Turbulence Impact Mitigation Workshop IV

November 8-10, 2021

Day 1, November 8, 2021

[7:55 AM] Matt Fronzak
Good day, folks. I have the meeting open and everyone should be able to join without any action on my part.

[7:56 AM] Matt Fronzak
For those who wish to try out certain features ahead of time, either come up on audio and let me know what you'd like to try to do, or send me a message here in the Meeting Chat.

[9:12 AM] George Delanjian
Will this workshop be available to listen to after its completion? Only reason I ask is because I'm at work and may miss some of the presentations.

[9:13 AM] Matt Fronzak
Yes, we will record the entire presentation and make it available via a TBD location.

[9:18 AM] Bass, Randy (FAA) (Guest)
Matt S., are you able to translate those time savings due to better WAFS wind data into monetary and/or emissions savings for airlines?

[9:29 AM] Bob Avjian
Matt S., - do you think in the future that users can supply their own geo subsets.?...versus using the pre-set regions? Thinking about the grib filters that NWS provides... Thanks!

[9:45 AM] Flowe, Tammy (FAA) (Guest)
Dean - Can you elaborate on "free and unrestricted"?

[9:45 AM] Matthias Steiner (Guest)
@Dean - Can you elaborate more on aspects of proprietary value (access for a fee) vs public benefit of sharing data freely?

[9:46 AM] Matt Fronzak
Dean Lockett - you may have covered this in your presentation and I just missed it, but how does WMO plan to ensure that ground infrastructure sufficient to handle increasing numbers of aircraft-based observations is in place at an appropriate time?

[9:54 AM] Clark, Ivan O. (LARC-D319)
What is the impact on this international data exchange when the USGS periodically updates the shape of the geoid?

[10:02 AM] Dean Lockett (Guest)
Matt F - in fact, aircraft-based observations rely on aviation networks and communications and these

are known to be under stress in certain parts of the globe. I believe the expectation is that satellite and higher band width, less restricted communications will be critical.

[10:04 AM] Eckstein, Matthew D (Guest)
Debi - when you convert EDR to turbulence severity is the conversion fleet specific or fleet agnostic?

[10:10 AM] Klipfel, Stephanie (Guest)
With turbulence climatology...have you done any YOY comparisons over any regions...like the North Atlantic where there is good coverage?

[10:11 AM] Matthew Wandishin (Guest)
Debi, because of the noisiness of the data, turbulence climatology fields can look very different depending on the choice of grid resolution and smoothing methodology. Can you talk about the choices you made in this regard?

[10:12 AM] Dean Lockett (Guest)
Matthias - When data becomes a market-based commodity, it means that some can afford to have it and others not. This means ultimately that applications, products and services that rely upon them or are improved by them could be compromised in terms of quality. Possibly most in places where mitigation and disaster management is most required and impacts the most people.

[10:14 AM] Dean Lockett (Guest)
Tammy - under the policy, the definition becomes clearer and the intention really is that data that are deemed to be "Core" are essentially public.

[10:16 AM] Dobias, Donald L (FAA) (Guest)
This is very likely operator error on my part but...I am only able to view the bottom third of the displayed charts. Will I be able to review the full charts after these proceedings? Thanks

[10:17 AM] Matt Fronzak
Chat Room guidance - please include the name of the person your question (or reply) is for - otherwise it can become very difficult to link up the two, especially when many questions are asked.

[10:18 AM] Dobias, Donald L (FAA) (Guest)
Don Dobias asked about review of charts above...reachable also at donald.l.dobias@faa.gov

[10:19 AM] Dean Lockett (Guest)
Apologies Ivan, this is a bit beyond my expertise without research.

[10:20 AM] Matt Fronzak
Dobias, Donald L (FAA) (Guest) - your situation appears to be limited to you. I would suggest leaving the meeting and rejoining (rebooting), since this is a MS product smile.

[10:21 AM] Matt Fronzak
And, to be clear, I'm not necessarily suggesting you reboot your computer, just this meeting. However, if that doesn't work, you may want to reboot your computer, too.

[10:21 AM] Matthew E Pollack
Just FYI, Dobias, Donald L (FAA), I had to quit Teams and restart it to get that problem to go away.

[10:22 AM] Matthew E Pollack
Just leaving and rejoining didn't solve it for me

[10:26 AM] Jason Prince (IBM) (Guest)
Donald, I had to switch to using Teams via browser vs the client to see the last presentation, see if that works.

[10:27 AM] Dobias, Donald L (FAA) (Guest)
Thanks Jason....

[10:30 AM] Clark, Ivan O. (LARC-D319)
Dean, thanks for the reply. I understand. Until I attended one of the USGS conferences on their transition from photogrammetry to airborne lidars, I had no awareness that they periodically (about every 10 yr or so IIRC) update the data for the shape of the Earth. They actually update the distance from the center of the Earth to a point on the surface. In most cases, those changes are relatively small although I remember hearing that they have recently been larger around Yellowstone Park. When the geoid data changes, the difference between AGL and MSL altitude change for a plane in flight. At course resolutions, these changes are usually negligible for met data for aircraft in flight. The challenge becomes consistency in labeling data points for high resolution data.

[10:51 AM] Kowalewski, Debbie
On the ATC tool, Did ATC use the turb data to increase spacing between aircraft? or make any other changes?

[10:52 AM] John Williams (Guest)
Did you look at how many members of the ensemble were needed to give good results? How many ensemble members would be ideal?

[10:53 AM] Kowalewski, Debbie
was this shared with users? (airlines) so, they could plan around the turb?

[10:54 AM] Kowalewski, Debbie
ok – thanks

[11:12 AM] John Williams (Guest)
What is the role of the private sector in modernizing aviation? Could industry-FAA partnerships help accelerate transition of research to operations?

[11:13 AM] Matthias Steiner (Guest)
@Steve - What are the hurdles for getting a "best equipped, best served" approach implemented? It could greatly accelerate modernization.

[11:14 AM] Tony Wimmers (Guest)
When you mention the need for modern pireps, are you thinking specifically of EDR obs? How much do you think EDRs could meet this need?

[11:14 AM] Shelton-Mur, Karen (FAA) (Guest)
I understand that U.S. airlines are hesitant to share turbc data, how do we get around this impasse?

[11:15 AM] tminer (Guest)
ANSWER: I don't want to publicize that I just flew through moderate turb or greater and keep it in the public domain.... Just Saying..

[11:21 AM] Clark, Ivan O. (LARC-D319)
As UAS and AAM (air taxis) enter the NAS, is there thought of being proactive and defining airworthiness standards and thresholds for how much turbulence a vehicle can safely operate in?

[11:22 AM] Eden, Mark, FFTMEC ASAP Chairman & ERC (Guest)
We should easily be able to de identify information visible in the public domain.

[11:28 AM] Matt Fronzak
The FAA's ASIAS capability is a very real example of how this type of information could be ingested, protected, disseminated and archived. All we need is consensus that a similar effort is needed for turbulence and head nods of the right people.

[11:29 AM] Eckstein, Matthew D (Guest)
Was the rate of pilot reporting constant across that time, (% of PIREPs per flight or per flight hour)?

[11:34 AM] Matt Fronzak
Paul Williams - re the Flight cruising level wind shear anomalies slide, what depth of column did the 10m/s/100mb apply to? FL300-FL400?

[11:35 AM] Eick Donald
What about increase resolution and measurement of upper level winds during the period, versus any major changes due to climate change?

[11:39 AM] Flowe, Tammy (FAA) (Guest)
Fascinating!!

[11:39 AM] Ulrich.Schumann (Gast) (Guest)
Hi Paul, as you know, CAT depends on shear and vertical heat fluxes. How do you know that shear is the dominant effect? Best, Ulrich

[11:43 AM] Judith Reif (Guest)
Hi Paul, Any data for flight levels above 40K? Corporate/Private AC flight 40K and above!

[11:43 AM] Polderman, Nathan
Paul Williams - very interesting research on the El Nino/La Nina shear relationship! I seem to recall

the 1998 El Nino was accompanied by a lot more organized severe convective weather along a very active subtropical jet across the south/southeast US (there were a number of tornado outbreaks across Florida). Your findings appear to validate the stronger subtropical jet shear...curious if you've looked at convective weather proxies in El Nino years? Certainly an increase in CAT in those areas, but certainly seems like an increase in CIT could also result

[11:44 AM] Nicolás Rivaben (Invitado) (Guest)
Paul, thanks for your presentation.
I have two questions:
- In your analysis: Do you consider windshear by thermal wind (turbulence by frontogenesis) as a main source?
- What do you think about non-frontogenesis turbulence, such us generated by strong anticyclonic flows (Knoxx, 1997) and climate change?

[11:44 AM] paola imazio (Invitado) (Guest)
Hi Paul, how was CAT diagnosed before the set of measurements, satelite, radiosonde, etc. Sorry that I miss it, but I am not quite sure of the sources for CAT charaterzation form one of the last slides.

[11:44 AM] tminer (Guest)
Airlines are "look-see" so we will go and see what the situation is and act accordingly... same for visibility etc.

[11:45 AM] Matt Fronzak
Paul Williams - re your Q of the audience. IMO, no, providing highly accurate ENSO information will not change what flights do on either a daily or seasonal basis.

[11:45 AM] Klipfel, Stephanie (Guest)
From DAL - usually we try to avoid turbulence so if deviating away from the turbulence causes more flights to use more fuel, then knowing this months in advance could be useful for longer term fuel strategy

[11:45 AM] Mark Phaneuf - ALPA (Guest)
Great talk, Paul!! To answer your question: So from an airline perspective, yes, very useful. However from the pilot perspective, we're provided information through our flight dispatch. I'm sure the dispatch/met group within AOC would find it very useful.

[11:46 AM] Klipfel, Stephanie (Guest)
also from DAL - if long term winds are also accurate they could be used for better estimates of flight times as well..

[11:46 AM] Kory Gempler (Guest)
Seasonal forecasts are beneficial to airlines for planning, to an extent. FDX

[11:48 AM] Polderman, Nathan
However, seasonal climate indices could be an important part of an overall risk-based predictive model which can then be fed back into a general flight planning system schema for TBO

[11:49 AM] Kowalewski, Debbie
30% increase in Mod or greater turb over next 2-3 months information , if shared with ATC & airline SOC/NOC's They MAY/ Could plan for increased workload on controllers and dispatchers. And perhaps look at adjusting planned enroute flight times as well. (reroutes for turb could cause increase in flight times)

[12:25 PM] Eckstein, Matthew D (Guest)
Julia - what is required for you to ingest other sources of in-situ turbulence observations in the Nowcast?

[12:32 PM] Eckstein, Matthew D (Guest)
Julia, one more. GTG-N is a 3D product but I understand lightning to be 2D. How do you merge the 2D product in?

[12:33 PM] Tony Wimmers (Guest)
Which source of lightning data is used?

[12:33 PM] Axel.Barleben@dwd.de (Gast) (Guest)
@Julia:How do you interpolate lightning data (2d) to 3d GTG forecast?

[12:33 PM] tminer (Guest)
Given that there are many Flight Attendants suffering injuries in the altitudes between 10k to 20k, is there any plan to add that range? Starting at 18k is a significant safety issue for us in the airline world...

[12:34 PM] Steve Abelman
Julia, Have you considered blocking out the turbulence forecasts that completely overlay a solid line of weather. The forecasts can get quite cluttered in these situations where pilots/dispatch avoid anyway

[12:35 PM] Eckstein, Matthew D (Guest)
What if it is NOT EDR

[12:37 PM] Judith Reif (Guest)
I agree with Tim Miner...too many FA's are getting hurt! Same could apply for the FA's in the corporate/private sector.

[12:38 PM] Matthias Steiner (Guest)
@ Matt Eckstein - In principal, one can accept other sources of turbulence information for as long as one can relate them to an EDR level since GTGN is expressed in EDR values. One example is including a PIREP.

[12:39 PM] Bob Avjian
So, GTG 1.0 gridded datasets are only available via LDM feed, yes?
Would GTG-N gridded datasets be available for research purposes (not operational use)?

[12:40 PM] Rick Curtis (Guest)
Any estimate on when GTGN will transition to fully operational? Also, any estimate on GTGN2 release?

[12:40 PM] Bob Avjian
ok...thx!

[12:42 PM] Dr. Brian Pettegrew
Rick Curtis (Guest), originally I believe it was working towards a transition consistent with the NWS RRFS model release.

[12:48 PM] Smith, Brandon (FAA) (Guest)
you knew that was coming :-)

[12:51 PM] Dobias, Donald L (FAA) (Guest)
Can somebody summarize what is meant by "operationalize"? Have the operational requirements on the part of users been well defined?

[12:52 PM] Dr. Brian Pettegrew
For the NWS, operationalize means 24x7 supported and maintained

[12:53 PM] Dobias, Donald L (FAA) (Guest)
Thanks

[12:53 PM] Matthias Steiner (Guest)
If you would like to get access to GTGN, please reach out to Wiebke Deierling (deierlin@ucar.edu) or Bob Sharman (sharman@ucar.edu) at NCAR.

[12:54 PM] Matt Strahan (Guest)
I appreciate Tammy's frustration with the NWS, but do you want to have yet another set of forecasts thrown into the mix?

[12:54 PM] Clark, Ivan O. (LARC-D319)
What does "all the way to the surface" mean for urban areas?

[12:59 PM] Clark, Ivan O. (LARC-D319)
Thanks everyone. Unfortunately, I have a 1pm that I have to go to. "See" you tomorrow.

[1:02 PM] Olivier Jaron (MF) (Invité) (Guest)
Thank you all, have a nice day/night!

[1:02 PM] Jung-Hoon Kim (Seoul National Univ., South Korea) (Guest)
Thank you, Tammy and all!

[1:02 PM] "Sintija Moldengauere (Guest)"
See you tomorrow, bye

[1:02 PM] Mark Prosser (Guest)
Thanks!

[1:02 PM] Nicolás Rivaben (Invitado) (Guest)
See you tomorrow!