2013 Space Weather Enterprise Forum

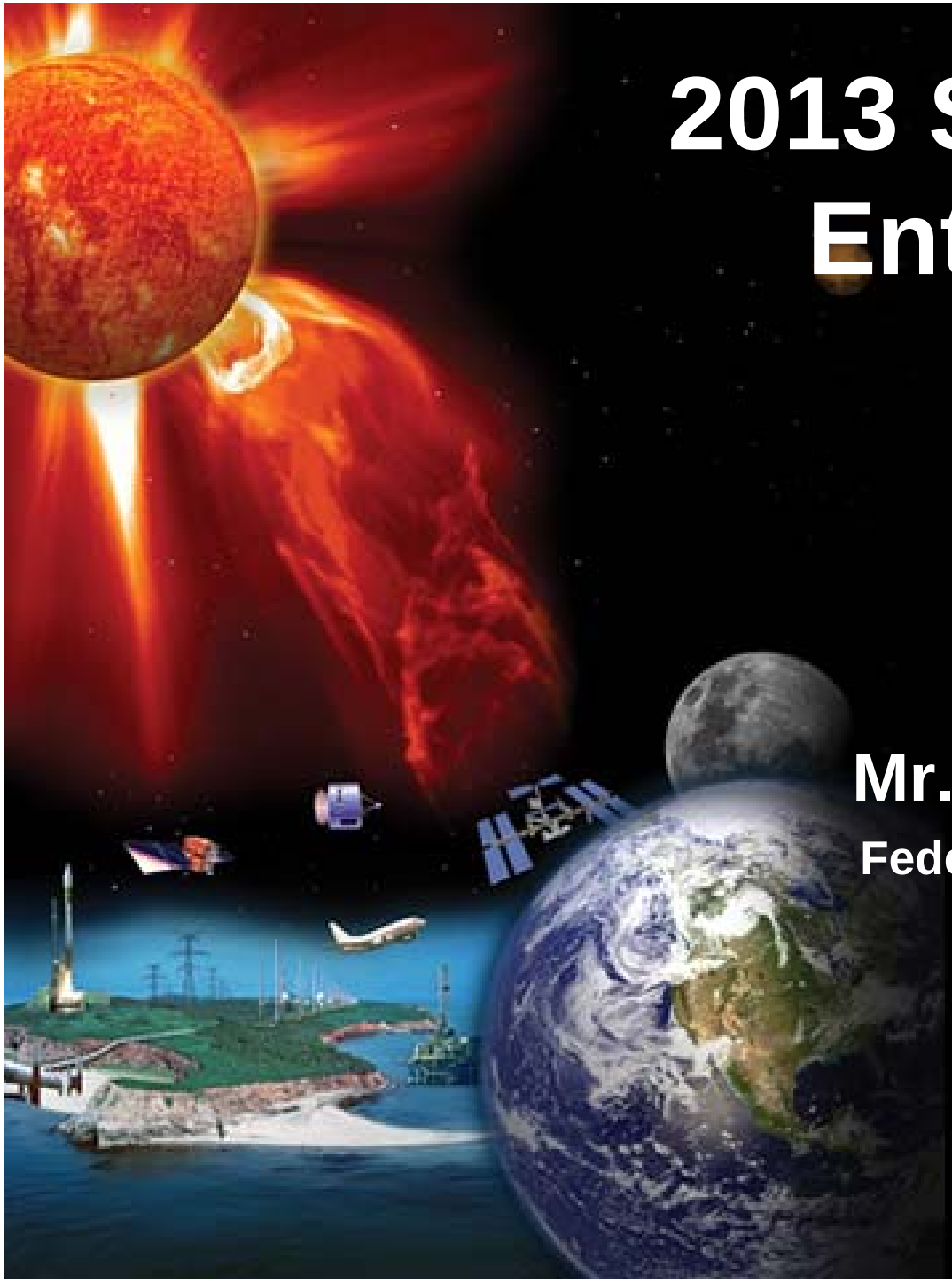
Space Weather Impacts: They Happen All the Time

SWEF

Sponsored by

National Space Weather Program Council

Commerce, Defense, Energy, Homeland Security, Interior, State, Transportation, NASA, NSF
Office of the Federal Coordinator for Meteorological Services and Supporting Research



2013 Space Weather Enterprise Forum

Mr. Samuel P. Williamson

Federal Coordinator for Meteorology and Chairman, National Space Weather Program Council

June 4, 2013

Silver Spring, MD

Congressional Perspective

The Honorable Steven Palazzo,

U.S. Congressional Representative

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Keynote Speaker

The Honorable
Charles Bolden
Administrator, National Aeronautics and Space Administration

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Opening Plenary Speaker

Dr. Kathryn Sullivan

Undersecretary of Commerce for Oceans and Atmosphere

and

National Oceanic and Atmospheric Administration (NOAA) Administrator (Acting)

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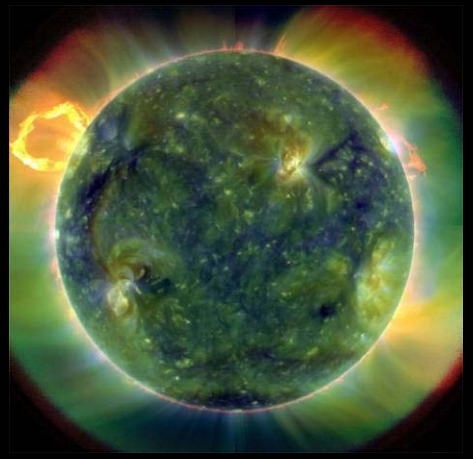
Overview

- Background
- The NSWP
- Agenda



Why Are We Here?

- In the midst of solar maximum, there's been a recent rise in solar activity and impacts
- Emphasize that the impacts of space weather, like terrestrial weather, can occur at any time
- Raise public awareness and readiness

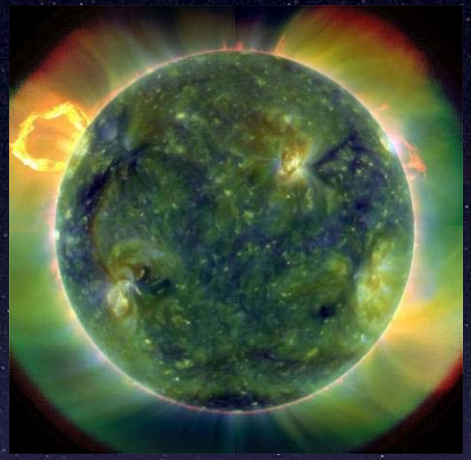
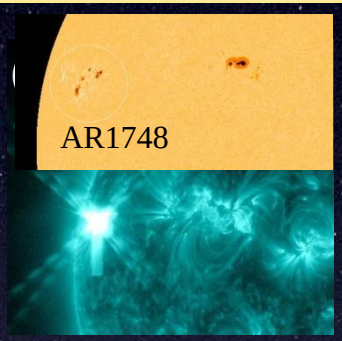


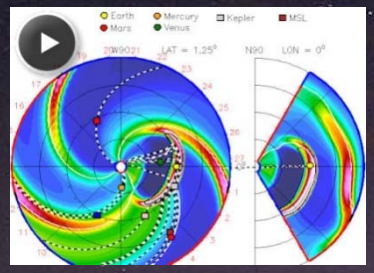
Photo by Graeme Whipps UKMO

Some Recent Events

May 13-17, 2013: X-FLARE THREAT CONTINUES: Sunspot AR1748 has already unleashed four X-class solar flares, but it might not be finished. The active region continues to grow beneath a delta-class magnetic field that harbors energy for powerful eruptions. NOAA puts the odds of another X-flare today at 60%. Solar flare alerts: text, voice. All by itself, AR1748 has produced more X-flares than every other sunspot of the past year combined. In summary, AR1748 has given us an X1.7-class flare (0217 UT on May 13), an X2.8-class flare (1609 UT on May 13), an X3.2-class flare (0117 UT on May 14), and an X1-class flare (0152 on May 15). More could be in the offing.



Oct 23, 2012: X-ray Class: X1.8 Potential Impacts: Area of impact consists of large portions of the sunlit side of Earth, strongest at the sub-solar point. Radio - Wide area blackout of HF (high frequency) radio communication for about an hour.



Oct 1, 2012: Geomagnetic K-index of 7. Potential Impacts: Area of impact primarily poleward of 50 degrees Geomagnetic Latitude. Induced Currents - Power system voltage irregularities possible, false alarms may be triggered on some protection devices. Spacecraft - Systems may experience surface charging; increased drag on low Earth-orbit satellites and orientation problems may occur. Navigation - Intermittent satellite navigation (GPS) problems, including loss-of-lock and increased range error may occur. Radio - HF (high frequency) radio may be intermittent. Aurora - Aurora may be seen as low as Pennsylvania to Iowa to Oregon.

June 14, 2012: Active sunspot AR1504 is facing Earth and hurling coronal mass ejections (CMEs) in our direction. A fast-moving CME that left the sun on June 14th is expected to scoop up another CME already en route and deliver a double-blow to Earth's magnetic field on June 16th. Weak-to-moderate geomagnetic storms are possible.

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Photo by Graeme Whipps UKMO

Objectives

- **Share information** across the enterprise and **raise awareness** for new users, decision makers, and policymakers
- Identify effective approaches to **raise awareness** in the broader society
- Identify effective approaches to **build resilience** across society, particularly in **critical infrastructure protection and support**
- **Improve communications** within and external to the enterprise
- **Collect information** to support new National Space Weather Program Plans

Photo by Graeme Whipps UKMO

Space Weather Enterprise Partnership

- National Space Weather Program Council
  - Member Agencies: NOAA (NWS and NESDIS), Defense (Air Force), Energy, Homeland Security, Interior, State, Transportation, NASA, and National Science Foundation
  - Observers: White House Office of Science and Technology Policy (OSTP) and Office of Management and Budget (OMB)
  - Sets overall policy, guidance, and direction
- Committee for Space Weather
  - Member Agencies: Same as Council
  - Executes Council guidance and implements the program

The NSWP achieves synergistic results allowing each partner agency to enhance national capabilities.

Photo by Graeme Whipps UKMO

NSWP History

- The National Space Weather Program (NSWP) established in 1995 with publication of **Strategic Plan**
  - Pulled Federal community together
  - Set a vision for the future
- **Implementation Plan**, 2nd Edition, published in 2000
  - Defined details on capabilities, strategies, goals, research, technology transition, education and outreach, and program management
  - Linked National Security Space Architect efforts and the NSWP

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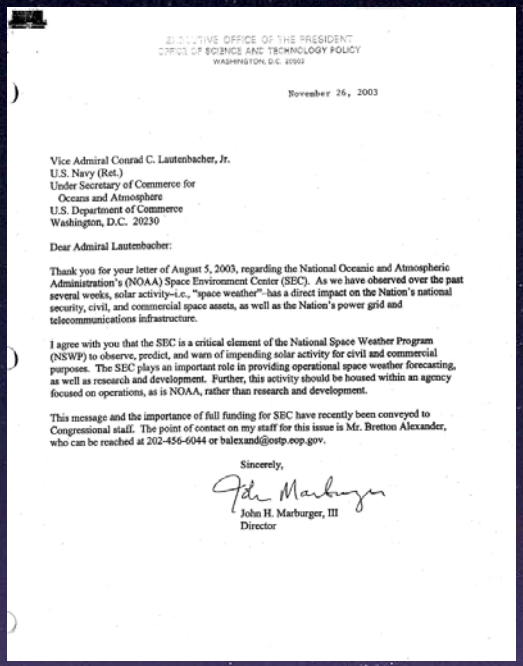
NSWP Supports NOAA SEC

- **2003: NSWP Assessment of NOAA SEC helped secure Executive Office of the President (EOP), Office of Science and Technology Policy (OSTP) support for continuation of NOAA space weather operational services.**
  - **NOAA Space Environment Center (SEC) "…is a critical element of the National Space Weather Program to observe, predict, and warn of impending solar activity for civil and commercial purposes."**
  - **"…This activity should be housed within an agency focused on operations, as is NOAA, rather than research and development"**
  - **"This message and the importance for full funding for the SEC have recently been conveyed to Congressional staff"**



EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY POLICY
WASHINGTON, D.C. 20502

November 26, 2003

Vice Admiral Conrad C. Lautenbacher, Jr.
U.S. Navy (Ret.)
Under Secretary of Commerce for
Oceans and Atmosphere
U.S. Department of Commerce
Washington, D.C. 20230

Dear Admiral Lautenbacher:

Thank you for your letter of August 5, 2003, regarding the National Oceanic and Atmospheric Administration's (NOAA) Space Environment Center (SEC). As we have observed over the past several weeks, solar activity–i.e., "space weather"–has a direct impact on the Nation's national security, civil, and commercial space assets, as well as the Nation's power grid and telecommunications infrastructure.

I agree with you that the SEC is a critical element of the National Space Weather Program (NSWP) to observe, predict, and warn of impending solar activity for civil and commercial purposes. The SEC plays an important role in providing operational space weather forecasting, as well as research and development. Further, this activity should be housed within an agency focused on operations, as is NOAA, rather than research and development.

This message and the importance of full funding for SEC have recently been conveyed to Congressional staff. The point of contact on my staff for this issue is Mr. Bretton Alexander, who can be reached at 202-456-6044 or balexand@ostp.eop.gov.

Sincerely,

John H. Marburger, III
Director

Photo by Graeme Whipps UKMO

Foundation for Today's NSWP

- 2006: Independent Assessment of the NSWP
  - 23 recommendations overall
  - Four key areas
    - Increasing program effectiveness through centralized program management, funding priorities, and collaboration
      - Strengthen interaction with the EOP (OSTP and OMB) to ensure space weather issues are visible at the highest levels of government
    - Maintain continuity of critical data sources
    - Strengthen the science-to-user chain, including research to operations (R2O) transition
    - Emphasize public and user awareness

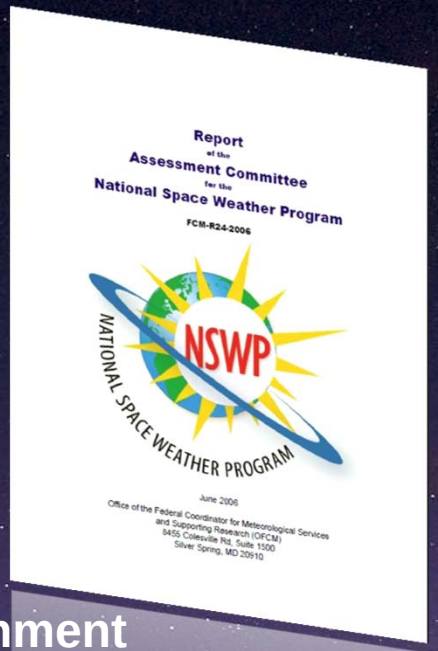
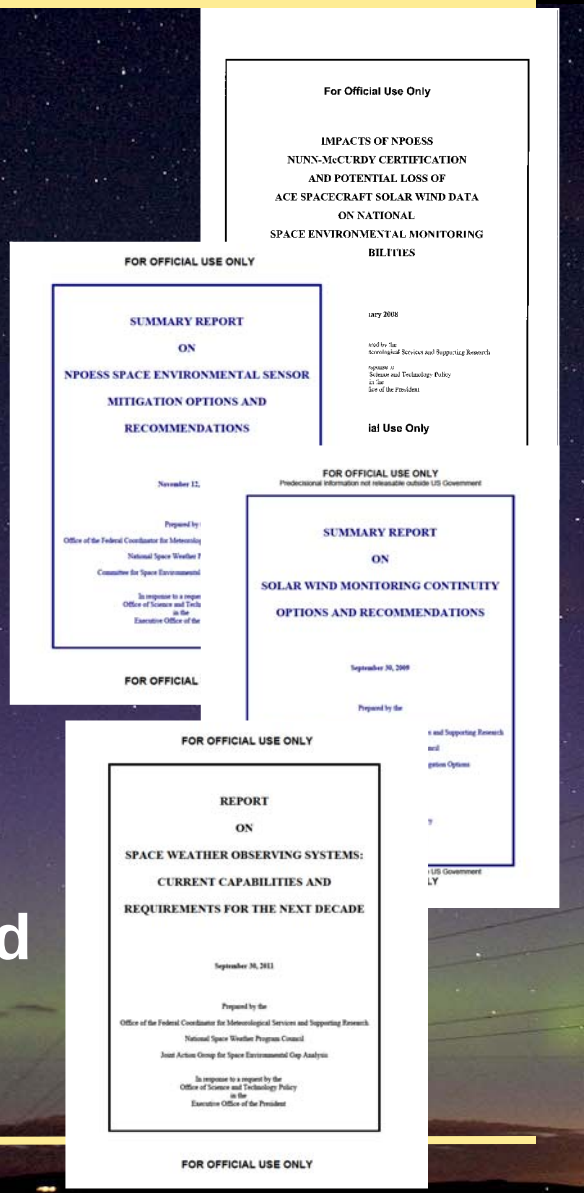


Photo by Graeme Whipps UKMO

Foundation for Today's NSWP: OSTP Studies

- **2008: Impact assessment of Low Earth-Orbit and Solar Wind monitoring loss**
  - ***Detailed the impact of the loss of SWx data and the need for observing capability.***
- **2009: Space Environmental Sensing Mitigation Options for Low Earth Orbit**
  - ***Supported COSMIC-2 and SSAEM missions.***
- **2009: Space Environmental Sensing Mitigation Options for Solar Wind Monitoring**
  - ***Supported DSCOVR and follow-on missions.***
- **2011/2012: Report on current and planned Space Weather Observing Systems**
  - ***Documented SWx observing architecture.***



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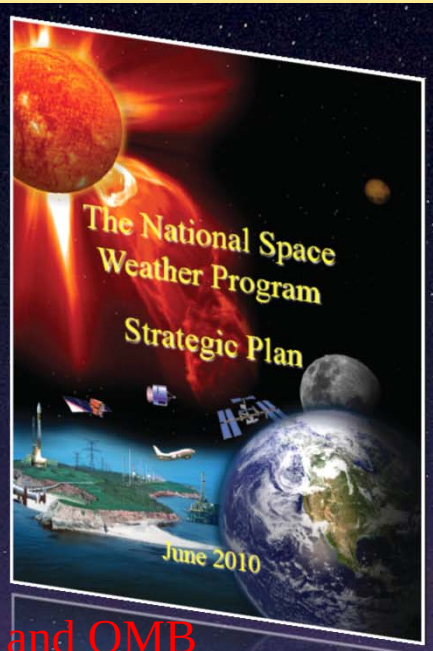
Foundation for Today's NSWP: 2010 Strategic Plan

Vision

A Nation that capitalizes on advances in science and forecasting to better cope with the adverse impacts of space weather on human activity and on advanced technologies that underlie our global economy and national security.

Developed by the Committee for Space Weather

Based on
10 Key Documents
and
185 Recommendations



Approved by the NSWP Council and OMB

Mission

The National Space Weather Program (NSWP) serves as the focal point for the Federal government's national space weather enterprise and partnerships. By providing an active, synergistic, interagency forum for collaboration, the NSWP facilitates mutually beneficial interactions among the Nation's research and operational communities.

Photo by Graeme Whipps UKMO

NSWP Recent Accomplishments

- Established the **Unified National Space Weather Capability** to leverage the interagency resources and capabilities
- Results of the assessment of current and planned space weather observing systems, architecture, and priorities informed the President's budget, and answered congressional requests
  - **Space Environmental Gap Analysis Report** 2013
  - **National Earth Observing Assessment** 2013
- Established the **National Space Weather Portal website**
  WWW.SPACEWEATHER.GOV/PORTAL
- Planned the 7th annual **Space Weather Enterprise Forum** to:
  - Expand outreach to our customers and stakeholders
  - Sustain Congressional and international support
- Supported several key recurring conferences and events, to include the American Meteorological Society and the Johns Hopkins Applied Physics Lab. SEASONS 2012 Conference

Photo by Graeme Whipps UKMO

NSWP: The Way Ahead

- Leverage support earned through NSWP efforts to:
  - Keep the DSCOVR program on track
  - Identify domestic and international resources to execute the COSMIC-2 program
- Complete the NSWP Roadmap & Strategic Research Plan
- Pursue public awareness and response actions and activities
- Develop effective private / public partnerships
- Expand the Unified National Space Weather Capability
- Begin NSWP Implementation Plan development

Photo by Graeme Whipps UKMO

Agenda

Session 1: Welcome and Opening Addresses

Session 2: Scientific Understanding, Observations, and Future Exploration

Dr. Robert McCoy, Director Geophysical Institute University of Alaska

Session 3: Understanding the Day-To-Day Impacts of Space Weather

Ms. Mary Kicza, Assist. Admin. for Satellite & Information Services, NOAA

Lunch Break

Session 4: The Unified National Space Weather Capability

Dr. Louis Lanzerotti, Distinguished Research Professor of Physics, New Jersey Institute of Technology

Session 5: Future Directions of Industry and their Space Weather Needs

Dr. Thomas J Bogdan, President of the University Corporation for Atmospheric Research

Session 6: Wrap up

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