AAM Ecosystem Community Integration Working Group: Weather Data Standards

National Aeronautics and Space Administration

Agenda

October 1st, 2020

3:30pm - 5:00pm ET

Topic	Speaker	Time (ET)	Description
Introduction	• Nancy Mendonca, NASA • Colleen Reiche, Quantitative Scientific Solutions (QS-2)	3:30PM - 3:45PM	• Welcome attendees, review the agenda, provide an overview of weather data standards, and introduce the panelists
Panelist Discussion	• Robbie Hood, Earth Science Consultant • Ralph Stoffler, Raytheon • Donald Berchoff, TruWeather Solutions • Stephanie Avey, NOAA	3:45PM - 4:50PM	• Discussion with Panelists and Participants (through the MS Teams microphone, chat, and "Raise your hand" features) regarding weather data standards
Closing	• Nancy Mendonca	4:50PM – 5:00PM	• Offer a high-level recap of the feedback session and share the Community Integration Working Group next steps

Platform and Discussion

- Platform: MS Teams
- Discussion: MS Teams microphone, chat, and "Raise your hand" features
  - Leave your cameras/webcams off to preserve WiFi bandwidth
  - Use your mute/unmute button (i.e. remain on mute unless you have been called on by the moderator to speak)
  - Click the "Raise your hand" button to notify the moderator that you would like to verbally comment/ask a question
  - Enter comments/questions in the chat function on the right side of the screen
  - Say your name and affiliation before you begin speaking
  - Speak loudly and clearly
  - Be professional in all verbal and written comments/questions

Meet Colleen Reiche

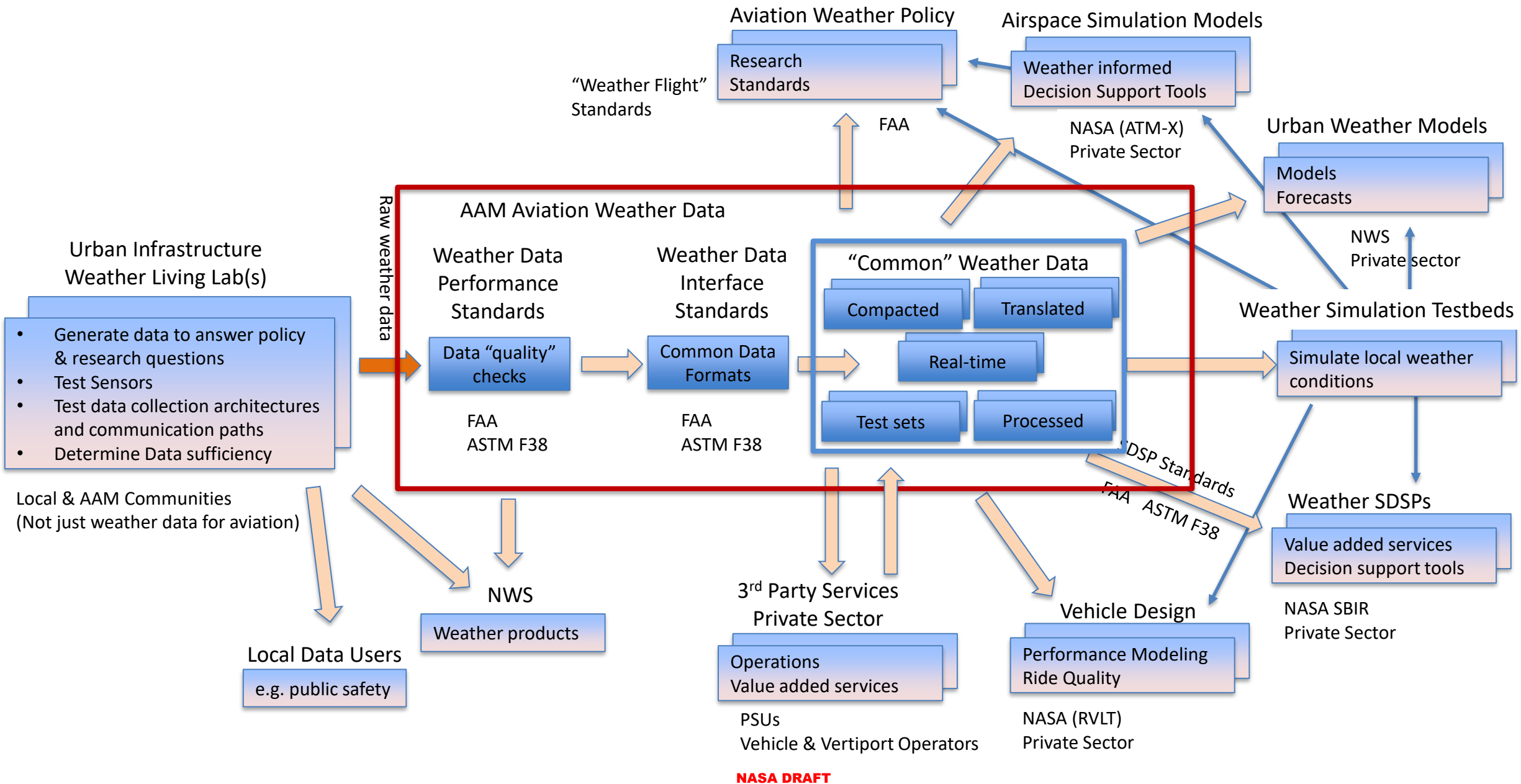
Colleen Reiche

Lead Scientist of Aviation & Weather

Quantitative Scientific Solutions

(QS-2)

Aviation Urban Weather Test Data Ecosystem



Panelist Introductions

ASTM F38 WK73142: SPECIFICATION FOR WEATHER SUPPLEMENTAL DATA SERVICE PROVIDER (SDSP) PERFORMANCE

What is ASTM?

International standards organization that develops and publishes voluntary consensus technical standards

What is F38?

Addresses issues related to design, performance, quality acceptance tests, and safety monitoring for unmanned air vehicle systems.

What is WK73142?

Group under F38.02 (Flight Operations) and charged with developing the new Weather SDSP Specification

Approach

Address gaps in current aviation weather standards using inputs from ANSI USSAC Roadmap, FAA UAS Traffic Management (UTM) CONOPS V2, lessons from field tests and demonstration, capabilities of IT systems and S&T etc.

Deliverable

Define minimum performance-based standards for Weather SDSP data and services to UAS Service Suppliers/Providers (USS/USP) and Operators for FAA consideration

THREE WORKING GROUPS ON ASTM F38 WK73142

JOIN! DON.BERCHOFF@TRUWEATHERSOLUTIONS.COM

Weather SDSP Performance Standards

Provisioning of weather data and services standards

- What weather data
- Latency, reliability and integrity standards (all three groups)
- System health, monitoring and quality control standards
- Human value-add procedures and training
- How to “certify” and “enforce” standards (EWINs-NEXT)

Weather Data Performance Standards

Focus on weather data sensing and prediction performance standards

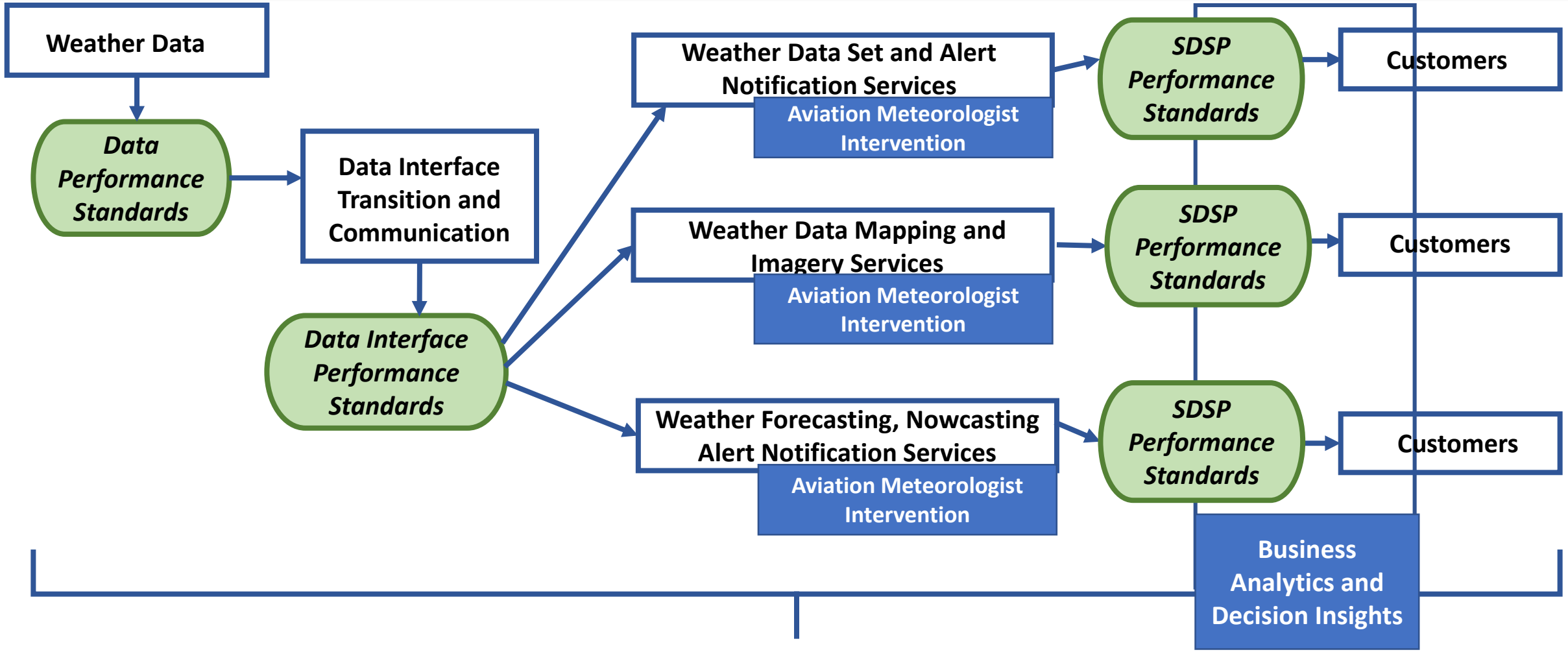
- Certifying instruments versus certifying data
- Risk-based
- Predictions – some considerations: quality of inputs, methods and resolution

Weather Data Interface Standards

Interface standards that specify output performance and required data format

- Options for weather data to UAS SSs or directly to operators
- Architecture to support one SDSP to many users or one SDSP to one user
- Provision for cyber-security measures

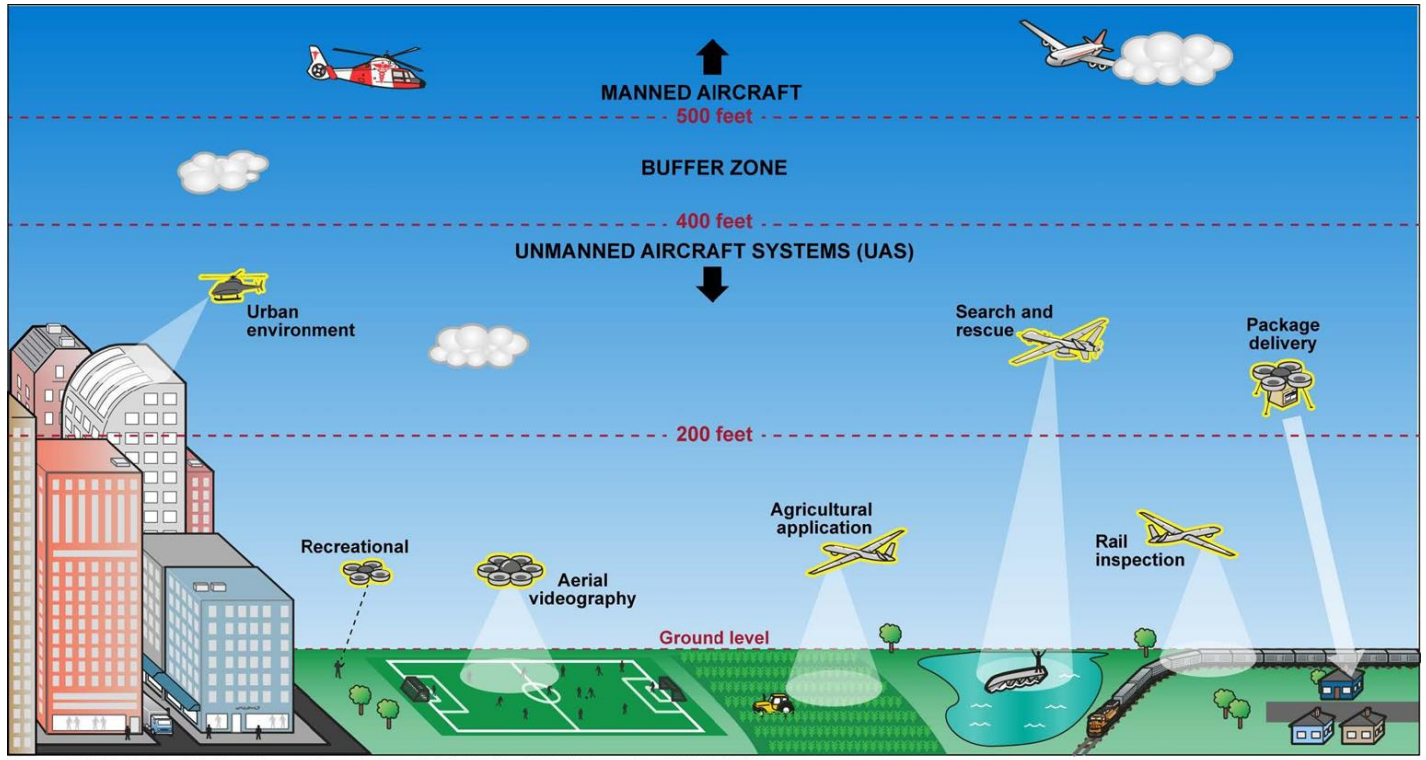
WEATHER SDSP "NOTIONAL" FRAMEWORK



Complete System for UAS Weather Supplemental Data Service Provider (SDSP)

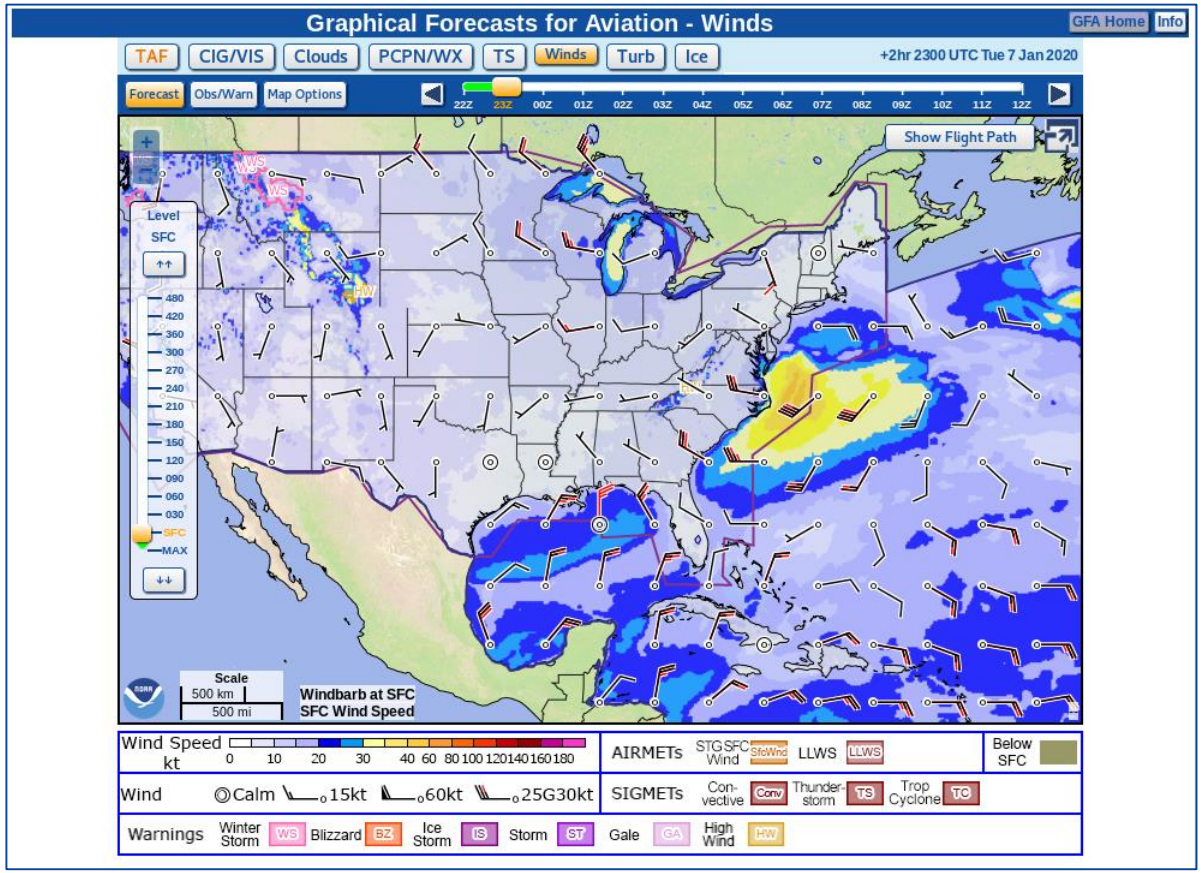
Weather Needs Below 500ft

- Aviation Weather Center (AWC) currently supports FAA regulated manned aircraft
- Services do not currently meet the needs of the UAS/UAM community
  - High resolution winds
  - More observations
- Looking for opportunities where we *can* provide useful information in already established framework!



Source: GAO illustration of National Aeronautics and Space Administration (NASA) information. I GAO-18-110

Starting to Bridge the Gap



www.aviationweather.gov/gfa

- The Graphical Forecasts for Aviation (GFA) is geared toward general aviation users
- Integrate HEMS into the GFA
  - GFA-Low Altitude (GFA-LA)
  - Low altitude needs, with the look/feel/capabilities of the GFA
- Higher resolution winds below 1000ft
- Additional forecast information
  - Clouds (with layer info)
  - Precip and weather from NDFD
  - Turbulence, LLWS

Panelist Discussion

Future Community Integration WG Meetings

The Community Integration Working Group will hold their meeting on the *first Thursday of every month from 3:30PM -5:00PM EDT (12:30PM -2:00PM PDT)*.

- Nov 5, 2020: Topic 3: Weather Sensing, Forecasting, and Decision Support
- Dec 3, 2020: Topic 4: Weather SDSPs
- Jan 7, 2021: Topic 5: Weather Policy and Regulations
- Feb 4, 2021: Topic 6: Vertiport Series Kickoff

– *POCs: Nancy Mendonca: nancy.mendonca@nasa.gov &*

Anna Cavolowsky: anna.e.cavolowsky@nasa.gov

Future AAM Ecosystem WG Meetings

- **Airspace Working Group: Operations Inside Corridors**
  - **DATE**: Tuesday October 6, 2020
  - **TIME**: 1:30PM – 3:00PM ET (10:30AM – 12:00PM PT)
- **Crosscutting Working Group: Autonomy Panel**
  - **DATE**: Wednesday October 7, 2020
  - **TIME**: 11:00AM – 1:00PM ET (8:00AM – 10:00AM PT)
- **Crosscutting Working Group: MBSE Approach**
  - **DATE**: Tuesday October 20, 2020
  - **TIME**: 11:00AM – 1:00PM ET (8:00AM – 10:00AM PT)
- **Aircraft Working Group: TBD**
  - **DATE:** Thursday October 29, 2020
  - **TIME:** 3:30PM -5:00PM ET (12:30PM -2:00PM PT)
- **Airspace Working Group: Demand Balancing Capacity**
  - **DATE**: Tuesday November 3, 2020
  - **TIME**: 1:30PM – 3:00PM ET (10:30AM – 12:00PM PT)
- **Crosscutting Working Group: National Campaign (NC) Partnership Strategy**
  - **DATE:** Tuesday November 17, 2020
  - **TIME:** 11:00AM – 1:00PM ET (8:00AM – 10:00AM PT)

NASA SBIR/STTR Program Virtual Conference

REGISTER HERE: https://sbir.nasa.gov/#slideshow-0

NASA SBIR/STTR Program 2021 Phase 1 Solicitation

LEARN MORE HERE: https://sbir.nasa.gov/#slideshow-0

Panelist Biographies

Nancy Mendonca, is currently the NASA ARMD portfolio manager overseeing the formulation of new projects within ARMD and a member of the ARMD headquarters office responsible for strategic analysis and resource management. She served 24 years in the Navy flying H-46 helicopters. Between the Navy and NASA she worked at the Missile Defense Agency, on the Marine Corps MRAP Program and at NTIA working on the Federal Strategic Spectrum Plan. She graduated from the U.S. Naval Academy with a B.S. in Aeronautical Engineering and subsequently eared M.S. degrees in Aeronautical Engineering and National Security and Strategic Studies. She is also a Certified Public Accountant and has currently prioritized rescuing Great Danes and riding horses over flying helicopters.

Colleen Reiche is the Lead Scientist of Aviation & Weather at Quantitative Scientific Solutions (QS-2). She has a demonstrated history of working in the aviation, weather, and aerospace industry, including an expertise in AAM, UAS, and Air Traffic operations. Colleen graduation with a Ph.D. focused in Atmospheric Science from Purdue University.

Ms. Robbie Hood is an atmospheric scientist with over 30 years of experience as a remote sensing scientist and project manager. She was the Director of the NOAA Unmanned Aircraft Systems Program for nine years before retiring in 2017. She has also served as an instrument, mission, and project scientist of aircraft field experiments during a 21-year career at NASA. Her research interests have included investigations of precipitation, thunderstorm, and hurricane properties using manned and remotely piloted aircraft. She has a Bachelor of Science degree in atmospheric science from the University of Missouri and Master of Science degree in physical meteorology from Florida State University. Her husband, Michael Goodman, is also an atmospheric scientist. Ms. Hood, her two daughters, and her son are all citizens of the Cherokee Nation of Oklahoma.

Mr. Stoffler is an operational Meteorologist with over 40 years of experience. He successfully served 30 years in the United States Air Force supporting helicopters, RPAs, UAVs, bombers, fighters, cargo and surveillance aircraft.

Mr. Stoffler worked an additional 10 years as a civilian in the DoD joining the Senior Executive Service. He served as the Director of Weather for the Air Force overseeing 4000 personnel, 2.2 Billion dollars in budget, a training school house and a number of acquisition programs.

Mr. Stoffler is currently employed by Raytheon Technologies as a Senior Solutions Architect with a focus on the weather mission.

He has a BS in Meteorology from the University of Oklahoma and an MS is Systems Management from USC. Mr. Stoffler is married to the former Waltraud Frank and has two sons, Michael and Christopher.

Don Berchoff is the CEO of TruWeather Solutions, which synthesizes complex weather data sets into simple decision insight for the Unmanned Autonomous System (UAS), ground transportation and logistics industries. Don is an Air Force veteran with 35 years-experience in weather, aviation and logistics systems during which he designed and led regional and global aviation weather operations centers, has over 300 hours as an airborne Meteorologist, contributed to development of the NEXGEN Weather CONOPS in 2005, and led all logistics and ground operations at Manas Air Base, Kyrgyzstan in 2007-2008. A distinguished meteorologist and technologist, he led the National Weather Service Directorate for Science and Technology from 2008-2012, overseeing the fielding of the Nation's WSR-88D duel polarization upgrade; initial planning and programming of the Integrated Dissemination Program and GOES-R NWS system preparation, AWIPS II development, the Multi-Sensor Multi-Radar product transition to operations and the concept design for the NOAA Virtual Lab.

Stephanie Avey is a Techniques Development Meteorologist with the National Weather Service (NWS) working at the Aviation Weather Center (AWC) in Kansas City, Missouri. She currently works under the Aviation Support Branch focusing on research to operations through the Aviation Weather Testbed (AWT). She joined AWC in 2017 and is involved with several AWT projects with a focus on ceiling and visibility. She also serves as the project lead for enhancements to the Helicopter Emergency Medical Services (HEMS) Tool.