Fall 2021 FPAW / Aviation Weather TEM Chat Log

Day 3

[11:45 AM] Matt Fronzak
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Draft Planning Agenda for Fed Agency TEM Day 3: Multi-Use Weather
1130-1140 Welcome and Announcements
1140-1150 Overview of TEM/Review of Day 2
1150-1300 Weather Support to Commercial Space
How will the boom in commercial space affect aviation weather operations? What are their requirements, and what role(s) will government agencies play in weather support for these operations?
Stratospheric payloads
Orbital flights
Launch and reentry
Interplanetary travel
Panelists: FAA (Karl Garman), SWPC (Hazel Bain), NASA (Kathy Rice), DoD (Omar Nava)

1300-1330 Break

1330-1440 Multi-Use Weather
Capabilities that agencies are working on that could be leveraged for aviation weather or has an aviation weather component
MRMS
Satellite
DOE
Volcanic
Open discussion among audience
Panelists: GOES-R (Dan Lindsey), NSSL (Heather Reeves), DOE (Sally McFarlane)

1440-1450 Break

1450-1555 Aviation Weather in the Future
What are the visions in context of weather information, especially for aviation or affecting aviation?
New data sources
New data communication methods
Cloud computing and processing, including multi-agency collaborations
Climate Change
New airframes and engines (composite materials, new fuels, etc.)
New routes and pathways (supersonic flight, sub-orbital, etc.)
Panelists: FAA (Mike Emanuel), DoD (TBD), NOAA (Mark Zettlemoyer), NTSB (Don Eick - tentative)

1555-1600 Highlights from the day, preview tomorrow's agenda
Jeff Weinrich, NOAA

1600 End of Day 3
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[11:46 AM] George, Tom
That works. Thanks!

[11:48 AM] Ryan, Thomas E-CTR (FAA) (Guest)
Thanks for your flexibility, Matt.

[11:49 AM] Matt Fronzak
Ryan, Thomas E-CTR (FAA) oh, but that I was that physically flexible...

[11:49 AM] Ryan, Thomas E-CTR (FAA) (Guest)
Amen, brudda!

[11:57 AM] gordon brooks (Guest)
micro-Sv/hr = ?

[11:58 AM] Matt Fronzak
gordon brooks (Guest) micro sieverts/hour, where sievert is a unit of radiation (a la x-ray)

[11:59 AM] Matt Fronzak
BTW - although I've stayed at a HIE, I am not a space weather expert

[11:59 AM] gordon brooks (Guest)
Thanks Matt

[12:01 PM] Matt Fronzak
The Space Radiation Analysis Group (SRAG) at the Johnson Space Center is responsible for ensuring that the radiation exposure received by astronauts remains below established safety limits. To fulfill this responsibility, the group provides: Radiological support during missions. From https://srag.jsc.nasa.gov

[12:03 PM] Bass, Randy (FAA) (Guest)
For Karl Garman - are there any gaps in weather support to Commercial Space, either terrestrial or space weather, launch, orbital or reentry, that you believe needs particular attention?

[12:03 PM] Matthias Steiner (Guest)
Question for Karl Garman: Can you elaborate a bit more on weather constraints (besides lightning) for space weather launch & reentry?

[12:05 PM] Matthias Steiner (Guest)
Question for Hazel Bain: You mentioned SWPC forecasts are publicly available. Does that include gridded data that could be integrated into decision support tools?

[12:09 PM] gordon brooks (Guest)
sorry Kristin, I missed the names of the local models you are using? Do you use mesoscale ensemble data from AF's weather.af.mil?

[12:13 PM] gordon brooks (Guest)
We have 20km, 4km, and 1km ensemble coverage for Cape Canaveral and work with the 45th

[12:14 PM] Eric Avila (Guest)
Did the weather criteria required for launch in terms of lightning strikes and ceilings change from the space shuttle program to the current private ventures?

[12:14 PM] Matt Fronzak
For Smith, Kristin A (KSC-SII10) - you suggested that you try to do lightning R&D to the extent you can, to refine and improve your lightning launch commit criteria. To me, this sounded like you were identifying an R&D gap in this area. Would you care to comment?

[12:16 PM] Hazel Bain (Guest)
Matthias Steiner (Guest) SWPC proton forecasts are publicly available (3-day probabilistic forecasts and short term Warning and Alert Hazard products) available here https://www.swpc.noaa.gov and by subscription here: https://www.swpc.noaa.gov/content/subscription%2Dservices/. For more details on this product you can see this paper here https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2020SW002670.

As for the ICAO space weather products. The maps are not currently publicly available, that's something that's being discussed in partnership with the other global space weather forecast centers. ICAO receives text-based advisories which distill the gridded map into something that looks like this:

FNXX03 KWNP 200703
SWX ADVISORY
DTG: 20050120/0703Z
SWXC: SWPC
ADVISORY NR: 2005/2
SWX EFFECT: RADIATIONMOD
OBS SWX: 20/0703Z HNH MNH MSH HSH E180 - W180 ABV FL280
FCST SWX +6 HR: 20/1300Z NOT AVBL
FCST SWX +12 HR: 20/1900Z NOT AVBL
FCST SWX +18 HR: 20/0100Z NOT AVBL
FCST SWX +24 HR: 20/0700Z NOT AVBL
RMK: NOTE SEV RADIATION ADVISORY 2005/1 ALSO IN EFFECT FOR FL330 AND ABOVE
NXT ADVISORY: 20050120/1300Z=

[12:16 PM] Bass, Randy (FAA) (Guest)
Kristin, thanks for filling in at the last minute!

[12:17 PM] Matthias Steiner (Guest)
Thanks, Hazel, for the detailed feedback.

[12:17 PM] Matt Fronzak
Bass, Randy (FAA) - I'm thinking that Smith, Kristin A (KSC-SII10) would be a great addition to the AMS Aviation, Range and Aerospace committee. What do you think?

[12:18 PM] gordon brooks (Guest)
I second that!

[12:22 PM] Suffern Paul (Guest)
for those providing forecast information (SWPC), Kennedy space center, etc..... are the graphical forecast products archived? if so how long does the database go back for graphical products?

[12:23 PM] Hazel Bain (Guest)
Matt Fronzak there are 3-day probabilistic forecasts for M and X class solar flares and also for geomagnetic activity. see here for an example of the NOAA SWPC RSGA forecast
https://www.swpc.noaa.gov/products/report-and-forecast-solar-and-geophysical-activity

[12:24 PM] Matthias Steiner (Guest)
Question to all panelists: From your perspective, how will changing climate conditions affect low-orbit & space flight operations?

[12:32 PM] Hazel Bain (Guest)
The archive of SWPC forecasts are archived at NOAA NCEI here:
https://www.ngdc.noaa.gov/stp/spaceweather.html

[12:34 PM] Suffern Paul (Guest)
thank you Hazel Bain

[12:41 PM] Smith, Kristin A (KSC-SII10) (Guest)
Launch Forecast FAQ quick guide:
https://www.patrick.spaceforce.mil/Portals/14/Weather/45WS%20Launch%20Forecast%20FAQ%20final.pdf?ver=7zXbiEWbRc-gRMpWBGbzog%3d%3d

[12:50 PM] Dr. Brian Pettegrew
How much support do you get from the Marshall space flight group in Huntsville?

[12:56 PM] Matt Fronzak
Hazel Bain (and know that my tongue is firmly planted in my cheek) - is it necessary to have a lovely brogue to join SWPC? I ask this based on cajoling Bill Murtaugh to deliver a MITRE Tech Talk on Space Weather several years ago.

[12:56 PM] Bob Avjian
@kristin Does NASA still convene Advanced Range Technology working groups (in various disciplines). [I had been a member of one back in the mid 2000s]

[12:58 PM] Hazel Bain (Guest)
Hah, there's just a few of us.

[12:59 PM] Smith, Kristin A (KSC-SII10) (Guest)
Bob Avjian I'm not familiar with the Advanced Range Technology working groups, but I'll definitely ask around!

[12:59 PM] Bob Avjian
Thanks Kristin! just curious

[1:16 PM] Matt Fronzak
Just an FYI linking the discussion about what is the responsibility of the commercial space operators back to the FAA Weather Community of Interest (Wx COI), which we all heard about both previous FPAW days. The Wx COI Wind Forecast Special Weather Action Team (SWAT) received a couple of problem statements submitted by high altitude vehicle operators through one of the SWAT members. These problem statements identified a lack of wind forecast information at very low and very high altitudes (i.e., off-airport low altitude wind information and at or above FL600). This problem statement came to us just prior to the roll out of GFS V16,

with its significant increases in vertical resolution and scope. We pointed those operators to the new GFS and suggested that there are commercial met organizations and applications that could likely leverage the new GFS wind forecasts and produce the information they were seeking.

[1:34 PM] Flowe, Tammy (FAA) (Guest)
Very cool!

[1:39 PM] Bob Avjian
@Dan - is the CIMMS turbulence product available as gridded datasets (netcdf or grib2?)

[1:39 PM] gordon brooks (Guest)
Great stuff, Dan!

[1:39 PM] Suffern Paul (Guest)
Dan Lindsey (Guest) will the CONUS cross sections be available in "user" selectable format in the future?

[1:39 PM] Steve Arbogast (Guest)
Dan we use the Volcano Imagery. Very helpful to our crews..

[1:40 PM] Dan Lindsey (Guest)
@Bob: I don't know, but I'll find out and get back to you

[1:40 PM] Bass, Randy (FAA) (Guest)
Dan Lindsay - Has CIRA or CIMSS started out with a research project for one area and then said "Hey, this is applicable for aviation." If so, do you have any examples?

[1:41 PM] Matt Fronzak
For Dan Lindsey (Guest) - how much direction do you and/or your researchers get from FAA on areas of interest to aviation weather?

[1:41 PM] Dan Lindsey (Guest)
Suffern Paul: At the moment they only have user selected flight paths over Alaska, but doing that over CONUS is future work. It would help alot if you all can provide some written interest (via email is fine)

[1:42 PM] Suffern Paul (Guest)
Dan Lindsey (Guest) i've used the AK cross sections in 3 of my accident cases so far... great information

[1:42 PM] Dan Lindsey (Guest)
Randy: let me think about that

[1:42 PM] Dan Lindsey (Guest)
Matt: not as much direction as we'd like...we always welcome feedback from users!

[1:43 PM] Dan Lindsey (Guest)
Suffern Paul: Great. I'll pass that feedback on to the developers

[1:44 PM] Bass, Randy (FAA) (Guest)
We can give feedback and direction, but they really like it more when it comes with funding! We're working on that

[1:47 PM] Dan Lindsey (Guest)
Randy: this is true, but even some interest statements without funding can help convince folks to spend some NOAA funds on various R&D projects/products

[1:48 PM] Matt Fronzak
Bass, Randy (FAA) [103123-07] Enhanced Weather Products from Improved Satellite Observation Data (2023 - 2027)

[1:48 PM] Kowalewski, Debbie
Good stuff Heather!

[1:48 PM] Bass, Randy (FAA) (Guest)
Thanks Dan, I'm sure we can come up with some feedback.

[1:49 PM] Bass, Randy (FAA) (Guest)
Thanks Matt, I wrote that OI!

[1:49 PM] Matt Fronzak
Reeves, Heather D. great stuff as always. Your auto-SIGMET capabilities are getting better and better. Maybe ready for prime time?

[1:50 PM] Matt Fronzak
Bass, Randy (FAA) - I was pretty sure you did.

[1:51 PM] Reeves, Heather D. (Guest)
We still have some oversized C-SIGs that I'm working to address.

[1:51 PM] Matt Fronzak
Reeves, Heather D. (Guest) perfection is the enemy of good (enough) smile.

[1:53 PM] Matt Fronzak
McFarlane, Sally - does ARM share its observations in real time with NOAA NWS?

[1:53 PM] Bass, Randy (FAA) (Guest)
Heather - Not to put you on the spot, but could you talk a little about FACETs and Warn on Forecast initiatives in the NWS? Bonus points if you can talk about how those initiatives might translate into aviation support for tracking convection, etc.

[1:55 PM] Bass, Randy (FAA) (Guest)
Sally - Can the jet be used for other flight campaigns or is it reserved for DOE purposes only?

[1:59 PM] Matt Fronzak
For all panelists: I am struck with how relevant your "non-aviation" R&D is or could be to aviation. How do we foster the necessary collaboration (and funding) to really super-charge some of the aviation-related efforts (aside from having TEMs like this)? What role might ICAMS/IMCO play?

[2:02 PM] Matt Fronzak
Reeves, Heather D. (Guest) - or it's forecast shopping, where I want to find one that matches my notion of what's going to happen.

[2:02 PM] Matthias Steiner (Guest)
It seems to me that the renewable energy sector is developing capabilities (e.g., wind & cloud coverage predictions) that could benefit low-altitude flight operations.

[2:02 PM] dave mccarren Navy - N2N6E (Guest)
Every forecast is probabilistic - just if you tell people that or not - no such thing as a deterministic forecast

[2:02 PM] Bass, Randy (FAA) (Guest)
Thanks Heather, that's a much better explanation than I could have given.

[2:04 PM] Bass, Randy (FAA) (Guest)
For the audience, if you're in an agency or group that's not really aviation-related but doing something that may have aviation applications, feel free to speak up!

[2:05 PM] McFarlane, Sally (Guest)
ICAMS is the Interagency Council for Advancing Meteorological Services

[2:06 PM] Eick Donald
Right now there are 7 active volcanoes being depicted on the High Level Significant Weather Prog worldwide! Current topic with NESDIS

[2:11 PM] Bob Avjian
@Dan. So, there may be folks online that work for the FAA NextGen Weather Program who can speak to this in more detail and about ongoing coordination with NWS, but my understanding is that the Nextgen Wx PO coordinated with NWS for acquiring GOES-R, Himawari, etc. product needs and then defines those product needs in a Product Description Document (PDD). However, there some of us that see value and applicability of various NESDIS products to aviation that are not already in the plan to provide FAA. Just food for thought...

[2:15 PM] Dr. Brian Pettegrew
Dan Lindsey (Guest), CIRA is directly tied into the AWC and I know we've worked with them on finding paths for satellite technologies in the past

[2:16 PM] McFarlane, Sally (Guest)
Matt Fronzak The DOE Wind Energy Technologies Office does have several projects that might be relevant, including their wind forecast improvement project. https://www.energy.gov/eere/wind/wind-resource-assessment-and-characterization

[2:29 PM] Apoorva Bajaj (Guest)
@Heather What are the different federal agencies that are currently using the MRMS products?

[2:29 PM] Dan Lindsey (Guest)
Randy: thank you for the explanation on the FAA's role - that helps. I wasn't sure if there's any real-time "operational" component to FAA

[2:29 PM] Steve Darr (Guest)
ADS-B Wx anyone?

[2:30 PM] Bass, Randy (FAA) (Guest)
Dan - There are operational components, but the vast majority of weather support for the FAA comes from the NWS.

[2:30 PM] Matt Fronzak
Amen, brother Steve Darr!

[2:33 PM] McFarlane, Sally (Guest)
Here's a story on our collaboration with Mississippi State around the UAS activities:
https://arm.gov/news/facility/post/71085

[2:33 PM] Bob Avjian
Pertaining to Randy's earlier comment, I think we should challenge the assumption that the FAA has to ingest high bandwidth weather data such as satellite product…especially given the advanced in cloud services and the FAA's own plans for deploying cloud services.

[2:34 PM] Apoorva Bajaj (Guest)
Thanks Heather!

[2:34 PM] Steve Weygandt (Guest)
Steve Darr, yes definitely on ADS-B! More obs for DA. Heather, MRMS has been essential for HRRR, thanks for all the work on it!

[2:34 PM] Dan Lindsey (Guest)
I really would like to follow up with some smaller, more focused discussions about FAA (and others) needs. Please shoot me an email: Dan.Lindsey@noaa.gov to coordinate

[2:47 PM] John Pino (Guest)
Matt F…I need access granted to get to the MP4…thanks

[2:48 PM] Matt Fronzak
John Pino (Guest) - do you mean the session recording?

[2:49 PM] Matt Fronzak
If so, all the session recordings, cleaned up chat logs and presentations will be available on the FPAW website after the meeting has concluded at https://www.fpaw.aero.

[2:51 PM] John Pino (Guest)
Thanks

[2:57 PM] Matt Fronzak
Hey folks - my MS Teams just coughed up a hairball and shut down. I'm back on and all is well (right now). Nonetheless, if your ability to unmute or mute yourself, or turn your camera on/off becomes balky, don't be shocked if your session is getting ready to fold its tent.

[3:10 PM] Matt Fronzak
Lt Col Branham (HAF/A3OW) (Guest) for those of us like me who may not be familiar, can you decode DAF and S2S?

[3:11 PM] Lt Col Branham (HAF/A3OW) (Guest)
Matt, you bet. DAF (Department of the Air Force), S2S (Seasonal-Subseasonal forecasting) 2 weeks to 12 months forecasting.

[3:15 PM] Bob Avjian
John Pino (Guest) Hi John!

[3:17 PM] Steve Darr (Guest)
The NTSB recently recommended to the FAA that Part 121 operators be required to equip to and broadcast ADS-B Wx data in rule airspace.

[3:19 PM] Bob Avjian
Hi Steve - do you have a link to that recommendation you can share?

[3:22 PM] Steve Darr (Guest)
Download report at https://www.ntsb.gov/safety/safety-studies/Pages/DCA18SS003.aspx recommendations 28-30 relate to ADS-B Wx and 27 to the EDR parameter

[3:23 PM] Matthias Steiner (Guest)
to panelists: If you could have a new sensing capability, what would that be?

[3:27 PM] McClure, Andrew (FAA) (Guest)
@LCOL Branham: Is there any way the military can increase the number of PIREPs without compromising OPSEC?

[3:27 PM] Stephen Schwartz (Guest)
@ Eric Donald: Are the results from the NTSB study that was completed to understand the current impact of turbulence to airlines published in any form? Are the results from the NTSB study that was completed to understand the current impact of turbulence to airlines published in any form?

[3:27 PM] Flowe, Tammy (FAA) (Guest)
Agreed Don!

[3:28 PM] Lt Col Branham (HAF/A3OW) (Guest)
McClure, Andrew (FAA) Great question and it is largely dependent on the nature of the operation an processes to get the data discoverable to the user.

[3:28 PM] Ian Johnson (FAA) (Guest)
Great point Don!

[3:30 PM] Matt Fronzak
Echoing Mark Z.'s recent comments regarding aircraft as sensors, I feel compelled to, once again, point everyone to the following paper:
https://ams.confex.com/ams/2020Annual/webprogram/Manuscript/Paper369277/U-ABO_Final.pdf

[3:32 PM] Joe Bracken
https://www.ntsb.gov/safety/safety-studies/Documents/SS2101.pdf

[3:32 PM] Joe Bracken
NTSB Safety Research Report re turbulence

[3:34 PM] Bob Avjian
Lt Col Branham and Andy: Andy's question came up at last year's PIREP Summit and we did follow up with Maj Green and Travis at AFLCMC/HBAW. Just providing FYI.....

[3:36 PM] Lt Col Branham (HAF/A3OW) (Guest)
Thanks Bob, appreciate that SA.

[3:37 PM] Ian Johnson (FAA) (Guest)
Great point Mark! This is the WTIC approach. Thanks.

[3:39 PM] jim evans (Guest)
PHX has a TDWR/ITWS that would display MB shapes on the tower situation display and a warning for the pilot on the ribbon display updating once per minute. Was the TDWR in operation on Oct. 6?

[3:39 PM] Matt Fronzak
Tombstone or blood priority - well known in the world of aviation system safety.

[3:40 PM] Matthias Steiner (Guest)
to all panelist: Lots of things we talked about that need to get done. Do we have enough money to do those things or how can we improve leveraging and achieving more through collaboration? Any visionary suggestions?
[3:41 PM]

Steve Darr (Guest)
LTC Branham- I'd be happy to brief you on progress on standards for in situ data link of weather from A/C. ADS-B Wx extends ADS-B from position surveillance to weather surveillance and has ben published and is being harmonized at ICAO

[3:42 PM] Flowe, Tammy (FAA) (Guest)
That is an on-going issue Don.

[3:42 PM] Lt Col Branham (HAF/A3OW) (Guest)
Steve Darr (Guest) That would be great and I could pull in a few other folks from Air Force Weather

[3:43 PM] Steve Darr (Guest)
sdarr@dynamicaerospace.com

[3:43 PM] Lt Col Branham (HAF/A3OW) (Guest)
Steve Darr (Guest) I will message you, and I am robert.branham@us.af.mil

[3:44 PM] Steve Darr (Guest)
Thanks, I look forward to it!

[3:45 PM] Dr. Gabrielle Hedrick
You said that weather is involved in a lot of accidents, but how much is it responsible for the accidents vs. something else such as pilot error or defective material, if it is possible to say?

[3:52 PM] Dr. Gabrielle Hedrick
thank you!

[3:57 PM] George, Tom
FAA has a document about self weather briefings, but it isn't yet well known by the GA community.
Page 7 of this year's AOPA weather survey.
https://download.aopa.org/advocacy/2021/0914_weather_survey.pdf?_ga=2.64945068.2058260066.1633389942-128801807.1591428694

[4:00 PM] Bass, Randy (FAA) (Guest)
Thanks to all the panelists. Great discussions today!

[4:01 PM] Janet Ford
FAAST Wings Course - How to Conduct a VFR Pre-flight Self-briefing Using Automated Resources is already available. An IFR Wings course is under development and should be out in early 2022.