --> 03:31:54.750
Rubino, Thomas (FAA)
Understanding what's needed, and

03:31:55.590 --> 03:32:13.740
Rubino, Thomas (FAA)
and right now, we just know we need it so that's it. I had the last slide is just you know a plug for the aviation weather branch that those are the developers of the wiser tool. Here are just some of the other things that they're involved with and some of the key Contacts from that branch.

03:32:16.400 --> 03:32:16.960
Rubino, Thomas (FAA)
Nancy.

03:32:18.190 --> 03:32:21.530
Mendonca, Nancy (HQ-EO000)
Tom thank you very much questions for Tom.

03:32:26.070 --> 03:32:38.110
Mendonca, Nancy (HQ-EO000)
Not seeing any I will put up a We are going to take this slides and put him alongside their recording that F Paul be putting up on their site for us, so thank you for having your contact information in there again.

03:32:38.860 --> 03:32:42.470
Mendonca, Nancy (HQ-EO000)
Uhm is David Wagner online I don't see him.

03:32:43.770 --> 03:32:46.490
Mendonca, Nancy (HQ-EO000)
In my list, but I could up there right.

03:32:43.810 --> 03:32:44.450
Wagner, David (LARC-D309)
Hello. Yes.

03:32:47.320 --> 03:32:48.620
Mendonca, Nancy (HQ-EO000)
David over to you.

03:32:47.360 --> 03:32:48.290
Wagner, David (LARC-D309)
I do see.

03:32:48.910 --> 03:32:49.930
Wagner, David (LARC-D309)
Do you see the sign?

03:32:51.030 --> 03:32:52.010
Mendonca, Nancy (HQ-EO000)
Yes, thank you.

03:32:52.100 --> 03:32:54.710
Wagner, David (LARC-D309)
Excellent Alright Hi I'm David Wagner.

03:32:53.950 --> 03:32:59.030
Mendonca, Nancy (HQ-EO000)
And and David I'm running just a touch behind so if you could help me out or be awesome.

03:32:55.400 --> 03:32:55.740
Wagner, David (LARC-D309)
Yes.

03:32:59.610 --> 03:33:12.310
Wagner, David (LARC-D309)
OK, fine, I will see what I can do, I have a whole lot of one slide here to talk through I'm here on behalf of convergent aeronautics solutions? Who I've been working with and the project and the lower right, which we'll get to in a second.

03:33:12.800 --> 03:33:19.570
Wagner, David (LARC-D309)
Uh here at NASA. We took a look at Urban Air Mobility while their talent operations 2.

03:33:19.720 --> 03:33:49.230
Wagner, David (LARC-D309)
Ah ah probably problem areas in that space or that of micro weather, which is what I'm focusing on here and also whether talent operations in public spaces. The goal of Cass is to find a more transformative solutions that are both desirable stuff to people actually want fireball things that are affordable, and people are willing to pay for infeasible things that are actually possible were customer focused problem focused open aperture. We take a look at all the stakeholders holders do.

03:33:49.760 --> 03:33:59.460
Wagner, David (LARC-D309)
One or 2 months of basically structured brainstorming with a lot of good brains in the room to look for what we like to call problems in the wicked quadrant?

03:34:00.440 --> 03:34:01.520
Wagner, David (LARC-D309)
Problems that.

03:34:02.110 --> 03:34:23.750
Wagner, David (LARC-D309)
Are both have novel potential solutions or perhaps no no currently known solutions and problems that really need solutions that are not been characterized so they're uncharacterized new ideas when we took a look at weather tolerant operations and micro whether we found 2 of those wicked kind of problems.

03:34:24.720 --> 03:34:43.220
Wagner, David (LARC-D309)
One of them has been moved into audit related ongoing project and this one is looking at filling that gap that you all have been talking about for awhile in getting higher resolution of weather data. I believe part that these projects are both in the planning phase. So I don't have a lot of details on partners and timelines quite yet.

03:34:44.170 --> 03:34:47.550
Wagner, David (LARC-D309)
But first ubiquitous weather, sensing is looking at.

03:34:48.180 --> 03:34:57.400
Wagner, David (LARC-D309)

I I see the original vision was looking at a sensor package that it is small, lightweight low power and is still going to get the kind of.

03:34:57.460 --> 03:34:57.820
Wagner, David (LARC-D309)
Ah.

03:34:58.340 --> 03:35:27.570
Wagner, David (LARC-D309)
Uh without kind of small scale weather data that is needed to support Micro Weather Nowcasting and forecasting and Grady cocked great catch is the contact for the that project mine is looking a little bit further in the future. We're trying to focusing especially in casts on the Urban Air mobility level transition to 5 and 6 when things get really busy and realize that by the time we get there. The wind flows in a lot of cities just are not.

03:35:28.060 --> 03:35:59.150
Wagner, David (LARC-D309)
As is so these are designed the buildings are shaped going to be amenable to that level of operation in all cases. And we want to see well? What is it that's causing those the problematic wind flows well it's it's city planning where buildings are and shapes of those buildings and it turns out that you know, we can do something about that. We have a history United States through designing cities and architecture around our transportation system think about where it parking garages integrated into buildings city planning laid out and in grids for the roads.

03:35:59.420 --> 03:36:11.710
Wagner, David (LARC-D309)
We're likely to be doing that as we get started getting more and more Urban Air mobility operations going and so we're doing some really going to be doing some really urgent early research, to see if we can get.

03:36:12.240 --> 03:36:41.410
Wagner, David (LARC-D309)
Are the micro local very localized micro weather moderated likely to starting very near the inverted parts. But outside the fence line to see if we can improve conditions for approach and landing and that's pretty much it in a nutshell. If you all have any other really interesting research areas that are kind of further term lot further out there encourage you to talk with keep Wickman or Jessica and Reinart at the cache project.

03:36:42.680 --> 03:36:55.800
Wagner, David (LARC-D309)
And if you are interested since we are looking for partners right now in this planning phase and either of the micro mother moderation or because some other sensing to contact me David Wagner or Grady KOK.

03:37:01.390 --> 03:37:03.920
Wagner, David (LARC-D309)
And thank you for questions Oh no.

03:37:04.040 --> 03:37:06.530
Mendonca, Nancy (HQ-EO000)
Thank you. Yeah, question questions for David.

03:37:07.310 --> 03:37:11.230
Mendonca, Nancy (HQ-EO000)
Now pause a little longer than I missed one from top for for Tom and the last one.

03:37:20.070 --> 03:37:24.800
Mendonca, Nancy (HQ-EO000)
Uhm looks it looks like you've got one. One ask for more info or for A.

03:37:25.440 --> 03:37:26.720
Mendonca, Nancy (HQ-EO000)
Further collaboration.

03:37:30.610 --> 03:37:32.070
Mendonca, Nancy (HQ-EO000)
David thank you very much.

03:37:32.370 --> 03:37:41.940
Wagner, David (LARC-D309)
Thank you, Yeah Alright, I have to go through actually mid planning our check in with management right now, so I'll review the chat later.

03:37:42.920 --> 03:37:43.660
Wagner, David (LARC-D309)
Thank you very much.

03:37:43.030 --> 03:37:45.760
Mendonca, Nancy (HQ-EO000)
OK, no that sounds great all right, thank you.

03:37:46.680 --> 03:37:49.350
Mendonca, Nancy (HQ-EO000)
And with that I will turn it over to Joshua.

03:37:50.400 --> 03:37:53.370
Mendonca, Nancy (HQ-EO000)
From end up from the Naval Research Lab.

03:37:55.170 --> 03:37:55.550
David A Strand
Enter.

03:37:56.100 --> 03:37:56.790
Josh Cossuth (ONR)
Can you hear me now?

03:37:59.370 --> 03:37:59.920
Mendonca, Nancy (HQ-EO000)
Yes.

03:38:01.020 --> 03:38:26.700
Josh Cossuth (ONR)
Great if you could bring up my slides, I could definitely start to introduce myself. So yeah, my name is Josh cost if I'm a program officer at the opposite naval research. So I was formally at the Naval Research Laboratory. Doing research myself and now I managed the programs for that, so this slide show. I'll show you is not specifically geared towards Uas. But some of the research efforts that owners funding in general, for aviation.

03:38:27.340 --> 03:38:27.790
Josh Cossuth (ONR)
Uhm.

03:38:29.330 --> 03:38:29.780
Josh Cossuth (ONR)
Great.

03:38:31.880 --> 03:38:34.610
Josh Cossuth (ONR)
Looks like it's coming up a little cut off.

03:38:35.580 --> 03:38:36.150
Josh Cossuth (ONR)
Uhm.

03:38:38.580 --> 03:38:40.300
Josh Cossuth (ONR)
Suffice it to say, I guess we'll just move on.

03:38:38.940 --> 03:38:39.730
Mendonca, Nancy (HQ-EO000)
Jennifer.

03:38:40.660 --> 03:38:40.960
Mendonca, Nancy (HQ-EO000)
Yeah.

03:38:42.150 --> 03:38:42.730
Josh Cossuth (ONR)
Yep. Sorry.

03:38:42.270 --> 03:38:46.540
Mendonca, Nancy (HQ-EO000)
Yeah, Jennifer do you wanna try and maybe it's my I think it's my I had problems with this.

03:38:47.050 --> 03:38:50.140
Mendonca, Nancy (HQ-EO000)
Uhm presentation Jennifer do you have it up to try?

03:39:01.110 --> 03:39:02.620
Josh Cossuth (ONR)
That's what I get for sending a PDF.

03:39:05.950 --> 03:39:10.430
Josh Cossuth (ONR)
Well so anyway, I could move on. While we figure this out since it's not too big of a deal.

03:39:11.540 --> 03:39:36.170
Josh Cossuth (ONR)
So what I wanted to talk about was just a little bit of how we kind of do research and divide up. Those research areas that the office enable research and then I'm going to move into some examples of some of the programs that help with aviation for the Navy starting with some of the advanced prototypes on that are pretty close or have already transitioned to operations and you'll see, those projects. There, some applied research, which is a little bit more.

03:39:36.220 --> 03:39:49.410
Josh Cossuth (ONR)
Or uh we need to put a little bit more effort to see if we can make something. Interesting work out of it and then uh upcoming basic research campaign called Magpie, which is really looking at some fundamental processes of the boundary layer and trying to understand.

03:39:50.010 --> 03:40:01.910
Josh Cossuth (ONR)
Some of the the characteristics of the thermodynamics and dynamics on small scales and see if we can represent some of those processes given the coarser numerical models or satellite observations, we have.

03:40:02.610 --> 03:40:04.220
Josh Cossuth (ONR)
So if we move on to the next slide.

03:40:05.590 --> 03:40:07.390
Josh Cossuth (ONR)
That's just gonna show an overview of.

03:40:09.360 --> 03:40:25.500
Josh Cossuth (ONR)
Great so slide 3 would be where I'm at now and that's gonna show kind of a overview of how we get from basic research funding through and applied project, then prototyping which will get us to transitioning into operations perfect.

03:40:26.790 --> 03:40:38.230
Josh Cossuth (ONR)

So oh and are we cover all the scope that's listed there from 61 through 64. So we funding. Basic research that tries to understand some processes in Meteorology or new theories some conceptual models.

03:40:39.090 --> 03:40:46.360
Josh Cossuth (ONR)
In our applied research program, 62 were adapting some of those new technology developing algorithms using case studies with real data.

03:40:46.970 --> 03:40:53.030
Josh Cossuth (ONR)
And in 64 that's where we start integrating those with existing systems and transition it to the operational partner.

03:40:53.760 --> 03:41:10.140
Josh Cossuth (ONR)
On the right there, you see in those yellow boxes. Those are just examples of administrative bodies, so that the different naval stakeholders take place and take part in this process as we go and on the left just shows some of the other sponsors and funding that happens, so let's move to the next slide and start getting to some examples of some research.

03:41:11.450 --> 03:41:12.760
Josh Cossuth (ONR)
So the first one is.

03:41:13.460 --> 03:41:30.980
Josh Cossuth (ONR)
Looking at something that we transitioned I think it was in 2019 that has to do with trying to bias correct statistically. Some of the errors. We have in the data. When we're trying to get some sensible weather observations so in this example, we're looking at.

03:41:31.530 --> 03:41:32.000
Josh Cossuth (ONR)
Uhm.

03:41:33.090 --> 03:41:35.300
Josh Cossuth (ONR)
If we can move to the next slide slide 4.

03:41:36.030 --> 03:41:36.510
Josh Cossuth (ONR)
Uhm.

03:41:37.750 --> 03:41:38.470
Josh Cossuth (ONR)
There we go thank you.

03:41:39.890 --> 03:41:56.170
Josh Cossuth (ONR)

So we're seeing how if we take observations at a near coastal areas. Obviously, there's a lot of different land characters. There's a lot of characteristics that are different in the meteorology between the ocean and the land. And So what we've done. If we updated some of our statistics in our post processing to take that into account by.

03:41:57.390 --> 03:42:05.580
Josh Cossuth (ONR)
By going and training, the observational datasets using only the relevant near data points that represent the model data point we're trying to

03:42:06.150 --> 03:42:26.690
Josh Cossuth (ONR)
uh we're trying to resolve so in this case, we could see that we separated our biases between land and sea contrast, so that we could focus on those problems without contamination in the other and so that transitioned in 2019 or trying to use these algorithms to move ahead with more smarter ways to look at some of our meteorological data, including topography, and other land see differences.

03:42:27.490 --> 03:42:33.630
Josh Cossuth (ONR)
On the next slide, UM is where we took this project next, which is now applying that this certain aviation.

03:42:33.780 --> 03:43:03.870
Josh Cossuth (ONR)
Uhm difficulties and so that we know that there is a lot of issues, especially with things that we care about that aren't in model predictions and forecast models icing turbulence clouds or especially important factors and they're not really. Those aren't physical state variables and so it's taking some of those concepts when the last project. We're doing work on, taking the probability distributions and correcting them for known biases without observation data.

03:43:03.930 --> 03:43:16.800
Josh Cossuth (ONR)
Uhm re calibrating the data so that we have a calibrated set of diagnostics to support aviation forecasts. Given our Navy global system so on the top right is where you could see just the line graph of how the?

03:43:17.440 --> 03:43:28.930
Josh Cossuth (ONR)
Those black dots are under dispersed and characterizing some of those processes and then the red line shows that were close to the ideal line and the bottom right just shows a graphic of icing.

03:43:30.140 --> 03:43:46.250
Josh Cossuth (ONR)
For a specific forecast time in the global model and so we're moving forward with that right now. We have some simple things like flight level temperatures and winds and we're we're still doing testing for some of them or second order higher order effects like the turbulence and icing.

03:43:47.580 --> 03:44:12.730
Josh Cossuth (ONR)

And the next slide is a another project that's fairly close or has already mostly transitioned to support the Triton unmanned aerial vehicle. This is a support project to take the entire process of taking of getting that date. Meteorological data coming up with the preparation for the flights and automating most of that, so that the arrow graphers make and spend their time.

03:44:13.590 --> 03:44:39.340
Josh Cossuth (ONR)
I'm focusing on the analysis of the data and creating that forecast rather than trying to look up all the data and compile it together and fill out all the forms so the bottom right shows kind of a workflow that's been automated that they used to have to ham jam before and that is just been transitioned last year and is right now. We're continuing updates to be able to make that process smoother and make those connections, so that the data that we need goes into.

03:44:40.790 --> 03:44:45.640
Josh Cossuth (ONR)
Uh enter the forecasters hands to be able to focus on that forecasting problem itself.

03:44:46.980 --> 03:44:52.990
Josh Cossuth (ONR)
OK, so on the next slide. We're going to start to move towards kind of where we're going with a more basic research area, which is.

03:44:54.190 --> 03:45:05.860
Josh Cossuth (ONR)
How do we take all of this data that we've seen and more smartly put it together for it uh or best sort of analysis or forecast talks earlier in this session as shown that.

03:45:05.910 --> 03:45:36.480
Josh Cossuth (ONR)
Uhm you know, we have a lot of interesting data, but there's it's it's hard to put it be able to put it together still tell us consistent message or at least be able to deliver the OPS that we're taking and give it to a specific forecaster and so the geolocated information processing system or Geo Whips is an open source. Python software developed at the Naval Research lab to to do that capability in particular. It's focused on satellite data. For now, but ultimately, we're starting to bring in numerical model output and observations.

03:45:36.920 --> 03:45:57.290
Josh Cossuth (ONR)
And the goal is to take all these different formats of data and the calibrations and standards and put them together into a common metadata analysis, so that we can start fusing them together and come up with added value products on the bottom right. It's kind of hard to see but there's specific satellite data. That's taking into account multiple channels to be able to discriminate clouds versus snow.

03:45:58.210 --> 03:46:06.400
Josh Cossuth (ONR)
Or uh contrails versus other serious clouds or fires from other low level heat signatures.

03:46:07.520 --> 03:46:07.940
Josh Cossuth (ONR)
So.

03:46:08.780 --> 03:46:10.320
Josh Cossuth (ONR)
Using J Lips on the next slide.

03:46:10.940 --> 03:46:17.240
Josh Cossuth (ONR)
At 1:00 of the more interesting directions. We're just starting in the next year is called are overcast project on a slide 8.

03:46:18.020 --> 03:46:18.490
Josh Cossuth (ONR)
And.

03:46:19.200 --> 03:46:29.660
Josh Cossuth (ONR)
Well, we're trying to do. There is using juleps get at a 4 dimensional evaluation of clouds aerosols water visibility in the atmosphere.

03:46:30.920 --> 03:46:31.790
Josh Cossuth (ONR)
So ultimately.

03:46:33.300 --> 03:47:02.370
Josh Cossuth (ONR)
You know it's it's easy to get cloud tops from satellite and so there's some other derived products, but it's really hard to get basis to be able to see where your your ceilings are or you know if there's gaps in the clouds. What's your slant path visibility there might be better ways or paths to go to navigate that you can't see from just inator look on satellites or even the model data. So we're just starting. This project now to leverage that view of system to combine Noah NASA.

03:47:02.420 --> 03:47:04.690
Josh Cossuth (ONR)
Algorithms UM other open source.

03:47:05.520 --> 03:47:28.950
Josh Cossuth (ONR)
Datasets and uh and software that takes into account geostationary and polar data develop a 3 dimensional structures from that, the bottom left images from Syria at the Colorado state where they're or they're doing those tests to be able to come up with a 3 D cloud analysis. We're using machine learning techniques in the middle and we're going to improve parameterisations and models that we can see on the right.

03:47:30.190 --> 03:47:37.380
Josh Cossuth (ONR)

So finally the second, the last slide just shows some of based on example of basic research that we're doing that, we're hoping that will help with our.

03:47:38.040 --> 03:47:43.030
Josh Cossuth (ONR)
UAV another every aviation problems and this is Magpie.

03:47:44.510 --> 03:48:03.000
Josh Cossuth (ONR)
We're looking at moisture and aerosol gradients and the physics of inversion evolution in the boundary layer specifically since with the Navy. We focused on the the marine boundary layer, but the gist of the problem. Here is that if you look on the right figures. There's a large variability and moisture temperature dynamics.

03:48:04.080 --> 03:48:05.730
Josh Cossuth (ONR)
And that has a substantial impact on.

03:48:07.010 --> 03:48:37.450
Josh Cossuth (ONR)
Different operations that we like to do not the least of which would be aircraft operations. And so given all that variability. We like to be able to we're going to have a few field campaigns to measure what those processes look like in a in a bulk sense, see if we could represent some of those stochastic processes and large scale models and understand the subgrid scale variability of weather processes that happen on local scales from 10 to 100 meters and how that's represented in course models and what we could do about that.

03:48:38.350 --> 03:48:48.370
Josh Cossuth (ONR)
So the last slide. I could talk through it or I'll just leave it up. But that just discuss is some of the session topic questions that were brought up so I tried to summarize with that.

03:48:49.710 --> 03:48:51.160
Josh Cossuth (ONR)
So I can take questions or.

03:48:51.980 --> 03:48:52.860
Josh Cossuth (ONR)
Move on, but thank you.

03:48:55.610 --> 03:49:00.310
Mendonca, Nancy (HQ-EO000)
Thank you. I think one from Don if he still has his hand up.

03:49:02.620 --> 03:49:02.870
Donald Berchoff
Oh no.

03:49:02.940 --> 03:49:33.650
Donald Berchoff
I took my hand down, but but but just a comment when I see this great work being done and I'm again thinking from a standard perspective about how we're going to know the goodness of all these products and and who's you know how we going to track the methodologies and to make sure that you know, I'm not saying Your Science isn't good. I'm using this as an example. This again goes back to you know if we're thinking about an explosion of data.

03:49:33.780 --> 03:49:39.510
Donald Berchoff
And then explosion of new techniques and capabilities to do modeling and prediction.

03:49:40.260 --> 03:49:44.050
Donald Berchoff
How does the aviation community understand?

03:49:44.800 --> 03:50:08.460
Donald Berchoff
You know what is good science? What's OK science? What's just somebody trying to get a product out right and and and so I think this is just something I want to point out in this to the group is to think about that right because we've got to manage you know if you look at what what the social media sites are doing. There's a lot of people out there today, that are doing forecasting aren't even meteorologist right.

03:50:09.030 --> 03:50:27.180
Donald Berchoff
Uhm and part of our challenge as a community is how do we maintain the standards that we know we need to maintain but open this up so that private sector? Can participate, 'cause That's how we're gonna accelerate our whole progress is in the nation right so there's just so that was the thoughts. I was having when I raised my hand.

03:50:29.350 --> 03:50:59.380
Josh Cossuth (ONR)
So since this was my talk, I'll respond to it quickly. I concur completely. I mean, I don't. I'm not very familiar with this community, I focused more on my areas of expertise in naval problems. But I think this is exactly the form to do that. I don't have expertise in the precise problems. You have, but I've got other areas that I know what I'm talking about and I think it's good for us to discuss you know where I've been focusing where you've been focusing what our needs are and we could come together on this. But I think it's exactly these meetings like this, or we have other expertise.

03:50:30.090 --> 03:50:30.720
Mendonca, Nancy (HQ-EO000)
Install.

03:50:59.900 --> 03:51:00.980
Josh Cossuth (ONR)
Rather than a free for all.

03:51:01.470 --> 03:51:24.170
Donald Berchoff
Yeah, no, I I wasn't even really addressing your your your your presentation just got me thinking about the different complexities of how our science is moving and it wasn't really addressing your particular presentation. But in general. When I when I think about this how we gonna manage you know the science standards right around aviation weather that that was just a general comment.

03:51:25.860 --> 03:51:26.660
Josh Cossuth (ONR)
Great thank you.

03:51:28.790 --> 03:51:34.260
Mendonca, Nancy (HQ-EO000)
Thank you very much with that I'm Rob Randall turn it over to you.

03:51:37.440 --> 03:51:38.400
Robb M. Randall (Guest)
OK.

03:51:39.400 --> 03:51:53.100
Robb M. Randall (Guest)
Good afternoon, everybody, I'm Rob Randall. I worked down at White Sands missile range for the Army Research lab for those don't know where that is. It's in New Mexico and about its near Las Cruces, New Mexico about an hour North of.

03:51:54.320 --> 03:52:01.740
Robb M. Randall (Guest)
El Paso, Texas, just so you understand where we're sitting and can you see my slides by chance.

03:52:02.550 --> 03:52:04.520
Mendonca, Nancy (HQ-EO000)
Yes, but not in presentation mode.

03:52:04.680 --> 03:52:05.140
Robb M. Randall (Guest)
OK.

03:52:06.250 --> 03:52:36.130
Robb M. Randall (Guest)
I just put it in there, it should transition to it, so I see the Times running short. So I'll buzz through this pretty quick. We don't have this large portfolio that really speaks to this community. But we have some things some capabilities and there are a few research projects that were entertaining that go down this road. So I'll just jump right into it. This here is a meteorological sensor array that we have built out on jornada experimental range. It's USDA in conjunction with New Mexico State University.

03:52:36.620 --> 03:52:41.090
Robb M. Randall (Guest)
You'll see the San Andreas Mountains, East of that is the actual white sands.

03:52:42.250 --> 03:52:43.440
Robb M. Randall (Guest)
National Park.

03:52:44.070 --> 03:53:13.970
Robb M. Randall (Guest)
And and then South of that is lost crucis and mainly where I was just describing So what you see here. We have this is the portion that's done, we have different configurations across the the array. We have a little micro scale set up towers up into the foothills and really our goal is to understand the complex terrain boundary layer processes land surface processes and how they impact DoD systems.

03:53:14.350 --> 03:53:19.640
Robb M. Randall (Guest)
And so that's that's really our goal at the basic research level and so.

03:53:18.770 --> 03:53:21.450
Mendonca, Nancy (HQ-EO000)
Wrap those slides weren't advancing.

03:53:22.480 --> 03:53:26.530
Mendonca, Nancy (HQ-EO000)
Does it stick? Maybe no he's bandwidth throughout me try it?

03:53:22.710 --> 03:53:23.570
Robb M. Randall (Guest)
They are not.

03:53:27.150 --> 03:53:31.740
Robb M. Randall (Guest)
Uhm OK sorry, yeah, maybe you should try it, I'll stop sharing.

03:53:30.840 --> 03:53:32.300
Mendonca, Nancy (HQ-EO000)
No OK.

03:53:34.770 --> 03:53:36.820
Robb M. Randall (Guest)
I was hoping I could alleviate.

03:53:38.620 --> 03:53:40.360
Robb M. Randall (Guest)
Problems you guys were having on your side.

03:53:43.610 --> 03:53:44.160
Robb M. Randall (Guest)
Excellent.

03:53:46.260 --> 03:53:46.960
Robb M. Randall (Guest)
Uhm.

03:53:47.880 --> 03:54:17.600
Robb M. Randall (Guest)
So this is the meteorological sensor or that I was talking about and so we do have a uas runway out there. We have not put a uas out there yet or run. Quadcopters quite yet. We're getting too. We're learning more processes and again resource constrained on that aspect, but does have the capability and then if you go to the next slide. I'll just briefly go over what's on a lot. That's a 30 meter tower on a 3 year 3 towers. We have full surface energy budget and down.

03:54:17.880 --> 03:54:25.890
Robb M. Randall (Guest)
And on all the towers, we have the Heat flux and all the ground sensors. So we can understand soil moisture 's and things like that next slide.

03:54:28.040 --> 03:54:28.700
Robb M. Randall (Guest)
Uhm.

03:54:30.220 --> 03:54:50.530
Robb M. Randall (Guest)
And then we have the capability out there on the jornada to do things like multiple synchronized lidars get a virtual wins and and just so we can understand what the boundary layer looks like as we're as we're as we're trying to understand the process. He's going out there that really the microscale stuff that we're learning, we're continuing to find so next slide, please.

03:54:52.340 --> 03:54:53.070
Robb M. Randall (Guest)
Uhm.

03:54:54.850 --> 03:55:11.740
Robb M. Randall (Guest)
And so as I said our process. It's really about the surface processes. Environmental State House that affect the army systems. We do a lot of dust type research out there at the core of Engineers. But we really want to understand how this again. How this stuff affects army systems including you at the next slide.

03:55:12.890 --> 03:55:28.380
Robb M. Randall (Guest)
So I will just go over a couple of the initiatives. I'm not going to go into detail here since how we're short, but one initiative weeded taken in conjunction with NMSU. We have an adjunct professor that works out here and.

03:55:29.810 --> 03:55:35.310
Robb M. Randall (Guest)
He had a PhD student that's just finishing this up so we took a uas rotor.

03:55:35.950 --> 03:56:06.140
Robb M. Randall (Guest)
A small rotor uas you can kind of see a little bit. You can kind of see it in the right hand picture there. But put it through a wind tunnel and the whole goal is to understand the turbulence around those to understand where sensors could be placed on the on the craft so that we could get accurate readings or if we could possibly get corrections. You know have a model to to do corrections based on forward motion reverse motion up down.

03:56:06.340 --> 03:56:15.720
Robb M. Randall (Guest)
You name it so that was the thrust of this project in general next slide. Just some cool pictures. I think of of the?

03:56:17.560 --> 03:56:22.360
Robb M. Randall (Guest)
Inside of the wind tunnel as we're trying to understand that sort of stuff if you go to the next slide.

03:56:23.280 --> 03:56:53.250
Robb M. Randall (Guest)
Uh and I think they're still working through some of these next corrections on how to do your velocity corrections and this one of course, is on the forward flight. But if you go to the next slide. I'll go to the next major initiative. We really have had over the years and it's called automated impacts routing and it's really a software system that calculates a really path through the atmosphere based on the environmental effects and obstacles along that path and so the idea is you put whether dad in or model data in.

03:56:53.300 --> 03:57:17.500
Robb M. Randall (Guest)
And it will quickly calculate uh a 4 dimensional route path and you can see all the specifics here written in Java and just 3 D puts it out in ogc and into a standard Google Earth. And so this has been around awhile. It's been implemented into the army system. the D sigset? For those that know what I'm talking about there, but that's really where the weather is.

03:57:17.550 --> 03:57:24.020
Robb M. Randall (Guest)
Some is viewed in the army so that's the new addition to that next slide.

03:57:24.710 --> 03:57:36.300
Robb M. Randall (Guest)
But the latest in the last couple of years we had an Sbir and and so that oh so here's just some images of the path that it can find and the and the different examples next slide.

03:57:37.290 --> 03:57:46.100
Robb M. Randall (Guest)
Please and and it can be multi you know different scales and Reza resolutions can be nested together and so that's just the capability next slide.

03:57:47.730 --> 03:58:00.020
Robb M. Randall (Guest)
Last couple years we had an SSBIR where and the whole goal was take the routing system embed it on a on an air uas airframe and and then.

03:58:01.040 --> 03:58:04.850
Robb M. Randall (Guest)
With input of weather data have it autonomously.

03:58:04.900 --> 03:58:35.150
Robb M. Randall (Guest)
The UM route you know, creative route using air and then autonomously just steer around those hazards as it goes so well. That was demonstrated back in September 2019. They did it in July 2020. It was, it was advanced to where they were getting obstacle data sent between drones during flight and then it was able to autonomously steer around those and then this latest one at or yeah end of last year October 2020.

03:58:36.070 --> 03:58:36.600
Robb M. Randall (Guest)
The company.

03:58:37.530 --> 03:59:05.620
Robb M. Randall (Guest)
Uh mounted a forward mounting sensor and I think if you go to the next slide will kind of show it, and then they placed and they really just a Real Simple. They said, OK, anything read that you come into is now a new obstacle that you need to input and re-route around and so they went out there and tested that and that was very successful and so this is just this is just where we're going as an autonomous environmentally aware uas using using the RL developed technology so.

03:59:06.680 --> 03:59:11.180
Robb M. Randall (Guest)
And I think this is the end of my brief and so Yep.

03:59:11.770 --> 03:59:16.700
Robb M. Randall (Guest)
So I I know there's probably not time for questions. But if you want to put anything in the chat. I'll gladly answer it.

03:59:21.090 --> 03:59:22.330
Mendonca, Nancy (HQ-EO000)
Thank you very much.

03:59:24.400 --> 03:59:45.270
Mendonca, Nancy (HQ-EO000)
Let me see if it yeah. Thank you questions over to the chat and I will change my screens around and the next. The bringing up is our last part is a panel session and not being able to scan down through I'm hoping Jack Cave, Michael Shapiro, and Colonel Diller were able to join us.

03:59:47.600 --> 03:59:49.390
Kaye, Jack (HQ-DK000)
Jackie is on in here.

03:59:51.440 --> 03:59:53.190
Kaye, Jack (HQ-DK000)
I'm in line for awhile quietly.

03:59:57.740 --> 04:00:03.490
Tom Meagher - AFWERX (Guest)
Hey good afternoon, Alice Turner called tamahere. I'm filling in for kernel dealer how this afternoon from Mathworks in the Air Force.

04:00:02.900 --> 04:00:03.230
Mendonca, Nancy (HQ-EO000)
Ah.

04:00:04.460 --> 04:00:06.290
Mendonca, Nancy (HQ-EO000)
Thank you Tom I saw you also lurking.

04:00:08.270 --> 04:00:10.220
Shapiro, Michael (OST)
And you've got mixture period from DOT as well.

04:00:08.660 --> 04:00:09.010
Mendonca, Nancy (HQ-EO000)
Ah.

04:00:11.260 --> 04:00:20.000
Mendonca, Nancy (HQ-EO000)
Ah, thank you very much. I I definitely appreciate all your time your time. Can I let you go once around the room to formally introduce yourselves?

04:00:23.980 --> 04:00:28.840
Tom Meagher - AFWERX (Guest)
I'm sure I'll start so I'm like I said, I would check out tamahere active duty Air Force.

04:00:29.540 --> 04:00:59.880
Tom Meagher - AFWERX (Guest)
Uh with app works so we our director at within Air Force Research Lab and we focused on 3 kind of main things. The overall cyber sitter program for the Air Force through our app ventures arm. The spark which kind of is our internal innovation and then prime which is where is what I run that's focused on transitioning to use technologies and specifically what that our main program right now is that Julia Prime, which is focused on electric vertical takeoff and landing aircraft. That's kind of how we are interested in this conversation of.

04:01:00.340 --> 04:01:10.750
Tom Meagher - AFWERX (Guest)

Kind of the future where those vehicles go and then what sort of weather information they require for safe operations and sometimes operations in the future based on some of the road Maps out there.

04:01:12.220 --> 04:01:13.540
Tom Meagher - AFWERX (Guest)
Happy to be here and thank you very much.

04:01:14.850 --> 04:01:15.580
Mendonca, Nancy (HQ-EO000)
Thank you.

04:01:21.040 --> 04:01:21.510
Mendonca, Nancy (HQ-EO000)
Jack.

04:01:21.930 --> 04:01:26.760
Kaye, Jack (HQ-DK000)
Yep, I'm Jackie I'm the associate director for research in the Earth Science Division that.

04:01:27.360 --> 04:01:33.320
Kaye, Jack (HQ-DK000)
A NASA headquarters where part of the science mission Directorate here in DC.

04:01:40.740 --> 04:01:41.870
Mendonca, Nancy (HQ-EO000)
Michael over to you.

04:01:43.550 --> 04:02:00.270
Shapiro, Michael (OST)
Hi there, I'm I'm Michael Shapiro. I'm deputy assistant secretary for economic policy over at the Department of Transportation and focus on a lot of our departments innovation activities, including an advanced air mobility. Qas and and kind of many of the other technologies before us today.

04:02:03.450 --> 04:02:34.010
Mendonca, Nancy (HQ-EO000)
Now they come thank you all for joining us so we, we've spent, the first part of the briefing and today's events was kind of talking about the operational 's and what the is going on across the federal government in the SQL, mostly around us. You ask but definitely in aviation and and some weather needs and then we looked towards the you know potential future for the system and then we are blessed session here was on the different research activities. So was hoping to focus as panel on how do we get from where we're at today?

04:02:34.060 --> 04:02:53.070
Mendonca, Nancy (HQ-EO000)
With 3 with research and things and transition that to a plan and road map for the system so whether you guys want to talk about current efforts that you're doing to look toward the future system or in general, on how we transition researched operations. I'm looking forward to hearing your thoughts and then seeing if we have questions from the audience.

04:02:59.280 --> 04:03:28.640
Tom Meagher - AFWERX (Guest)
So I guess I'll I'll get it started a little bit with some of our and air forces interest and what we've looked at from a kind of the technologies and things we've looked at is how do you get transportable weather solutions more so for austerfield up so one of our our special OPS folks go in and using new field data set up some weather information and sensors and kits and so we're looking at how do we miniaturize those things in their stuff out there. There's certainly cured a little bit or the commercial sector and then some that.

04:03:28.940 --> 04:03:33.650
Tom Meagher - AFWERX (Guest)
I want little more ruggedized. I'm aware interested in but what comes with that is in some connectivity.

04:03:34.010 --> 04:04:03.550
Tom Meagher - AFWERX (Guest)
Uhm we look at satellite connectivity to to get a little bit further range. But certainly from a commercial perspective. Using those connections with your commercial such as Lt or or 5 G connections to kind of set up a network of that type of weather information is one row that that kind of goes down commercial path so from their perspective perspective we're looking at from Taxol situations, but then the important part is that we are interested in certainly with affects in our cyber program of how we transition those over and leverage the dual use.

04:04:04.120 --> 04:04:17.230
Tom Meagher - AFWERX (Guest)
Uh focus technologies that exist in the commercial space now, so I'll be honest, we're not really focused on what that the overall architecture on the commercial side. We want to leverage? What is being developed on that on that front over?

04:04:26.140 --> 04:04:27.150
Kaye, Jack (HQ-DK000)
Do you want me to go?

04:04:28.880 --> 04:04:30.540
Mendonca, Nancy (HQ-EO000)
Yes, please, it seems like it's a good order.

04:04:30.890 --> 04:05:02.300
Kaye, Jack (HQ-DK000)
Like I I can't remember the the other so I don't have charts and and I may have too many talking points. So if I'm getting greedy and time just let me know. And I'll jump ahead. But that the research to operations has been the one standing challenge and the government and it's also challenged to go. The other way to you know, see what the operations are are asking and how the research can help with that at NASA in particular. We haven't applied Sciences program that were extra transition results in 2 applications in areas like ecological forecasting and and.

04:05:02.420 --> 04:05:14.880
Kaye, Jack (HQ-DK000)

What resources and food security and disasters? I'm going to talk about some of the things that we do within the research program in the meteorology realm. We've had a few mechanisms that Joint Center for satellite data assimilation.

04:05:14.940 --> 04:05:30.850
Kaye, Jack (HQ-DK000)
And I'm really looking to assimilate, NASA data and models into all the assimilation systems in the US and the short term prediction. Research in transition center to help our operational forecast is utilized. NASA data in in what they do.

04:05:31.380 --> 04:06:01.190
Kaye, Jack (HQ-DK000)
Uhm ones my other roles now is as the AIA Co Chair of the Committee on research and innovation. Under Eye Cams Interagency Council for advancing meteorological services that got set up under the previous administration and sort of emphasized under the current one to enhance the ability of the federal enterprise to link knowledge to services to boil in the participant. List beyond the agencies that were their primary participants in the older officer federal coordinator for.

04:06:02.070 --> 04:06:11.010
Kaye, Jack (HQ-DK000)
Meteorology and NASA has Co chair roles in 2 of the 4. I cams committees in general, what we do in this earth Sciences to advance.

04:06:11.060 --> 04:06:41.650
Kaye, Jack (HQ-DK000)
The science and global earth system science, including climate and weather using it makes a satellite observations airborne observations serve based surface based observations modeling data analysis using scientists at Ascentis and to grow the community academia or the government agencies. Private sector nonprofit mostly competed. One of our focus areas that one that may be most relevant here is the weather in atmospheric dynamics focus area. That's surveyed the community through an RFI recently in the process of developing a guide.

04:06:42.030 --> 04:07:12.770
Kaye, Jack (HQ-DK000)
Further focus area in the future one of the things that that focus area doesn't particularly is to work closely with a S to Earth Science, Technology Office on some of the technology demonstrations, especially at miniaturizing instruments and research in their new observing strategy with the ultimate goal that the end. OS will allow autonomous vehicles to coordinately observe predefined events or features and those maybe opportunistically identified by AIML algorithms, the satellite program that we have.

04:07:12.820 --> 04:07:43.930
Kaye, Jack (HQ-DK000)
That has 20 plus operating satellites do what we call the program of record gets a lot of the data about atmospheric profiles. Temperature weather precipitation. There are souls clouds using this earth system science perspective. So it's not to just characterize what we see but to understand and ultimately lead to improvements in predictive capability. We use it for either of techniques, including a active techniques.

So we can do things like why they are in radar and and get say multi layered clouds through the radar and we're also starting to use small satellites, which we had not.

04:07:44.090 --> 04:08:09.200
Kaye, Jack (HQ-DK000)
Previously, everyone program makes use of NASA platform sensor systems people and opportunities and and right now. Some of the foci of that include aerosol cloud interactions confections in the tropics and the relation to wind patterns looking at snowfall and strapped rope exchange of whether vapor in the past. We've done things like Atmospheric Transport a firearm missions and aerosols clouds in the Asian monsoon.

04:08:09.260 --> 04:08:12.720
Kaye, Jack (HQ-DK000)
In a meeting and the modeling efforts tend to.

04:08:13.560 --> 04:08:46.850
Kaye, Jack (HQ-DK000)
Look at that range from big modeling systems including those used for climate data simulation be analysis and process models like for clouds. We are engaged in purchasing and distributing commercial data and initially both so the GNSS Radio Article Tation and some surface optical imagery. But we're purchasing additional data for evaluation and looking toward with others and note that the cable survey from the national academies that was done in late 2017, 2018.

04:08:47.170 --> 04:09:17.050
Kaye, Jack (HQ-DK000)
Uh made calls for a significant new observation. Ull capability as part of what we're calling the Earth Surface Observatory, including designated observables through a aerosols class convection precipitation or ACP future observable. That's now in the pre phase. A study they also identified some topics where would we be called Explorer missions and then perhaps quite relevant here is an incubation activity for areas that we're seeing is not quite ready for Phillip Satellite.

04:09:17.100 --> 04:09:46.930
Kaye, Jack (HQ-DK000)
No mission but which could really benefit from both fundamental research or no so they use inspired research and technology development. So one of those, 2 was planetary boundary layer. The other was surface topography and vegetation, which were for both of them what we did is we have a solicitation to develop a team to lay out a plan for what we might do in the years ahead. We use that plan to develop a solicitation, which is out and closes 9 days from now, so it.

04:09:47.110 --> 04:09:54.610
Kaye, Jack (HQ-DK000)
You can actually see I don't print out much these days, but this is one that we have that shows the plan that's available online and and.

04:09:54.660 --> 04:10:21.550
Kaye, Jack (HQ-DK000)
I'm uh where where you can get some information because it thinking why the talks before you see that

there's new capabilities that that may provide ways of looking at the planetary banjo later because there's a sense that there's no single technique. That's really going to get us what we need to know about the planetary boundary layer and we have to think imaginatively about how they integrate data from a variety of remote, sensing you know in situ and surface based measurements.

04:10:21.600 --> 04:10:52.130
Kaye, Jack (HQ-DK000)
Some uh for that now I should say that I'm you know relative to aviation. We do, we do have a history of working with I guess the predecessor to NASA or nervous research mission directly with going back into the 90s and atmospheric effects of Aviation program and also notes on ARN T user platforms and sensors and as we look towards this, where welcome additional opportunities to interact in the future, and they didn't talk so much about.

04:10:52.180 --> 04:11:06.250
Kaye, Jack (HQ-DK000)
You warehouses, but I think because we're really interested in the so that the underlying science and how that one turns that into knowledge and use that so there's certainly a opportunities there with that, so I'll stop there. Thank you.

04:11:08.650 --> 04:11:09.320
Mendonca, Nancy (HQ-EO000)
Thank you.

04:11:08.940 --> 04:11:09.490
Kaye, Jack (HQ-DK000)
Thank you.

04:11:14.580 --> 04:11:22.740
Shapiro, Michael (OST)
And happy to go up and excited to really be here for for this for this panel and and getting everyone together here.

04:11:16.960 --> 04:11:17.690
Kaye, Jack (HQ-DK000)
Excellent.

04:11:23.990 --> 04:11:53.250
Shapiro, Michael (OST)
And you know it's it's really exciting to see NASA gathering a lot of innovators and inventors, and investors to really talk about technology that will will kind of reshape how we think of of flight today and and I know we're we're kind of talking about how we get from where we are today where there's not a lot of decisions support. There's there's there's kind of minimal certified weather sources and weather data collected primarily by the federal government so that we can have kind of.

04:11:53.290 --> 04:12:08.750
Shapiro, Michael (OST)
Better information to make a risk based decisions for kind of low altitude vehicles. You know in our case,

thinking about AM and an advanced air mobility systems and recognizing that kind of others are are thinking about the the types of systems.

04:12:09.320 --> 04:12:35.430
Shapiro, Michael (OST)
Uh you know, I'm under their jurisdiction and where this research might lead you know, so for us. These kind of systems have the potential to speak to a lot of priorities for us at at at DOT you know, thinking about things like urban congestion role access issues on demand and equitable distribution networks and and sources of kind of job creation and other transportation problems that were focused on on solving as as a team.

04:12:36.040 --> 04:13:03.020
Shapiro, Michael (OST)
But UM I I think as you guys have been discussing all day, the key to all of this is the infrastructure that support it and that includes you know net landing platforms power supply for fueling navigation enablers. Communication arrays and of course, critical information such as weather and I think you know, I'm I'm supposed to answer how we're going to govern the quality of information and who will ultimately.

04:13:03.470 --> 04:13:33.410
Shapiro, Michael (OST)
A man who ultimately provide it and and I think the answer. Today is we all need to collectively figure that out. You know at at at DOT. We've talked with industry with academia with a lot of conversations internally and informally and we've seen concept models where weather is provided by the federal government. Local weather stations or private service suppliers. And so for our conops, which we've developed with NASA. We envision kind of service suppliers, but the provision.

04:13:33.460 --> 04:14:03.210
Shapiro, Michael (OST)
Precision of the weather information needed in a microclimate like a modern city is is a lot more demanding that we have than what we have in today's forecasting and their responsibility often is of the pilot to avoid weather becomes a hefty demand. When that pilot or the aircraft is is kind of detached. So it's a promising future but a daunting challenge to get there, so in response, what we're doing at DOT is we're reinvigorating our non traditional and emerging transportation technology or net council.

04:14:03.670 --> 04:14:34.860
Shapiro, Michael (OST)
Which kind of takes a look at all of the new transportation systems across all of our modal administrations and explores how they will work together in the coming weeks, you'll you'll see a request for comment. Coming soon from the Department. There will be asking the public what we need to focus on most. But we already know that one of the answers to that question is that kind of Advanced Air Mobility Infrastructure is going to be an important part of that, so we've been hard at work developing a charter and across modal team to develop delve into a lot of these kind of policy issues.

04:14:35.330 --> 04:15:04.630
Shapiro, Michael (OST)
This work will touch on infrastructure needs, authorities responsibility and effects on on kind of other

modes of Transportation funding models. Environmental responsibility and of course, our North star is of safety for everyone using the system so we have the idea insight. But we have to get to the hard work of answering these questions and and I'm really excited to to kind of see what we discover in determined in the following years, and and equally excited to see what we will hear from the industry and consumers as we try and make this a collaborative process. Thank you.

04:15:08.690 --> 04:15:16.690
Mendonca, Nancy (HQ-EO000)
Thank you very much. I'm had a question in the chat. What would you consider to be the big elephant in the room that needs to be addressed?

04:15:19.560 --> 04:15:20.620
Tom Meagher - AFWERX (Guest)
Sergeant first just.

04:15:21.370 --> 04:15:30.580
Tom Meagher - AFWERX (Guest)
President Mister Perez comments on that permit duties for Spec perspective make their bit. The big elephant is. It's a very complex problem that you're talking about when you.

04:15:31.270 --> 04:16:01.230
Tom Meagher - AFWERX (Guest)
Talk about the number of sensors and integrating them all all those data streams into one coherent solution. Whether that's from the private sector, where that's from government owned architectures? How do you actually combine them synthesize all data and who's in charge of running that that part of it to actually provide either data streams out to be Thomas vehicles in the case of what they were talking about with the Army research labs, and error 'cause That's that's incredible capability, but also just to other.

04:16:01.290 --> 04:16:21.640
Tom Meagher - AFWERX (Guest)
Users throughout the Urban Air mobility segment without small uas or larger vehicles or traditional piloted aircraft that we have today. So who actually coordinates all that data and provides that architecture and the standards to combine it and utilize it is probably a huge challenge and how we how do we tackle that problem?

04:16:22.310 --> 04:16:25.420
Tom Meagher - AFWERX (Guest)
Where do we start I guess that's also a good good point?

04:16:29.070 --> 04:16:40.940
Kaye, Jack (HQ-DK000)
Yeah, I I guess I would say that it, it may be a bit of a wimpy answer, but it's it's related to the the the challenge of crossing scales that on the one hand, there's things that one wants on very small scales.

04:16:41.340 --> 04:17:11.100
Kaye, Jack (HQ-DK000)
Uh uh and and short periods of time between needs whether this ubiquity of the information where you

know you may want it anywhere. Anytime anyplace and when you start talking about that that mix. You know it. It's hard. You can't you know you can't have it both ways typically So what one has to try to do is to figure out you know whether it's the right mix of of of observation and modeling techniques that will let you get the information you know that.

04:17:11.390 --> 04:17:12.150
Kaye, Jack (HQ-DK000)
It when you need it.

04:17:12.200 --> 04:17:18.470
Kaye, Jack (HQ-DK000)
Uhm where you need it, but the The The The associated good news and it's maybe the other side, the elephant is that?

04:17:19.160 --> 04:17:49.200
Kaye, Jack (HQ-DK000)
Come in and I'm not a technologist. I'm I'm a a lapse theorist, but that the capabilities that they are on in in terms of you know the new kinds of satellite platforms. We've heard why the bad small. Uas is and what they can do and you know, potentially other kinds of you know very different kinds of uas is that may give us a lot of situational awareness for high altitude long invent endurance or by up to 2 to the satellites and the new data techniques and and artificial intelligence or machine learning so you know, there may be ways to.

04:17:49.420 --> 04:17:54.950
Kaye, Jack (HQ-DK000)
To package all of these together, but it's a you know it's a lot, that has to get done at the same time.

04:17:58.920 --> 04:18:28.880
Shapiro, Michael (OST)
Yeah, no, I'll echo what I think by Co panelists have said about the challenges with system integration and technology which are are you know, daunting in and of themselves. You know, I'd say, another kind of part of the elephant in the room or another big elephant in the room is thinking about some of the like policy and legal contexts around us and and I that that goes to kind of the responsibility for the accuracy of the data and some of the safety concerns so if if a pilot.

04:18:28.930 --> 04:19:00.040
Shapiro, Michael (OST)
Is kind of responsible for the safety of flight as as they kind of are today but she can't kind of accurately kind of can't actually observe the weather and is is kind of completely reliant on accurate data like like? How does that affect or or who is in effect kind of responsible for the safety of the flight right and so even if we can get the technology right and and solve some of those really difficult systems integration challenges and technological challenges and research challenges.

04:19:00.340 --> 04:19:18.150
Shapiro, Michael (OST)
Which were all hard there's another elephant in kind of some of the basics of like well? Who owns the liability or who owns the responsibility for making sure that that these kind of new systems are

operating in a Safeway, especially if you're changing kind of traditional ways of of being accountable for the for the data and for the measurements.

04:19:24.330 --> 04:19:51.490
Kaye, Jack (HQ-DK000)
Yeah, I mean, I I would echo that I think in the air to that because certainly at NASA. One other things that that we know like many of our partners partners do take very seriously as the calibration and validation save all the satellites. We are extreme calibration zealots. We hold ourselves and and and you know? Our community holds us to very high standards, and you know if if we're not the ones providing the data.

04:19:51.840 --> 04:19:52.250
Kaye, Jack (HQ-DK000)
Uhm.

04:19:52.600 --> 04:20:13.680
Kaye, Jack (HQ-DK000)
You know uh what will others do whether they're willing to share you know how do we compare and allow people to potentially integrate data from multiple data sources. You know that that may release certain amounts of information about what they're leading to and and and not others, and and no hope that people can confidently use use all of that. That's

04:20:13.730 --> 04:20:31.160
Kaye, Jack (HQ-DK000)
done uh you know it is more complicated when you have a more complicated. Universal providers so but now again. If you look. I think what we've done internationally with a lot of very international partners, where there are a lot of efforts are there in place to help people?

04:20:31.630 --> 04:20:46.400
Kaye, Jack (HQ-DK000)
Uh confidently use data from different sources and integrate it. It may be that the way that we've done things internationally. You know, perhaps may give us some guidance and hope as to how we do that and then more complex ecosystem of information providers.

04:20:49.960 --> 04:20:53.550
Tom Meagher - AFWERX (Guest)
And check in or internationally are those primarily done.

04:20:54.170 --> 04:21:01.470
Tom Meagher - AFWERX (Guest)
As an automated function of how you which data you trust and how you rack and stack it or how's that currently? Don't over, there and how we apply that may be here?

04:21:02.140 --> 04:21:17.940
Kaye, Jack (HQ-DK000)
I'm well certainly like working with others space agencies satellite agencies within the high levels who like the Committee on their thoughts are patience satellites, which hasn't Working Group like calibration and validation and going anything. Groupon metalogical satellites as a.

04:21:19.420 --> 04:21:29.410
Kaye, Jack (HQ-DK000)
Global G 6 isn't something global something I think into comparison. I can't remember when my abbreviations. Unfortunately, so you know you, you have.

04:21:29.750 --> 04:21:48.990
Kaye, Jack (HQ-DK000)
Uhm mechanisms in place with people talking to each other. A lot and and doing a lot of direct comparisons, so as well as data simulation systems that integrate data from multiple ones. And if there's if there's issues. They will they will find them You'll see it in the residuals.

04:21:57.130 --> 04:22:09.930
Mendonca, Nancy (HQ-EO000)
Thank you. I'm great answers all around as we come to the close up like to make closing comments or or thoughts. As we kind of look forward or next steps or what you'd like to what you think the community could do moving forward.

04:22:12.400 --> 04:22:33.490
Tom Meagher - AFWERX (Guest)
I think I think the obvious one is is just just the cross talk like these forums to see what different agencies are doing often and not only within our own services. But with throughout their government. We often we always not always but often work in so it by just sitting here and listening to different initiatives within the other services, and the and what NASA and other agencies have done system.

04:22:34.750 --> 04:22:47.640
Tom Meagher - AFWERX (Guest)
And lightning to see some of the things that maybe we're interested in that we can leverage that are already taking place within other other agencies so there's the continuous forms for collaboration on these specific topics is pretty key to keeping a move forward so.

04:22:48.380 --> 04:22:50.010
Tom Meagher - AFWERX (Guest)
Actually let me put the part of it.

04:22:51.810 --> 04:23:02.930
Kaye, Jack (HQ-DK000)
Yeah, I I'll just say I think you know between the the things that we're talking about already relative to planetary boundary layer, but they think that seems like that's a real interest for what I've been hearing here.

04:23:03.280 --> 04:23:12.260
Kaye, Jack (HQ-DK000)
Uhm and new techniques, so they're coming available whether it's new sensors new platforms. New data systems. I think it's going to really be a lot of fun to see.

04:23:12.310 --> 04:23:33.590
Kaye, Jack (HQ-DK000)
Uhm and and really need an important and useful science as to how all those pieces can put together

and help us tackle something that's that that that's hard and important and also remember that it's easy. Something like this to fall into a domestic focus, but from our perspective we're global and the things that we're looking to do.

04:23:33.650 --> 04:23:38.150
Kaye, Jack (HQ-DK000)
Umm you know here we would like to help enable globally.

04:23:42.720 --> 04:23:52.320
Shapiro, Michael (OST)
Yeah, no, I'll echo the comments by my Co panelists with and this is enormously helpful for him to kind of share interagency efforts and think about the research that we're doing.

04:23:52.930 --> 04:24:23.720
Shapiro, Michael (OST)
I would say from our perspective, the ask we'd have this group. You know, we're standing up a working group for that net council that I mentioned on a lot of the issues involved with advanced air mobility, including related to weather and and would love to kind of have interagency feedback on that and in particular. I think you can expect from us a new kind of RFI or request for comment broadly on kind of innovation related issues for the Department of Transportation coming out in the relatively near future, where we'd love to get kind of broad input from from a range of stakeholders.

04:24:23.780 --> 04:24:33.840
Shapiro, Michael (OST)
So you know, I would appreciate it folks responding to that. It's just yet another way to have input. In addition to to great panels like these that we really appreciate folks, setting up.

04:24:39.280 --> 04:24:43.170
Mendonca, Nancy (HQ-EO000)
Thank you and as we come close to the time.

04:24:44.370 --> 04:25:14.070
Mendonca, Nancy (HQ-EO000)
Like to echo in our comments great discussions. Today appreciate all the but the information. Everyone's time, UM if anyone has like say any closing observations to to put in the chat. I had a few other kind of threw out there or I think the UM from Steve Bradford and PKS panel about the need to understand the current and future of critical requirements and and understand what we really need and not just a you know a path to get there.

04:25:14.390 --> 04:25:26.680
Mendonca, Nancy (HQ-EO000)
And then continuing that path so let's come even though it's doesn't really continue to meet this future requirements. And I think we're going to see a challenge, shifting from you know, federal government federal government provides.

04:25:27.450 --> 04:25:57.810
Mendonca, Nancy (HQ-EO000)
I did weather and a centrally managed paradigm to come future commercially one that's performance

based. I think we've heard by a lot of different comments on different data needs and and where and where we can find them. I think those that's a great takeaway sender stand. Those I found an interesting observation in the the federal government 's focus really on your on rural over urban so I had that was a very interesting takeaways to understand the real need not only for urban weather for AM.

04:25:57.860 --> 04:26:27.680
Mendonca, Nancy (HQ-EO000)
But also the needs for rural whether I'm kind of understand you know had discussion with several presenters on data being timely and the need for both in a timely data for emergent operations and also data for a planned operations but also has to be weighed with a cost so you know the the cost has to be commensurate with the benefit provided so I've got to go back and look and watch the recording again some great different takeaways.

04:26:28.290 --> 04:26:30.630
Mendonca, Nancy (HQ-EO000)
But that but thank you everyone and uh.

04:26:31.800 --> 04:26:43.730
Mendonca, Nancy (HQ-EO000)
Any other comments folks with wanna come on or put in chat. But if nothing else, I'll say thank you. Everyone great day and look forward to the next 2 days. Matt did you want to say something in the next 2 days?

04:26:45.100 --> 04:26:57.510
Matt Fronzak
Well, I I would like to just remind all the participants that as Nancy has very eloquently stated. We do have a 2 more days of conversations planned tomorrow.

04:26:57.980 --> 04:27:09.600
Matt Fronzak
Uh has I think some some very interesting topics being covered starting off with commercial space and high altitude aviation for the in the first part of the day.

04:27:09.650 --> 04:27:13.510
Matt Fronzak
They uh the second part of the day will explore.

04:27:13.810 --> 04:27:44.750
Matt Fronzak
A federal agencies that that are not aviation related but which are working on things that could be leveraged and used in in our arenas and then the then the final session of the day tomorrow is about the the future of aviation weather from several different federal organizational perspective. So I I think again very interesting discussions, you know my.

04:27:45.290 --> 04:28:15.410
Matt Fronzak
I only regret I I sure do wish we could have had this in person and we will have this in person. Just just not right now and uh and reminding everybody. There is a day 4 and Day 4, is kind of our wrap up and

here's what we think we heard on in the areas of of gaps of synergies of of overlaps of opportunities to collaborate and I think we've heard I've I've gleaned a lot of that. In 2 days of discussion and expect to continue to pick up some more again.

04:28:15.730 --> 04:28:30.080
Matt Fronzak
Uh tomorrow, so we, we hope you'll hang in there with us. Same time, same station same dial in information. The next 2 days. Matias let me. Let me hand the ball over to you and you give us a proper sign off.

04:28:32.790 --> 04:28:52.870
Matthias Steiner (Guest)
Oh, I think you did a wonderful job, summarizing an ad looking forward for the next few days and thank you for my side also for all the speakers and panelists a wealth of information that was exchanged today. That definitely will require time to absorb and that just so I look forward to.

04:28:52.920 --> 04:28:56.750
Matthias Steiner (Guest)
You are picking this up tomorrow again. Thank you.

04:28:56.530 --> 04:29:29.890
Matt Fronzak
Yeah, and and Matthias Sorry I I I'm I'm I. I do this all the time to you. I know Nancy said something about reviewing the recordings, which reminds me that there may be some folks on the call who are not aware that the friends and partners of aviation, which is sort of sponsoring not sort of which is which is holding this temp does have a website. It is at F Paw Dot Arrow and and sometime after the meeting has concluded hopefully not as late as it was last time because yours truly couldn't get his act together.

04:29:30.010 --> 04:30:00.210
Matt Fronzak
Will have the minutes and the and the video recordings and all the presentations of stored on on the the the meeting summary page and and we invite you all to visit it and if you if you are so inclined and want to stay plugged into what F paw is doing a you could go to the registration page. And for the princely sum of Zero Register and and sign up for F paw and then you'll get all of our emails and and.

04:30:00.260 --> 04:30:01.290
Matt Fronzak
Follow up information.

04:30:05.590 --> 04:30:07.820
Matt Fronzak
And with that I bid you adieu.

04:30:07.220 --> 04:30:07.490
Matthias Steiner (Guest)
Right.

04:30:10.010 --> 04:30:13.590
Matthias Steiner (Guest)
Thank you I'll see you tomorrow again, bye bye.

04:30:13.550 --> 04:30:14.570
Mendonca, Nancy (HQ-EO000)
Thanks everyone.