

**INTERDEPARTMENTAL COMMITTEE FOR METEOROLOGICAL
SERVICES AND SUPPORTING RESEARCH (ICMSSR)**

2019-3 MEETING

August 8, 1:00 p.m. EDT

SSMC 2, Room 7224
1325 East West Highway; Silver Spring, MD 20910

<i>Members</i>	(T) via telecon	Agency
<i>William Bauman (Chair)</i>		DOT/FAA
<i>Michael Bonadonna (Vice Chair)</i>		OFCM
<i>Louis Uccellini</i>		DOC/NOAA/NWS
<i>Kandis Boyd for Craig McLean</i>		DOC/OAR
<i>Ralph Stoffler</i>		DOD/USAF/A3W
<i>Bill Spendley(T)</i>		DOD/USA
<i>CDR Jillene Bushnell for Chris Ekstrom</i>		DOD/USN
<i>LtCol James Reusse (T)</i>		DOD/USMC
<i>Rickey Petty (T)</i>		DOE
<i>Jonathan Berkson (T)</i>		DHS-USCG
<i>Angel McCoy (T)</i>		DOI/BOEM
<i>John Vimont (T)</i>		DOI/NPS
<i>Don Eick (T)</i>		NTSB
<i>Jack Kaye</i>		NASA HQ/ESD
<i>David Chorney (T) (Executive Secretary)</i>		OFCM
Invited Participants		Agency
James Sims, Sim James, Ken Barnett,		OFCM
Floyd Hauth (T)		OFCM STC
Phil Jasper (T), Brent Gordon (T), Andy Stern, Clinton Wallace (T)		NOAA/NWS
Ajay Mehta, Dan St Jean		NOAA/NESDIS
David Johnson		FHWA
John Egentowich, Paul Fontaine (T)		DOT/FAA
Jeffrey Best, Kathryn Hermsdorfer		DOD/NAVY
Michael Marsicek, LtCol Rob Branham		DOD/USAF

Approved: 8/20/19

1. OPENING REMARKS.

Dr. William Bauman (FAA), ICMSSR Chair, and ICMSSR Vice-Chair, Mr. Michael Bonadonna (OFCM) provided opening remarks. Roll call was conducted for participants on site and those using teleconference media. Members approved the agenda and the Record of Action from the last ICMSSR meeting.

2. ACTION ITEMS.

The Executive Secretary, David Chorney, gave an update on the currently open Action items.

- Action Item 2019-1.3 commercial satellite weather data programs are being presented today.
- Action Item 2019-1.4 is closed.
- Action Item 2019-2.1 Space Weather Center information will be presented by the FAA today.
- Action Item 2019-2.2 is being coordinated by OFCM with NOAA POCs.
- Action Item 2019-2.4 is being addressed at an EPIC meeting in Boulder, CO this week.

3. FEDERAL COORDINATOR'S UPDATE.

The Federal Coordinator for Meteorology and the OFCM Staff provided a summary of several key OFCM/Federal Weather Enterprise (FWE) coordination activities and plans.

- The FWE coordination infrastructure has twenty groups which is the smallest number of groups in 25+ years.
- Status of implementing the Weather Act of 2017: DOC/NOAA and OSTP General Counsel review will be concluding in August. The decision on the Federal Coordinator being the ICAWS Co-chair is being negotiated. OFCM will provide a signature copy to NOAA and OSTP and OFCM will plan for an ICAWS Charter signing at the next FCMSSR meeting (not later than October 2019).
- Recap of the Atmospheric Transport and Dispersion (ATD) working Group: The WG ATD will coordinate with the operators and researchers to write a new plan using the IMAAC SOP as the base for a new plan. Members noted past issues related to U.S. based models/data for applications in other parts of the globe including local geography and other local perspectives. They also stressed the importance of including all appropriate agencies in developing the plan.
- 2019 SWEF Status: The Forum was well attended and successfully engaged the Space Weather community and public. The next forum will be a half day meeting in November 2020 and aligned with the JHU/APL SEASONS Conference.
- A Federal Weather Enterprise Coordination Session is scheduled for the upcoming AMS Conference in Boston, MA in January 2020. Presentations will include the Committee for Operational Processing Centers, Space Weather Coordination in the Federal Government, Winter Season Working Group, and the Committee for Climate Services.
- Interagency Arctic Region Environmental Services: OFCM will continue to engage in Arctic region environmental service coordination and report back to the ICMSSR regularly.
- Proposed JAG for the Climate Services and Information Database development: The

Climate Services and Information Database will provide a central location for access to sub seasonal to decadal (S2D) products and services that are available from multiple agencies based on categorical needs and security levels to aid in Impact-based Decision Support Services (IDSS). Members approved formation of the JAG. **See Action Item 2019-3.1.** Initial meeting is scheduled for August 12, 2019.

- Interagency Wildland Fire Weather Initiative: OFCM proposed to arrange and conduct an exploratory meeting with National Wildland Fire Weather program stakeholders, setting up a multi-agency meeting in September. Members noted that cross line office meetings related to this topic are being held within NOAA in the near term. NOAA/NWS agreed to support the broader initiative after NOAA completes their internal reviews on this topic. **See Action Item 2019-3.2.**
- FMH 1 Surface Weather Observations and Reports update: OFCM sent the FAA approved revision to ICMSSR members on July 29 for final review before publication. Members approved the revision for publication. **See Action Item 2019-3.3.**
- FCM S4 1994 Federal Standard for Siting Meteorological Sensors at Airports update: Final version will be sent to ICMSSR for final review in August. **See Action Item 2019-3.4.**
- Status of the OPM 1340 Meteorologist Qualification Standard: The NOAA Administrator is tracking the status of action and will contact OPM if needed. OFCM will continue to report progress to ICMSSR.

Mr. Bonadonna closed by highlighting the OFCM staff members who were recognized for their excellence over the past year.

4. ICAO SPACE WEATHER CENTERS.

Dr. William Bauman (FAA) presented the status of ICAO Space Weather Centers. He defined the Space Weather work stream and noted that the ICAO Meteorology Panel (METP) is responsible for development and maintenance of standards, and the recommended practices and procedures for meteorological service for international air navigation. METP meetings review, discuss and formulate recommendations and decisions on a broad spectrum of technical areas concerning aeronautical meteorological service provision including space weather air navigation.

There are three global centers including a European consortium of nine countries, a second consortium comprised of Australia, Canada, Japan and France, and the third being the NOAA Space Weather Prediction Center (SWPC). These centers will operate on a two-week rotation and are designed to provide backup for each other. Global Centers working to meet Annex 3 provisions will be operational on November 7, 2019. The two regional centers are China/Russia, and South Africa and will be operational by 2022.

SWPC and other countries have produced space weather information for years that is not specific to aviation needs and decisions. ICAO Annex 3 Space Weather Advisories are intended to meet the needs of 192 ICAO member States, and over 200 airlines globally. These advisories provide a standardized product and service and can be supplemented with more detailed space weather information as needed.

Space Weather Manual V1.0 was just released. The FAA is not planning any new regulations, or changes to current regulations around ICAO Space Weather Advisories,

however, the use of space weather information by individual airlines can be defined in their Operations Specifications.

Dr. Bauman closed by providing the FAA point of contact: [Pat Murphy](#).

Members expressed their need for more information about the CONOPS for Space Weather Prediction Center (SWFC)'s. **See Action Item 2019-3.5.**

5. RADAR MODELING.

Mr. Jason Baker (FAA) presented a briefing on the MIT LL Offshore Prediction Capability (OPC). He provided its history, an overview of its development, current and future activities, a case study of Hurricane Florence, NEXRAD and OPC comparisons, and verification data.

Lack of weather radar information in Caribbean and offshore air traffic sectors led the FAA to pursue MIT LL's development of the OPC. The United States Air Force realized the potential of OPC and leveraged its partnership with MIT LL and requested the development of a global version to include a forecast capability. The FAA will leverage the MIT LL work for the USAF for potential domain expansion and will be evaluating the forecast version for possible implementation.

OPC visualizes weather outside of radar range using supplemental technologies, has high spatial resolution, accuracy of location, rapid update and low latency. Current work will incorporate Geostationary Lightning Mapper (GLM) lightning data into OPC to improve depiction of storms. The domain of OPC will be expanded to Hawaii, Guam and CONUS later this year.

Currently OPC is only available via a managed website. The OPC capability may be transitioned to another organization in the future and also globalized.

Members noted that NOAA Earth System Research Lab is working on third party verification of OPC. This information will be shared with members when it becomes available.

Multi-Radar/Multi-Sensor System (MRMS) is a system with automated algorithms that quickly and intelligently integrates data streams from multiple radars, surface and upper air observations, lightning detection systems, and satellite and forecast models. Members noted that incorporating OPC into MRMS would be useful.

LtCol Rob Branham presented information on the USAF Global Synthetic Weather Radar (GSRW) capability.

The DoD requirement for the GSRW originated from weather impacts on Remotely Piloted Aircraft (RPA) missions, the non-existence of weather information in many high interest areas, and insufficient weather information from satellites and models to support tactical rerouting.

GSRW incorporates data from satellites, lightning detection systems, radars, numerical weather prediction, and other sources outside the United States. It incorporates machine learning and training and expands CONUS centric Offshore Prediction Capability to support

the USAF global analysis/forecast mission.

This project started in February 2018 and focuses on analysis and forecast tasks. Sample products were shown for two areas of interest.

6. COMMITTEE FOR OPERATIONAL ENVIRONMENTAL SATELLITE (COES) UPDATE.

Mr. Ajay Mehta (NOAA) presented the COES annual update on the committee's activities. He briefly reviewed the background, membership, and Terms of Reference for COES which includes new procedures for the CGMS coordination.

Current Issues include keeping abreast of evolving DoD space-based environmental monitoring (SBEM) capabilities programs, Indian Ocean satellite coverage challenges, and Radio Frequency Interference. Other focus areas include:

- Leveraging NASA research satellite capabilities.
- Commercial Weather Data Acquisition Programs.
- Decadal Survey and implications for future environmental satellite systems.
- Satellite Oceanography.
- Cloud Services--monitoring the implementation of cloud services for satellite data processing across the FWE.

The commercial weather data pilot status was summarized for NOAA, DoD/USAF and NASA.

As noted by the GAO, COES provides a forum for issue discovery and the means to connect stakeholders with organizations providing environmental satellite services and system development.

Members discussed their concerns about potential gaps in satellite coverage and the costs/benefits/security issues related to cloud services. **See Action Item 2019-3.6.**

7. NESDIS: SATELLITE LIFE EXPECTANCY RELIABILITY ANALYSIS.

Mr. Dan St. Jean (NOAA/NESDIS) opened with general reliability terms and definitions. These included reliability, functional success criteria, and functional availability. Graphic representations, such as "reliability block diagrams" (RBDs) or "fault trees" (FTs) can be used in calculating reliability of the system. For satellites, these systems can come in the form of electronics, moving parts, batteries, and even fuel. Generally, vendors provide these data at the start of a program to help determine the satellite's reliability prior to launch.

Probability of failure at different discrete time intervals is plotted and then a reliability curve is fitted to these data points. With these calculations, the probability of success at various time intervals, for example over the course of multiple years, which is important for satellites.

Using this information, a curve can be fitted to the data producing a satellite reliability curve. Vendor information is used to begin this process, but as the system is put into operation, on-orbit statistics or empirical evidence of known failures can be used to update the failure rates of a given system.

For planning purposes, NOAA satellite fly-out charts go out as far as the 60% reliability of a

single satellite. Reliability charts were shown for GOES 15, and the geostationary functional reliability chart was provided for GOES 14, 15, 16, 17, T, U, and NE-1 based on predicted reliability and NOAA Office of Systems Architecture and Advanced Planning launch assumptions.

Functional availability is part of NOAA's planning process for future satellite needs.

8. OPEN DISCUSSION.

None, due to time constraints.

9. NEXT STEPS/CLOSING COMMENTS/CLOSING/ADJOURN.

Members were thanked for their participation. The meeting was adjourned at 3:08 PM.

**Interdepartmental Committee for Meteorological Services and Supporting Research
Meeting 2019-3**

Action Items

ICMSSR Action Item 2019-3-1. Establish Climate data base JAG. Dr. James Simms draft/coordinate TOR.

Responsible Office: OFCM

Due Date: October 1, 2019

ICMSSR Action Item 2019-3-2. OFCM conduct exploratory Fire WX meeting after NOAA fire weather coordination meeting.

Responsible Office: OFCM

Due Date: December 1, 2019.

ICMSSR Action Item 2019-3-3. Publish FMH-1 plan as agreed at meeting.

Responsible Office: OFCM

Due Date: September 6, 2019

ICMSSR Action Item 2019-3-4. Send Draft Federal Standard for Siting Meteorological Sensors at Airports plan to ICMSSR. Comments requested by 27 August.

Responsible Office: OFCM

Due Date: August 27, 2019.

ICMSSR Action Item 2019-3-5. OFCM collect approved CONOPS from SWFC and distribute to ICMSSR.

Responsible Office: OFCM

Due Date: October 1, 2019.

ICMSSR Action Item 2019-3-6. NESDIS to provide, through OFCM, the deployment schedule for COSMIC 2.

Responsible Office: OFCM

Due Date: December 6, 2019.