



## Fall 2019 Meeting Summary

The Fall 2019 Meeting of the Friends and Partners in Aviation Weather (FPAW) took place on Wednesday and Thursday, October 23/24, 2019 at the Las Vegas Convention Center, in conjunction with the National Business Aviation Association (NBAA) Business Aviation Convention and Exhibition (BACE).

### **Wednesday Morning, October 23, 2019**

Prior to the start of the full meeting, the morning of the first day was spent planning the FPAW Spring 2020 Meeting. A significant number of folks came in early and actively participated in the discussion; we had no trouble identifying excellent topic areas and session leads. A preview of the next FPAW meeting, which will take place on Wednesday and Thursday, April 15/16, 2020 at the National Transportation Safety Board (NTSB) Conference Center in Washington, D.C., will be sent out separately.

### **Wednesday Afternoon, October 23, 2019**

Steve Brown/Chief Operating Officer, NBAA welcomed everyone to the full meeting, which then opened with a half-day session led by Steve Darr/Dynamic Aerospace and Gary Pokodner/Federal Aviation Administration (FAA). It utilized three separate panels focused on the flow of weather information from the flight deck, ranging from automated sensor-based observations to Electronic Flight Bag (EFB)-augmented observations and Pilot Reports (PIREPS). The first panel featured an update on development efforts to automate the collection of aircraft-based observations via Automatic Dependent Surveillance – Broadcast (ADS-B) and a presentation on the criticality and benefits of aircraft-based observations to aviation weather forecasting was presented. Finally, the topic of operator contributions to ADS-B Weather produced lively discussion among the presenters, panelists, and the audience.

During the second panel, Bruce Landsberg, Vice Chairperson of the NTSB, made an appeal for improvements in the collection and distribution of PIREPs, a safety priority of both the NTSB and the FAA. Landsberg promoted the progressive implementation of semi-automated PIREPs, which downlink pilot-based observations electronically, potentially improving their collection and distribution. Also discussed were near and far-term plans for improvements to the weather observation system in Alaska, including the use of novel technologies to fill large information gaps, and upcoming changes to FAA weather policies and the FAA Weather Handbook, both of which are being revised.

The final panel of the afternoon provided an opportunity for a discussion between panelists from FAA, the Aircraft Owners and Pilots Association (AOPA), the Air Line Pilots Association (ALPA) and the audience on multiple PIREPs topics. The panel was designed to elicit themes for a future PIREP summit being contemplated by the FAA.

### **Thursday Morning, October 24, 2019**

Prior to the start of the second FPAW session, the new FPAW website (<https://fpaw.aero>), managed by Matthias Steiner/National Center for Atmospheric Research (NCAR), was announced, and plans to transition to it as the primary means of FPAW communications, including for meeting summaries like this, were discussed. The group was also briefed on three new FPAW social media channels:

Facebook (<https://www.facebook.com/groups/FPAWWX>), administered by John Kosak/NBAA, LinkedIn (<https://www.linkedin.com/groups/8722043>), managed by Matt Fronzak/MITRE and Twitter ([https://twitter.com/FPAW\\_AviationWX](https://twitter.com/FPAW_AviationWX)), overseen by Joel Siegel/Booz Allen Hamilton (BAH).

The second session followed immediately after. Led by Kosak, it was titled “Convective Weather Information: What’s Available and How Users See and Interpret It.” The opening portion of the session began with a briefing on the FAA’s Weather Information Mitigation and Transition (WIMAT) effort, including its work to consolidate duplicate convective observation and forecast products. WIMAT presenters also talked about some of the challenges specific to the effort, such as the AIRMET vs G-AIRMET discussion, how products are displayed (snapshot vs. time smear), and how we train the end users (Part 91 vs. 135 vs. 121). The current state of improved convective analyses and forecasts, like the HRRRv4, was then discussed.

The final portion of the session was primarily focused on how different users throughout the system see convection, from the GA pilot on the flight deck to the dispatcher at the home office to the full range of ATC users. A presentation on the differences between what pilots were seeing and how it depended on their weather vendor was followed by talk about what different (e.g., tower, TRACON and en route) controllers might see and the challenges each view might present when talking to the pilots. After both presentations were complete, we managed to have some stimulating conversations about both topics.

#### **Thursday Afternoon, October 24, 2019**

The final session of the FPAW Fall 2019 program revolved around the anticipated future weather needs and impacts on Unmanned Aircraft System (UAS) and Urban Air Mobility (UAM) flight operations. Three panels were organized: Requirements and Challenges, led by Rex Alexander/Vertical Flight Society, Weather Forecasts/Climate, led by Siegel, and Weather and Automation, moderated by Steiner.

The first panel informed the audience about the challenges facing UAM operations near ground level. Flying in between large skyscrapers automatically includes high risk; layering that risk with challenges from building codes and other regulatory challenges creates an absolute labyrinth for UAM operational deployment.

The second panel noted that current airport-based surface weather observations may be insufficient for the weather planning of urban air operations. Weather challenges near thunderstorms, complex terrain and urban environments, and the increasing sensitivity to weather impacts with decreasing size of aerial vehicle also affect UAS/UAM safety, efficiency and reliability. A lively discussion then took place about how to solve these issues. Not only are hyperlocal observations largely non-existent today, the same can be said for hyperlocal forecasts. Methods used by current drone operators to request weather support were described, in addition to the challenges they face each day due to weather.

Lastly, advances in software and algorithms were discussed in the third panel. Artificial Intelligence (AI) and machine learning (ML) are two advancing technologies that are allowing our vehicles to operate without direct human interaction. It was noted that automation requires guidance from sensors and that weather can negatively affect sensor reading thus potentially misleading the automation. The topic of regulations that need to be examined was nicely and sensitively covered.