Space Weather Operations, Research and Mitigation (SWORM) Status

Steven W. Clarke, NASA
Space Weather Enterprise Forum
27 June 2017
White House

- National Space Weather Strategy and Action Plan
- Executive Order 13744

“Section 3 (b) - To ensure accountability for and coordination of research, development, and implementation of activities identified in this order and in the Action Plan, the NSTC shall establish a Space Weather Operations, Research, and Mitigation Subcommittee (Subcommittee).”

“Section 71501 (d) - SPACE WEATHER INTERAGENCY WORKING GROUP — "In order to continue executive branch efforts to understand, coordinate, and plan for space weather, the National Science and Technology Council shall establish an interagency working group on space weather.."
Subcommittee on Space Weather

Committee on Environment, Natural Resources, and Sustainability (CENRS)
### Subcommittee on Space Weather Operations, Research, and Mitigation (SWORM)

**Departments and Agencies**

- **DOC**
- **OSTP**
- **DHS**

**Co-Chairs**

- **Dr. Louis W. Uccellini**, Director, NWS/NOAA
- **Rachael Leonard**, General Counsel, OSTP
- **Robert Kolasky**, Acting Deputy Undersecretary for National Protection and Programs, DHS

**Working Groups**

**NATIONAL SCIENCE AND TECHNOLOGY COUNCIL (NSTC)**

**COMMITTEE ON ENVIRONMENT, NATURAL RESOURCES, AND SUSTAINABILITY (CENRS)**

- **AQRS**: Air Quality Research (SC)
- **CSMSC**: Critical & Strategic Mineral Supply Chains (SC)
- **IARPC**: Interagency Arctic Research Policy Committee (IWG)*
- **SDR**: Disaster Reduction (SC)
- **MMCWG**: Methane Monitoring and Characterization Working Group (WG)
- **SWORM**: Space Weather Research, and Mitigation (SC)
- **SOST**: Ocean Science & Technology (SC)*
- **SWAQ**: Water Availability & Quality (SC)
- **T&R**: Toxics & Risk (SC)
- **USGEO**: U.S. Group on Earth Observations (SC)
- **SES**: Ecological Systems (SC)
- **SGCR**: Global Change Research (SC)*
- **Water-Energy-Food (TF)**

**exec Sec**
National Space Weather Strategy and Space Weather Action Plan were officially released on 29 October 2015.

Action Plan details the activities, outcomes and timelines that will be undertaken by Federal departments and agencies for the Nation to make progress toward the strategic goals.

6 Strategic Goals in the Action Plan:

- Establish Benchmarks for Space-Weather Events
- Enhance Response and Recovery Capabilities
- Improve Protection and Mitigation Efforts
- Improve Assessment, Modeling, and Prediction of Impacts on Critical Infrastructure
- Improve Space-Weather Services through Advancing Understanding and Forecasting
- Increase International Cooperation
Goal Progress Summary

Goal 1 – Establish Benchmarks for Space-Weather Events
*Action Responses: ~75% submitted or on-track*

Goal 2 – Enhance Response and Recovery Capabilities
*Action Responses: >90% completed or on-track*

Goal 3 – Improve Protection and Mitigation Efforts
*Action Responses: ~85% completed or on-track*

Goal 4 – Improve Assessment, Modeling and Prediction of Impacts on Critical Infrastructure
*Action Responses: ~75% submitted or on-track*
Goal Progress Summary

Goal 5 – Improve Space-Weather Services through Advancing Understanding and Forecasting
Action Responses: ~75% completed, submitted or on-track

Goal 6 – Increase International Cooperation
Action Responses: >90% completed, submitted or on-track

Significant progress has been made with the 99 National Space Weather Action Plan actions in 20 months due to enhanced and dedicated cross-agency collaboration.
Significant Accomplishments

• Benchmarks
  ➢ Nearing completion of Phase 1 Benchmark Plan after public comments received and adjudicated
  ➢ Final plan to be submitted to the SWORM Subcommittee in July 2017

• GPS Data Release
  ➢ Per Executive Order 13744, Section 5 (e), the DoD is releasing GPS combined x-ray dosimetry (CXD) data through the Los Alamos National Laboratory
  ➢ NOAA is receiving the data and will publish through the National Centers for Environmental Information website and data.gov

• Research-to-Operations-to-Research (R2O2R)
  ➢ R2O2R Plan
    ❖ Public comments received and adjudicated
    ❖ Final plan to be submitted to the SWORM Subcommittee in July 2017
  ➢ NASA-NOAA R2O MOU Signed; NASA-NSF MOU in Draft
Significant Accomplishments

• FEMA Concept of Operations
  ➢ Federal operational concept and response checklist
  ➢ Cross-agency coordinated development
  ➢ Nearing completion and subsequent review

• International Cooperation
  ➢ “Space Weather as a Global Challenge 2017” event @ the Embassy of Italy
  ➢ Highlighted research, observations, services, UN activities, and industry perspectives
  ➢ ~100 participants from 20 countries

• SWORM Website
  ➢ SWORM.gov website is nearing completion
  ➢ Publically-accessible data related to Subcommittee activities
UN/US Workshop on the International Space Weather Initiative: The Decade after the International Heliophysical Year 2007

Boston College
Chestnut Hill, MA
31 July – 4 August 2017
Summary

• National Space Weather Preparedness supported by the Administration and Congress

• SWORM Subcommittee established under the NSTC

• Significant progress made despite budgetary challenges

• Enhanced cross-agency collaboration

• Strong international interest
THANK YOU!