

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

COMMITTEE FOR OPERATIONAL ENVIRONMENTAL SATELLITES (COES)

Record of Actions: 2017-2 Meeting
June 19, 2017, 1:00 p.m. EDT
Room 7224, SSMC2

Office of the Federal Coordinator for Meteorology
Suite 7130, SSMC2
1325 East West Highway
Silver Spring, MD 20910

PARTICIPANTS

(T): Participated via telecon

| Agency | Organization | Name |
|---------------|----------------------------|-------------------------|
| DOC Cochair | NOAA-NWS | Joe Pica |
| DoD Cochair | USN | David McCarren |
| DOC | NOAA-NESDIS | Kate Becker |
| DOC | NOAA-NWS | Brian Gokel |
| DOC | NOAA NESDIS | Mary Ann Kutny |
| DOC | NOAA-OMAO | LCDR Jason Mansur |
| DOC | NOAA-NESDIS | Ajay Mehta |
| DOC | NOAA-NESDIS | Jason Taylor |
| DoD | HQ USAF A3W | Lt Col Ken Burton |
| DoD | SAF-PDSA | Lt Col Alan Beumont (T) |
| DoD | USN-N2N6 | CDR David Colbert |
| DoD | HQ USAF A3W | Col Michael Gremillion |
| DoD | HQ USAF A3W | Lt Col Chris Hollinger |
| DoD | USAF AFSPC | Lt Col Brian Kabat (T) |
| DoD | SAF-PDSA | Dan Weekly (T) |
| DoD | USN NAVO | Bruce McKenzie(T) |
| DoD | NAVOCEANO | Mark Middlebusher |
| DoD | HQ USAF A3XS | William Pryor (T) |
| DoD | USAF 557WW | Ken Smith (T) |
| DoD | USAF AFSPC | Chris Stock (T) |
| DoD | USAF 557WW | Mark Surmeyer (T) |
| DoD | USN FNMOC | James Vermeulen (T) |
| DoD | USAF 557WW | Ted Vroman (T) |
| NASA | HQ NASA | Paula Bontempi (T) |
| NASA | HQ NASA | Andre Dress (T) |
| NASA | HQ NASA | Tsengdar Lee |
| NASA | HQ NASA | John Lee |
| NGA | SXOW | Col Herb Keyser |
| NGA | SFG | Capt Erika Sauer |
| NGA | MCR LLC supporting | Elia Sanjume (T) |
| NRO | Aerospace Corp - Chantilly | Norm Modlin (T) |
| OSTP | USGEO | Jason Gallo (T) |
| OFCM | Executive Secretary | Michael Bonadonna |
| OFCM | STC | Floyd Hauth (T) |
| OFCM | Federal Coordinator | William Schulz |

Date of Issue: July 6, 2017

1. OPENING REMARKS:

Mr. Michael Bonadonna, COES Executive Secretary, opened the meeting and provided administrative comments. The COES co-chairs welcomed the attendees and conducted a roll call of participants attending the meeting and on the phone.

The agenda for this meeting and ROA from the last meeting were approved.

2. ACTION ITEM REVIEW:

All prior Actions Items have been closed. The Executive Secretary maintains a complete list of all COES action items.

3. UPDATE ON COMMERCIAL WEATHER DATA PILOT PROGRAMS:

Col Michael Gremillion (USAF)

The purpose of this pilot program is to inform Congress how the SECDEF plans to implement a program to assess the viability of commercial satellite weather data to support DoD requirements. The initial assessment reviewed existing space-based commercial providers, identified potential Space Based Environmental Monitoring applications that could enhance DoD mission requirements and assessed feasibility to execute data procurement/assessment within 12 months.

The DoD evaluation will focus on GPS Radio Occultation (electron density data stream) and determine the most promising commercial satellite weather data available and most likely to make an operational difference within the DoD weather enterprise and also benefit NOAA.

Based on the Executive Order 13744 and the proposed S.2817 Space Weather Research and Forecasting Act, the SECAF will develop mechanisms to transition research findings, models, and capabilities to space weather operational forecasting centers. The AF runs the Global Assimilation of Ionospheric Measurements (GAIM) Model which uses observations of electron content/density to characterize ionospheric conditions. The GAIM operations and R&D are a collaboration of DoD, industry, and academia.

AF is responsible for space weather operations in support of DoD unclassified and classified requirements and is uniquely postured to evaluate and assess data via the GAIM model.

Col Gremillion presented the AF timeline for submitting an RFP to contractors and follow-on program activities. They project a September award followed by a 3- month collection of information and an analysis of initial findings. A final report is due to Congress by October 2018.

Future evaluations could explore ground and space-based commercial weather data.

Christina D. Moats-Xavier (NASA); Presented by Tsendar Lee

The FY2017 President's Budget Request included a Small Satellite Constellation Initiative line item for NASA to invest several tens of millions of dollars in one or more pilot data purchases in the FY17-18 timeframe. This provided the opportunity to explore alternate approaches to the acquisition of Earth observation data.

In response to their first RFI, NASA found there is a commercial vendor pool already operating small satellite constellations collecting data relevant to earth science. There are also a few looming new entrants into this commercial space.

Their next step is to prepare and release a solicitation to procure and evaluate data products from privately-funded/non-governmental spaceborne Earth observation systems comprising small satellite constellations. Additional feedback from commercial vendors on the benefits and challenges of the NASA plan will likely identify opportunities to expand SSCI data purchases into future years.

Kate Becker, Policy Advisor, NOAA NESDIS Office of the Chief of Staff

NOAA initiated the Commercial Weather Data Pilot with \$3M in FY2016. NOAA identified radio occultation as the initial data set for evaluation and set requirements to enable maximum participation by providers. In addition, NOAA continues to develop internal capabilities to ingest and process commercial data from a variety of potential sources and domains.

NESDIS will use the second assessment period to further support the demonstration of radio occultation data and the development of internal infrastructure needed to pursue procurement of commercial radio occultation data operationally. Key questions continue to emerge as NOAA engages an evolving commercial sector. These include price point stability/volatility, competition, market demands, tension between commercial interests at different points in the value chain, impact to partnerships and data sharing arrangements, mission risk management, operational user readiness, and interagency coordination.

NOAA will execute Commercial Weather Data Pilot Round 2, with results possible in 2019. This will include use of a secure ingest gateway to bring data in. Data are processed by UCAR and can be shared by NOAA with government partners and archived. Both raw data and processed data may be accessed.

The Weather Research and Forecasting Innovation Act authorizes continuation of the Pilot through 2020, which is supported by the FY 2018 President's Budget. NESDIS will continue to canvass the commercial sector for available data sets that can meet NOAA mission needs.

Discussion following the three briefings included concerns about internal and external funding and contract processes and issues related to data rights and distribution. Action Item: Dave McCarren will summarize the three briefings on a one page document and provide it to COES members for review.

4. PLANKTON, AEROSOL, CLOUD, OCEAN ECOSYSTEM (PACE) MISSION

Dr. Paula Bontempi, PACE Program Scientist (NASA)

PACE's advanced technologies will provide unprecedented insight into Earth's ocean and atmosphere, which impact our everyday lives by regulating climate and making our planet habitable. Our oceans teem with life, supporting many of Earth's economies. New discoveries in Earth's living ocean will be revealed with PACE's global observations, such as the diversity of organisms fueling marine food webs and how ecosystems respond to environmental change.

PACE will observe our atmosphere to study clouds along with the tiny airborne particles known as aerosols. Looking at the ocean, clouds, and aerosols together will improve our knowledge of the roles each plays in our changing planet.

PACE has two fundamental science goals:

- Extend key systematic ocean color, aerosol, and cloud climate data records.
- Address new and emerging science questions using its advanced capabilities.

PACE's data will reveal interactions between the ocean and atmosphere, including how they exchange carbon dioxide and how atmospheric aerosols might fuel phytoplankton growth in the surface ocean. Novel uses of PACE data – from identifying the extent and duration of harmful algal blooms to improving our understanding of air quality – will result in direct economic and societal benefits. By extending and expanding NASA's long record of satellite observations of our living planet, we will take Earth's pulse in new ways for decades to come.

NASA's Plankton, Aerosol, Cloud, ocean Ecosystem (PACE) mission is a first-of-its-kind project that aims to answer key questions about the consequences of climate change on the health of our oceans and their relationship with airborne particles and clouds. PACE will use a wide spectrum of wavelengths from an “ocean color” instrument to provide scientists with this information.

PACE represents a major effort to truly combine ocean research with atmospheric research. PACE was approved to move forward out of its preliminary stage of planning on June 16 at the Key Decision Point A (KDP-A) event. A significant milestone for the next stage is that the official mission budget becomes available for use on July 1.

The primary instrument for this mission is named the Ocean Color Instrument (OCI), which will collect hyperspectral measurements from the ultraviolet to the shortwave infrared—a range that is broader than its predecessor satellite instruments, SeaWiFS, MODIS, and VIIRS—to examine and monitor how phytoplankton communities in the ocean are changing in space and time. The OCI will provide precise measurements of the ocean surface to allow researchers to see the concentrations of different phytoplankton communities all over the globe. The spectral range and resolution of the OCI design will substantially advance the ability to distinguish between different species of phytoplankton compared to predecessor satellite instruments.

Phytoplankton play an essential role in ocean ecosystems. They are the base of the marine food chain and, like land plants, produce much of the oxygen we breathe and play a role in reducing atmospheric carbon dioxide levels. With growing concern about the impact of rising global temperatures on our oceans, PACE data will be used to reveal new information about changing patterns in phytoplankton composition and the emergence of potentially harmful algal blooms. Satellites that currently exist are adept at detecting algal blooms, but cannot unequivocally determine their composition—for example, if they are harmful to fish or can contaminate drinking water. The spectral range of OCI will help scientists figure out more about where blooms occur and how they are changing.

The possible addition of a polarimeter, an instrument that could provide multi-angle polarized radiometric measurements to advance studies of aerosol particles and clouds, is currently under consideration by the PACE team. A polarimeter would allow improved measurement of atmospheric particle compositions that will ultimately improve observations of ocean color.

All preliminary planning for PACE is currently being done at NASA's Goddard Space Flight Center. The unique information that this mission will provide, in combination with climate models, will allow scientists to monitor the health of our oceans and their response to climate change like never before. PACE will help NASA comprehend how climate is changing.

Dr. Bontempi closed with an overview of the observatories and a summary of the mission status.

5. NESDIS OSPO UPDATE:

Mr. Jason Taylor, NOAA NESDIS Satellite Services Division, Office of Satellite Products and Operations (OSPO)

Mr. Taylor presented an overview of OSPO, and updates on GOES, POES, SNPP/JPSS-1, Himawari-8/9, the Meteosat-8 IODC mission, and PDA/Data distribution.

He noted that the NESDIS Office of Satellite and Product Operations operates 16 environmental satellites for the nation, summarized the operational satellite data flow and described the staff and facilities supporting or operating the satellites, receptors, and processing systems.

Mr. Taylor reviewed the capabilities of the current GOES constellation and the improvements expected from GOES-16 and follow-on synchronous satellites. He also summarized GOES -16 product feedback and rebroadcast details. The GOES-R series is designed to provide coverage through 2016. GOES-16 is projected to replace GOES-13 at 75W in November 2017.

His POES update covered POES status as of June 2017, POES instruments and observations, DSCOVR, JASON-2 and 3, and S-NPP payload status, maneuvers, and data access services. Himawari-8 operations are nominal and are expected to continue to 2022. Himawari-9 planned operation is from 2022-2029. Meteosat-8 is providing data for the Indian Ocean area. NOAA receives the data from secure EUMETCast and WMO GTS circuits.

PDA represents NESDIS's new enterprise distribution for real-time users. It provides NESDIS with a scalable Service Oriented Architecture (SOA) that functions as both a high availability and high-performance distribution system. In addition, it enables users to tailor product subscriptions in order to meet their unique mission requirements, including latency, and enhances IT security posture by using in-depth defenses against evolving threats.

PDA at NSOF (Suitland, MD) will support many missions; however, PDA at CBU (Fairmont, WV backup site) will only support the JPSS missions. PDA will assume the primary function of DDS (old data distribution system) in the August/September 2017 timeframe. Legacy data will be migrated to PDA by the end of July 2017.

6. OUTBRIEF FROM THE CGMS:

Mr. Joe Pica (NWS)

The Coordination Group for Meteorological Satellites (CGMS) is the group that globally coordinates meteorological satellite systems. This includes protection of in-orbit assets, contingency planning, improvement of quality of data, support to users, facilitation of shared data access and development of the use of satellite products in key application areas.

The coordination is pursued from an end-to-end perspective, through development of multi-lateral coordination and cooperation across all meteorological satellite operators in close coordination with the user community such as WMO, IOC-UNESCO, and other user entities.

The main goals of the coordination activities of the Coordination Group for Meteorological Satellites are to support operational weather monitoring and forecasting as well as climate monitoring, in response to requirements formulated by WMO, its programs and other programs jointly supported by WMO and other international agencies.

Mr. Pica reported that the 45th meeting was organized around four Working Groups:

Global issues on satellite systems and telecommunications coordination.

- Satellite data and products.
- Operational continuity.
- Global data dissemination.

Key topics covered included WMO public/private partnerships, the 2040 vision encompassing the global weather mission, frequency spectrum issues related to passive microwave sensors, and updating the CGMS baseline to include space weather.

7. OPEN DISCUSSION:

Members discussed additional factors to consider regarding updates to the CGMS baseline, and accuracy and reliability issues related to Chinese and Russian satellites.

8. ACTION ITEM REVIEW / NEXT MEETING:

Only one action item was noted from this meeting: Prepare a one-page summary of NOAA, USAF, and NASA commercial weather data procurement projects and plans for ICMSSR information. (Action Item 2017-2.1)

The Executive Secretary thanked the participants for a very productive meeting. The next meeting will be scheduled for mid-September depending on the availability of the Co-chairs.

The meeting adjourned at 3:05 P.M. EDT.

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2017-2 Meeting Action Items

Action Item 2017-2.1: Prepare a one-page summary of NOAA, USAF, and NASA commercial weather data procurement projects and plans for ICMSSR information.

Responsible Office: David McCarren

Due Date: July 30, 2017