

Session 4B: Interagency Coordination within the Federal Weather Enterprise

Co-chairs: Michael Bonadonna and C. Sim James,
Office of the Federal Coordinator for Meteorology, Silver Spring, MD

Michael F. Bonadonna, OFCM; and C. S. James

Overview of the Office of the Federal Coordinator for Meteorological Services and Supporting Research

Jennifer Meehan, HQ National Weather Service, Silver Spring, MD; and M. F. Bonadonna
National Space Weather Coordination Activities: Forging a Partnership among U.S. Government, Commercial, and Academic Organizations to Improve National Space Weather Capabilities

Carissa L. Klemmer, NCEP, College Park, MD

Overview of the Committee for Operational Processing Centers (COPC)

Amy Holman, NOAA, Anchorage, AK; and S. Bowden and R. Crain

Federal Interagency Coordination for Research in the Arctic

Vijay Tallapragada, NOAA/NWS/NCEP/EMC, College Park, MD; and F. M. Ralph, P. G. Black, X. Wu, T. J. Elless, A. Mehra, and R. D. Torn

A Targeted Operational Aircraft Reconnaissance Program Strategy for Improved Prediction of Atmospheric Rivers and Winter Storms

Jack Parrish, NOAA Aircraft Operations Center, Lakeland, FL

The Operational Transition from Winter Storms Reconnaissance (2014) to Winter Season Reconnaissance

The Office of the Federal Coordinator for Meteorological Services and Supporting Research (OFCM)

OFCM Overview

**Michael Bonadonna
Federal Coordinator**

Session 4B Interagency Coordination within the Federal Weather Enterprise
36th Conference on Environmental Information Processing Technologies

Tuesday, January 14, 2020
08:30 AM - 10:00 AM
Boston Convention and Exhibition Center

OFCM Activities and Services

- Coordinate
 - Facilitate the exchange of information, plans, and concerns among the Federal Weather Enterprise (FWE) partners to optimize the benefits of the ~\$5B annual investment on meteorological services and supporting research.
- Advise & Support
 - Provide agency-agnostic, strategic and operational recommendations and support for FWE efforts and high levels decisions.
- Plan
 - Produce and maintain key documents to facilitate interagency collaboration including:
 - Federal Weather Enterprise Budget and Coordination Report
 - Federal Meteorological Handbooks
 - National Hurricane Operations Plan

Historical, Legal Perspectives

The Bureau of the Budget shall provide the Congress in connection with the budget presentation for fiscal year 1964 and each succeeding year thereafter, a horizontal budget showing (a) the totality of the programs for meteorology, (b) specific aspects of the program and funding assigned to each agency, and (c) the estimated goals and financial requirements.

Public Law 87-843, Section 304 (1962)

The Director of the Office of Science and Technology Policy shall establish an Interagency Committee for Advancing Weather Services to improve coordination of relevant weather research and forecast innovation activities across the Federal Government...The Federal Coordinator for Meteorology shall serve as co-chair of this panel.

Public Law 115-25, Section 402 (2017)

Photo Credit: Architect of the Capitol

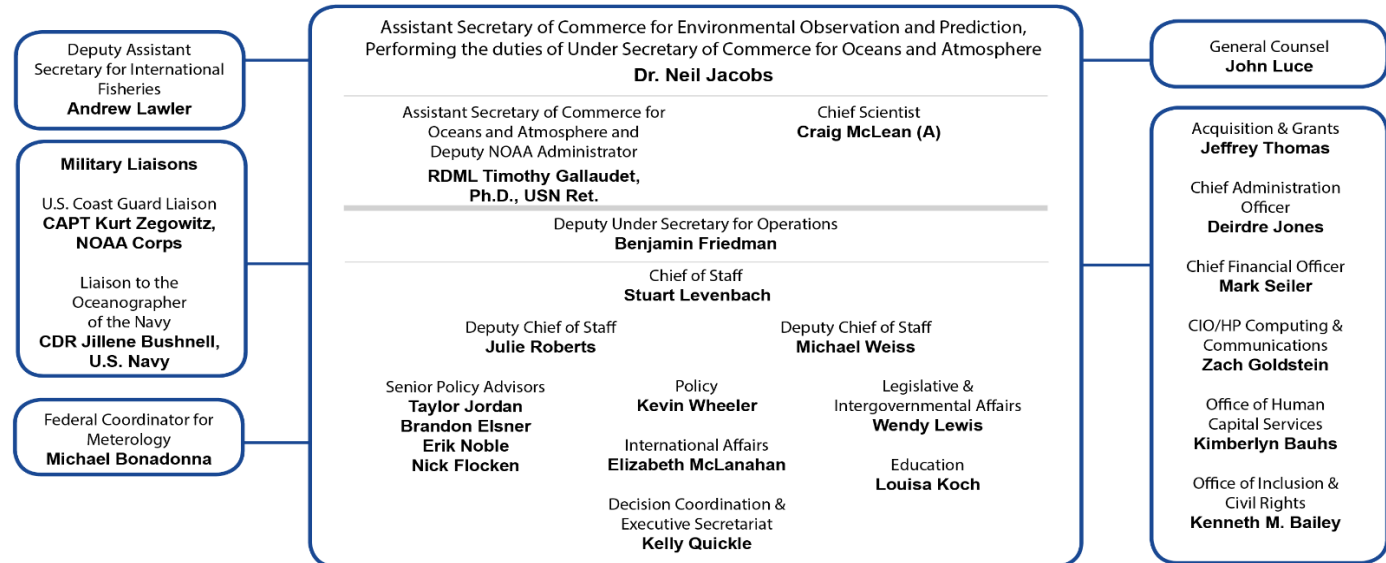


OFCM administered within NOAA

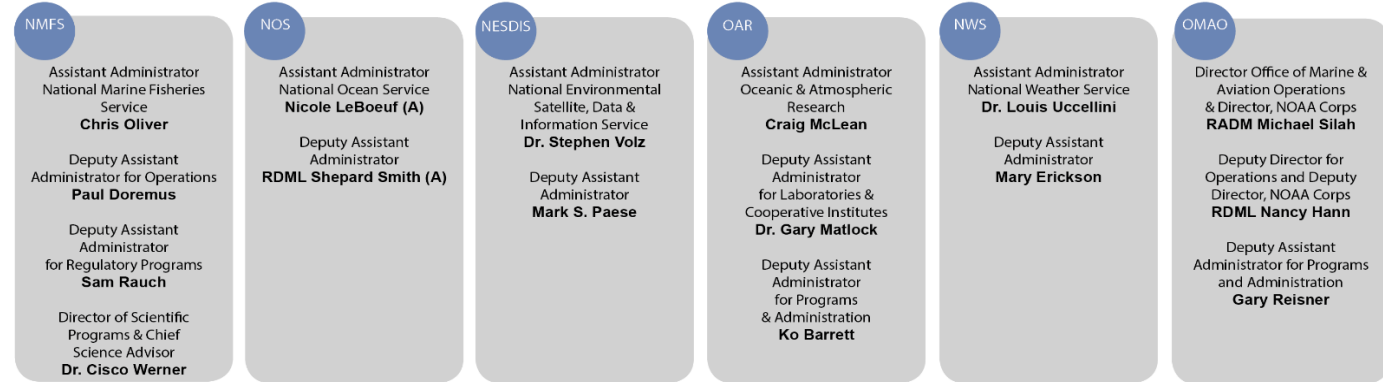
NOAA HEADQUARTERS ORGANIZATION



CORPORATE FUNCTIONS



LINE OFFICES



Key: (A) = Acting Last updated 09/11/19

The Federal Weather Enterprise (FWE)

Departments:

- Agriculture
- Commerce (NOAA)
 - NWS
 - NESDIS
 - OAR
- Defense
 - USAF/USA
 - USN/USMC
- Energy
- Homeland Security
 - Science & Technology
 - FEMA
 - Coast Guard
- Interior
 - USGS
 - BLM
- State
- Transportation
 - FAA
 - FHWA

Independent agencies:

- Environmental Protection Agency
- National Aeronautics and Space Administration
- National Science Foundation
- National Transportation Safety Board
- Nuclear Regulatory Commission

Executive Office of the President:

- Office of Management and Budget
- Office of Science and Technology Policy

FWE Coordinating Infrastructure

	Current
FCMSSR	1
ICMSSR & Councils	3
Committees	4
WGs	14
JAGs	2
TOTAL	24

Federal Committee for Meteorological Services and Supporting Research (FCMSSR)

Additional Support to SWORM and ICCAGRA

Federal Coordinator for Meteorology

NEXRAD Program Council

Interdepartmental Committee for Meteorological Services and Supporting Research (ICMSSR)

Earth System Prediction Capability (ESPC) Executive Steering Group

Committee for Operational Processing Centers

Committee for Operational Environmental Satellites

Committee for Climate Services Coordination

Interagency Weather Research Coordinating Committee

Working Groups (enduring)

Joint Action Groups (short-term)

FWE Infrastructure Participation

FCMSSR	Federal Committee for Meteorological Services and Supporting Research
ICMSSR	Interdepartmental Committee for Meteorological Services and Supporting Research
NEXRAD PC	Next Generation Radar Program Council
ESPC ESG	National Earth System Prediction Capability Executive Steering Group
CCSC	Climate Services Coordination Committee
COES	Committee on Operational Environmental Satellites
COPC	Committee for Operational Processing Centers
IWRCC	Interagency Weather Research Coordination Committee
WRSWG	Weather Research Science Working Group
STIWG	Satellite Telemetry Interagency Working Group
WG/CSAB	Working Group for Cooperative Support and Back-up
WG/CCM	Working Group for Centralized Communication Management
WG/OD	Working Group for Observational Data
WG/BCR	Working Group for Budget Coordination Report
WG/TCOR	Working group for Tropical Cyclone operations and Research
WG/WSO	Working Group for Winter Season Operations
WG/SWEF	Working Group – Space Weather Environment Forum
WG/VA	Working Group – Volcanic Ash
WG/DIAP	Working Group – Disaster Impacts Assessment and Plans
WG/CAS	Working Group – COASTAL Act Support
WG/ATD	Working Group – Atmospheric Transport and Diffusion
WG/FMH-1	Working Group for Federal Meteorological Handbook -1
JAG/CSID	Joint Action Group – Climate Service Information Database
JAG/USWRP-IP	Joint Action Group – US Weather Research Program – Implementation Plan

FWE Infrastructure Participation

	DOC	DOD	DOE	DHS	DOI	DOS	DOT	EPA	NASA	NSF	NRC	NSTB	USDA	EOP
FCMSSR	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ICMSSR	X	X	X	X	X	X	X	X	X	X	X	X	X	X
NEXRAD PC	X	X					X							
ESPC ESG	X	X	X						X	X				
CCSC	X	X	X		X	X			X	X				
COES	X	X	X	X	X		X		X	X			X	X
COPC	X	X												
IWRCC	X	X							X	X				
WRSWG	X	X							X	X				
STIWG	X	X			X			X						
WG/CSAB	X	X												
WG/CCM	X	X												
WG/OD	X	X			X		X							
WG/BCR	X	X	X	X	X	X	X	X	X	X	X	X	X	X
WG/TCOR	X	X			X				X	X				
WG/WSO	X	X	X											
WG/SWEF	X	X			X	X	X		X	X				X
WG/VA	X	X			X		X		X					
WG/DIAP	X	X		X	X								X	
WG/CAS	X	X		X	X								X	
WG/ATD	X	X	X	X	X			X	X		X			
WG/FMH-1	X	X					X							
JAG/CSID	X	X	X		X	X			X	X			X	
JAG/USWRP-IP														

Other Key Weather Enterprise Partners

National Research Council (NRC)

Board on Atmospheric Sciences and Climate (BASC)

Space Science Board (SSB)

Committee on Solar and Space Physics (CSSP)

**World Meteorological
Organization**

**American
Meteorological
Society (AMS)**

**University Corp. for
Atmospheric Research
(UCAR)**

**Friends & Partners of
Aviation Weather**

**American
Geophysical Union
(AGU)**

**National Center for
Atmospheric Research
(NCAR)**

**Interagency Coord.
Committee for Airborne
Geoscience Research
and Applications
(ICCAGRA)**

**Johns Hopkins
University Applied
Physics Laboratory**

**Secure World
Foundation**

Academia

Industrial Partners

**Commercial
Weather Data
Providers**

FCMSSR

Federal Committee for Meteorological Services and Supporting Research

- Meets twice yearly (April, October)
- Chaired by NOAA Administrator (permanent)
- Purpose: “Provides a formal mechanism for interagency coordination on implementing national policy relating to, and developing plans and procedures for, cooperative federal agency efforts in the development, acquisition, continuous operability, and increased effectiveness of meteorological services for the Nation. These services include observation, data sharing, analysis, prediction, dissemination of operational weather and atmospheric information, and the developmental research that supports these services.”

FCMSSR

FCMSSR (Federal Committee for Meteorological Services and Supporting Research)

- Next meeting is TBD.
- Topics include:
 - Implementing Section 402 of The Weather Research and Forecasting Innovation Act of 2017. Establishment of the Interagency Council for Advancing Weather Services (ICAWS)
 - Earth System Prediction Capability / Seasonal to Sub-seasonal forecasting / Environmental Prediction Innovation Center (EPIC)
 - Federal Coordination of Arctic Environmental Services and Supporting Research

Weather Forecast Innovation Act of 2017

P. L. 115-25, Section 402:

Interagency Weather Research And Forecast Innovation Coordination

(a) Establishment

The **OSTP** shall establish an **Interagency Committee for Advancing Weather Services** to improve **coordination** of relevant weather research and forecast innovation activities across the Federal Government. The Interagency Committee shall—

- (1) include participation by NASA, FAA, NOAA, NSF, and *such other agencies* involved in weather forecasting research as the President determines are appropriate;
- (2) identify and prioritize top forecast needs and coordinate those needs against budget requests and program initiatives across participating offices and agencies; and
- (3) share information regarding operational needs and forecasting improvements across relevant agencies.

(b) Co-Chair

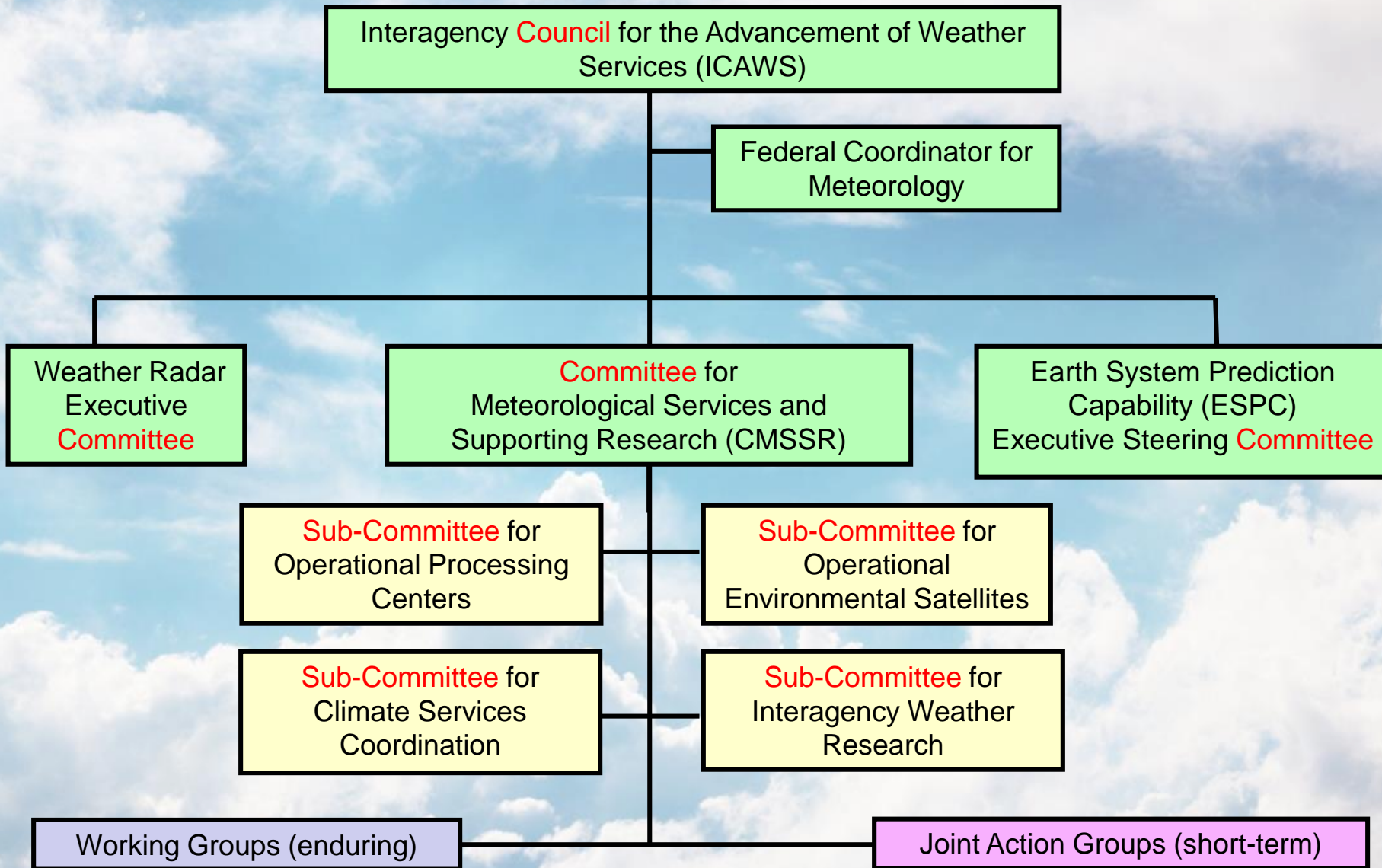
The Federal Coordinator for Meteorology shall serve as a co-chair of this panel.

(c) Further coordination

The Director of the OSTP shall take such other steps as are necessary to coordinate the activities of the Federal Government with those of the United States weather industry, State governments, emergency managers, and academic researchers.

Future

FWE Coordinating Infrastructure



Committee Highlights

- **Committee for Operational Environmental Satellites (COES).**
 - Commercial Weather Data Acquisition Programs
 - Monitoring Commercial Weather Data Pilot programs in NOAA, DOD, and NASA
 - Radio Frequency Interference and bandwidth encroachment
 - Command and data communications
 - Impacts to passive remote sensing windows
- **Committee for Operational Processing Centers (COPC)**
 - Communications backup issues
 - Cloud computing initiatives
- **Interagency Weather Research Coordination Committee (IWRCC).**
 - Facilitated input for US Permanent Rep to WMO on issue papers ahead of Executive Council meetings
 - Assisting in exploring funding outlets for WMO S2S database (work ongoing)
 - Established Weather Research Working Group
 - Worked on USWRP Congressional required Implementation Plan
- **Committee for Climate Services Coordination (CCSC).**
 - Re-engaged 2019 meeting addressing the following topics:
 - 4th National Climate Assessment Overview
 - Climate Considerations from the Interagency Arctic Environmental Services Exploratory Meeting.
 - Developing an Interagency Climate Services database proposal to provide a central location for climate services with information provided from partners across the Federal Weather Enterprise.

OFCM Activities and Services

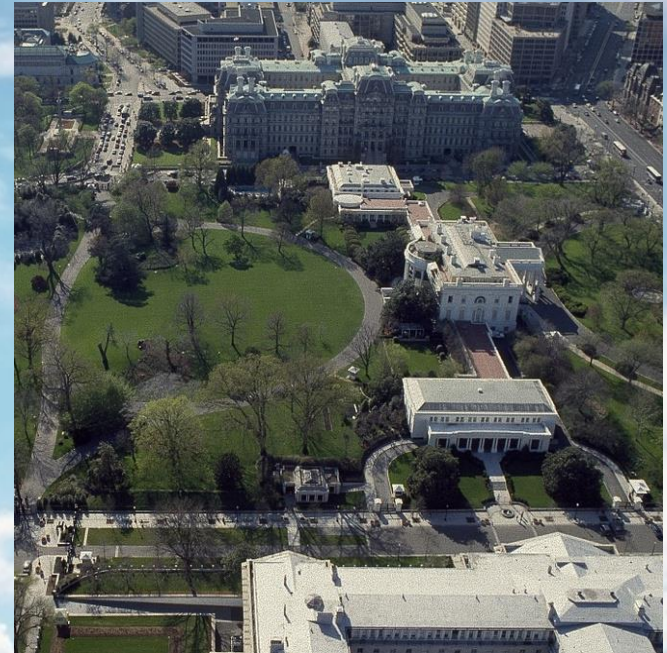
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Support for the NSTC



OFCM staff provides membership and staff support for key elements of the National Science and Technology Council NSTC

National Science and Technology Council (NSTC)

- Committee on Environmental Science (CES)
 - US Group on Earth Observation (USGEO)
 - US Global Change Research Program (USGCRP)
- Committee on Homeland & National Security (CHNS)
 - Space Wx Hazards and Security (SWSH)
 - Space Weather Operations, Research, & Mitigation (SWORM)



Support for Arctic Environmental Services





University of Alaska's Arctic Domain Awareness Center
(and in partnership with National Weather Service)
a "post" Arctic Related Incidents National Significance Workshop event

ARCTIC CRISIS Wx...FINDING BETTER METEOROLOGICAL PLANNER AND FORECASTER COORDINATION


A collaborative workshop to support the community of federal forecasters to assess how to improve coordination and cooperative actions in light of a stressful Arctic crisis response, leveraging participants joining for ADAC's "Arctic Incidents of National Significance 2019" workshop.

Date and location: 23 May 2019, Lucy Cuddy Hall, University of Alaska Anchorage, (following the ADAC Arctic IoNS workshop from 20-22 May 2019).
Information & Registration: Opens on 25 March 2019: @arcticdomainawarenesscenter.org

Next Planners Call Friday, 29 March 2019 11:30 AM AK/3:30 PM Eastern
Via <https://meet.alaska.edu/rakee/7QDU539P>
Dial-In Number: +1 (907) 786-6755 or +1 (844) 368-7867
Conference ID: 60250



Impacts of an Ice-Diminishing Arctic

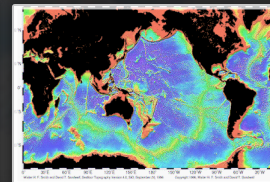
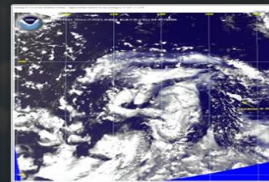
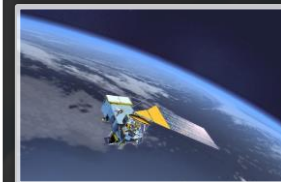
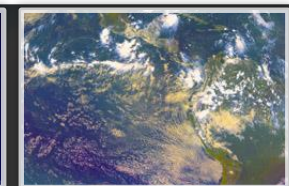


Day 1 Program: July 17, 2019

- Conducted an interagency workshop on Arctic Environmental Services & research in April 2019.
- The Federal Coordinator of Meteorology participated in two conferences in Anchorage in May 2019 regarding Homeland and National Security and Arctic Environmental services.
- OFCM participated in the 8th Symposium on the Impacts of an Ice-Diminishing Arctic on Naval and Maritime Operations
- OFCM hired a Subject Matter Expert to handle Arctic region environmental service coordination and report back to the ICMSSR regularly.
- Planning a one-day follow-up Arctic Environmental Services workshop in April 2020

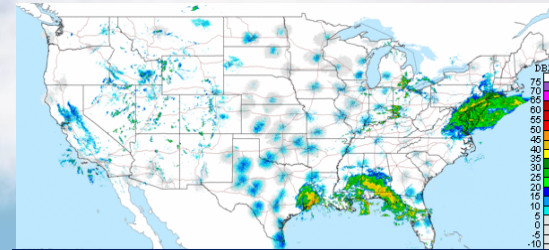
Support for Operational Centers

- OFCM supports Data sharing and Communications coordination among 5 DoD and NOAA Operational centers.
- OFCM SMEs developing NOAA Artificial Intelligence plans and assisting with Cloud Computing infrastructure.



Support for Weather Radar Development

- NEXRAD Program Council led coordination for development of the WSR-88D: First successful major tri-agency program - DOC, DOD, and DOT
- Joint Doppler Operational Project led to great advancement in radar application and resulting societal benefits
- Supported Multimission Phased Array program (MPAR) development
- Supported interagency Spectrum Efficient National Surveillance Radar (SENSR) initiative
- Provided SME support to the Wind Turbine Mitigation Working Group
- Highlighted separate agency projects to merge model and radar data



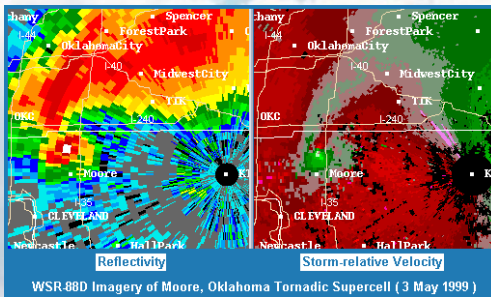
NEXRAD developed and deployed Cornerstone of NWS modernization



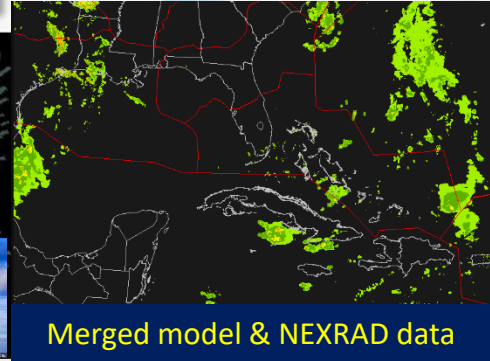
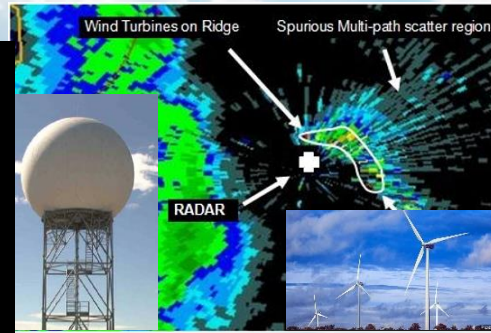
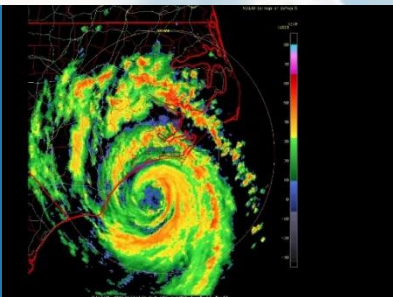
Phased Array Radar Exploring the future



Joint Doppler Operational Project



WSR-88D Imagery of Moore, Oklahoma Tornado Supercell (3 May 1999)



Merged model & NEXRAD data

Meeting Coordination Example: SWEF



- Theme: “Preparing the Nation for Space Weather”
- Location: Yates Auditorium, Dept. Interior Main Building, Virginia Ave NW, Washington DC
- Date: 26 June
- Big-SWEF concept
 - Full-day meeting
 - Large venue (240 Registered attendees)
 - Engage the SWx Community and public
- Keynote speakers:
 - Senator Cory Gardner
 - USGS Director James Reilly
 - NWS Director Louis Uccellini
- Next SWEF: November 2020
 - Half-day on Capitol Hill
 - Aligned with JHU/APL SEASONS Conference



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Quadrennial Strat Plan: Vision and Mission

STRATEGIC PLAN FOR FEDERAL WEATHER ENTERPRISE COORDINATION

*Fiscal Years
2018—2022*

Vision: *Well-coordinated weather services and supporting research across the Federal Weather Enterprise that meet the evolving needs of the Nation.*

OFCM Mission Statement: *Foster the effective use of Federal meteorological resources by encouraging and facilitating the systematic coordination of meteorological services and supporting research across the Federal Weather Enterprise.*

The quadrennial Strategic Plan provides the Vision, Mission Statement, Goals, and objectives for FWE Coordination

Coordination Goals and Objectives

Through interagency collaboration and cooperation, including both formal and informal partnerships:

- Goal 1.** Improve the resolution, frequency, information content, and sustainability of global observing capabilities.
- Goal 2.** Make federal forecasting processes more resilient for all relevant time and spatial scales.
- Goal 3.** Improve interagency collaboration to support effective and consistent decision-support products, information, and services.
- Goal 4.** Conduct productive, synergistic interagency research efforts.
- Goal 5.** Develop, recruit, and sustain a professional and diverse federal weather workforce.
- Goal 6.** Coordinate messaging about FWE priorities and needs.

Annual Coordination Report

THE FEDERAL WEATHER ENTERPRISE

*Fiscal Year 2020
Budget and
Coordination
Report*

The annual **Budget and Coordination Report (BCR)** provides:

- Agency FY Funding requests for Meteorological Services and Supporting Research
- Strategic Plan objectives coordination activities

Purpose:

1. Provide information required by PL 87-843.
2. Visibility on progress related to the Strategic Plan.

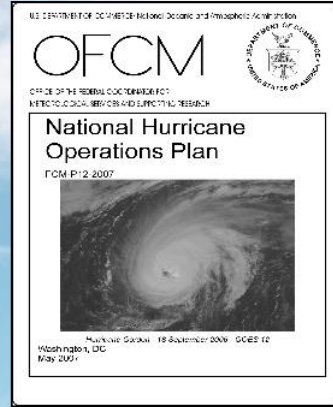
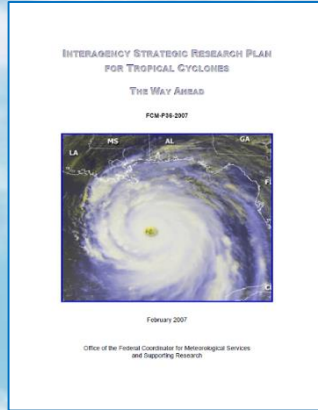
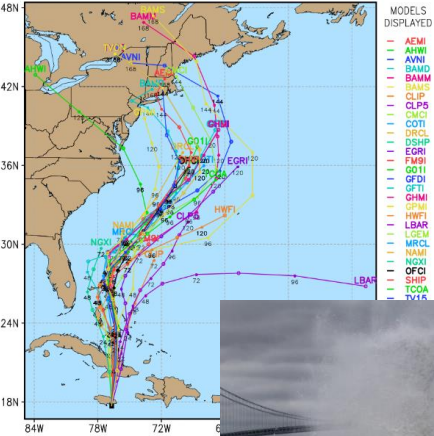
Meeting Coordination Example: TCORF/IHC

- Annual 2-day Tropical Cyclone Operations and Research Forum / Interdepartmental Hurricane Conference (TCORF /IHC)
- Generates the annual **National Hurricane Operations Plan**
- Reviews Joint Hurricane Testbed projects
- Highlights operational challenges looking for research solutions, shares best practices
- Participants usually include: NOAA (NHC, CPHC, HRD, AOC) USAFR 53rd WRS, NSF, JTWC, Navy (N2/N6, and ONR) FFRDCs
- The 2020 Tropical Cyclone Operations and Research Forum/Interdepartmental Hurricane Conference will be hosted by the NOAA/Air Operations Center in Lakeland, FL on Feb 25-26, 2020

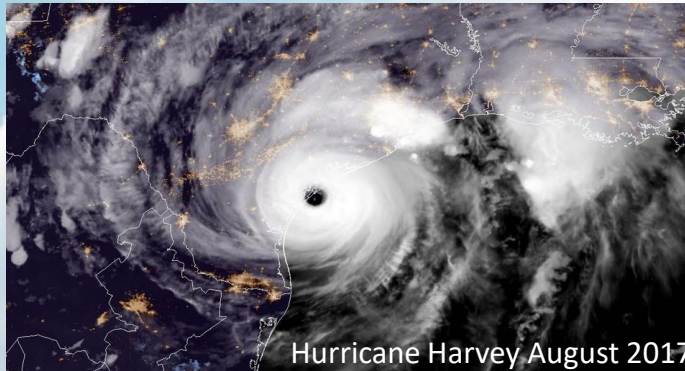


Interagency Planning: Improving Hurricane Warnings

Atlantic HURRICANE SANDY Model Tracks
Valid Time: 1800 UTC 24 October 2012



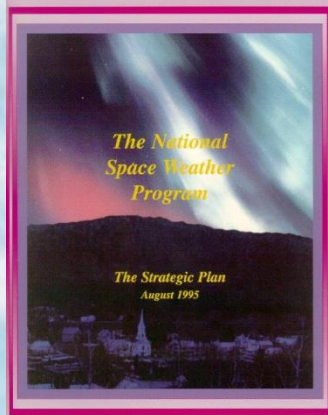
- Better observations
- Tropical cyclone R&D
- Improved forecasts
- Response to warnings (social sciences)



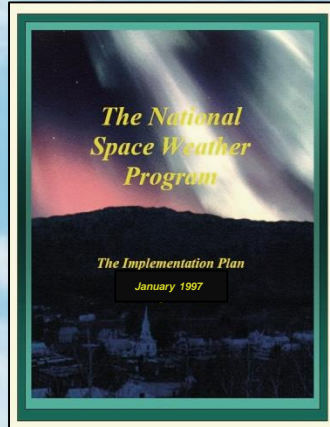
Interagency Planning: Space Weather

The National Space Weather Program Established

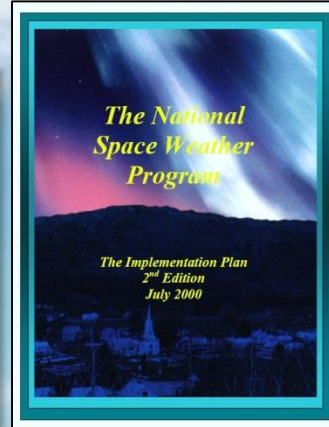
1995



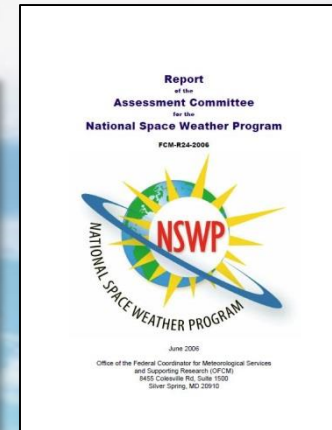
1997



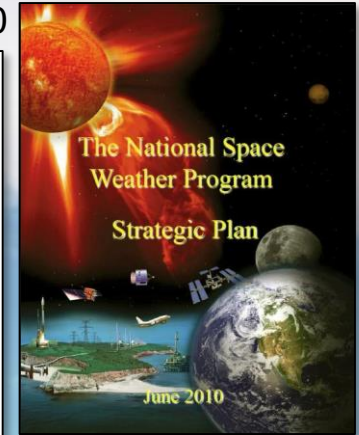
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2006



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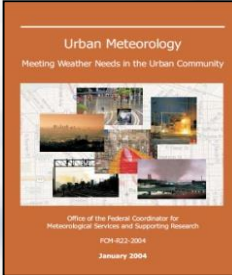
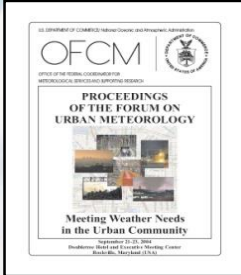
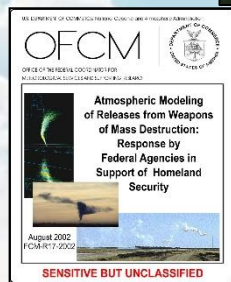
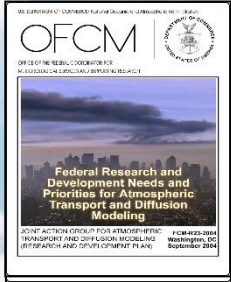
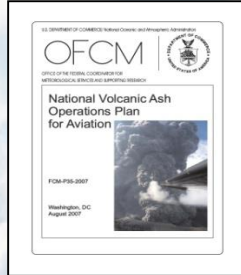
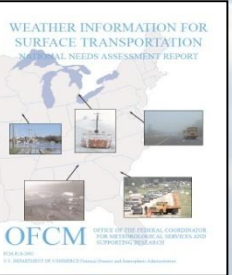
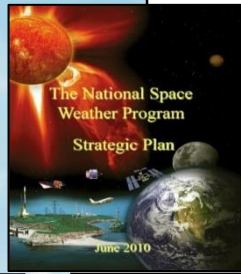
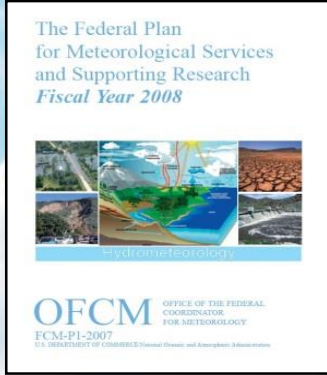
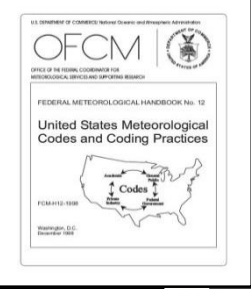
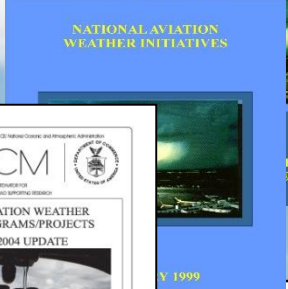
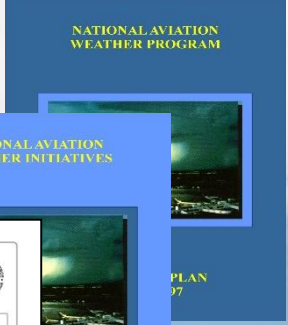
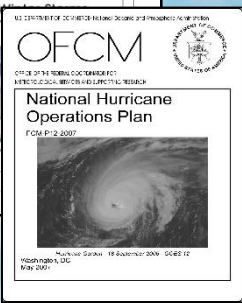
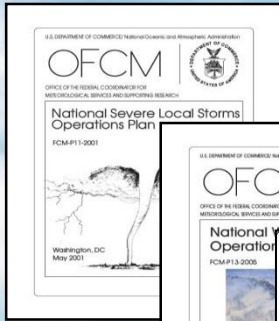
DSCOVR launch (2015)



- 1999: Established the Community Coordinated Modeling Center
- 2003: Space Environment Center closure averted
- Annual Space Weather Enterprise Forum since 2009
- 5 Impact Studies, Mitigation Options, and Observation architectures for OSTP, 2007-13
- 2015: Provided the foundation for the National Space Weather Strategy and Action Plan
- 2016: **OFCM provides the Executive Secretary to the Space Weather Operations, Research, and Mitigation Subcommittee**



FWE Coordination Documents



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 - Federal Weather Enterprise Budget and Coordination Report
 - Federal Meteorological Handbooks
 - National Hurricane Operations Plan

The Way Forward

- Execute baseline mandated functions, traditional roles, and required responsibilities with efficiency and effectiveness.
- Seek out and assist with emerging or poorly coordinated aspects of Federal Meteorological Service and Supporting Research.
- Maintain a small, fully engaged staff of highly experienced and motivated professionals willing and able to engage at any level across the FWE
- Streamline the FWE coordinating infrastructure terminating ineffective elements and transitioning self-sustaining interagency activities to the agencies.



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- **Mr. Jud Stailey, Mr. Floyd Hauth, Dr. Robert Katt**, Part-time Contract Support

OFCM Management Issues & Resources

- **Mandate – Potential for great improvement**
 - ICAWS implementation should alleviate budget coordination reporting issues.
- **Personnel – Trending Upwards**
 - 9 Total Civil Service FTEs (3 ZP-Vs; 2 ZP-IVs, 4 ZAs II-IV)
 - 1 Full-time USAF GS-15 Meteorologist
 - 1 Full-time and 3 Part-Time Support Contractors
 - **2 Senior Staff Meteorologist vacancies**
- **Funding – Down 20% from 10-yr average**
 - New NOAA funding agreement for personnel and support costs shares funding requirement among the main NOAA benefactors
 - NWS (50%), NESDIS (25%), OAR (25%)
 - FY19 total - \$375K: DoD (\$355K), DoE (\$20K)
 - **No budget line item: DoD contributions based on 2011 ASD memo.**
 - Majority of DoD funds used for contractor support: inconsistent source
 - Other agencies provide additional funding for major activities:
 - NSF: \$20K, NOAA-OAR: \$20K, NRL: 20K for annual TCORF
 - NASA: \$3K for SWEF as needed