



# U.S. National Space Weather Strategy

13 December 2016

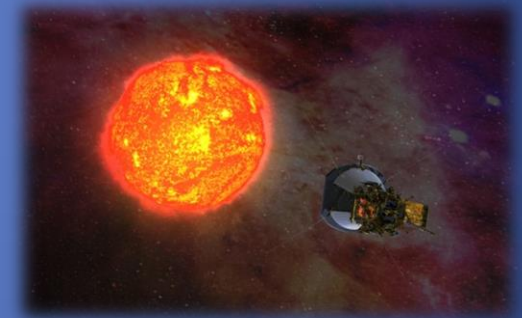
Jeffrey Auerbach

Office of Space and Advanced Technology

United States Department of State

# State Department and SWx?

- For Constitutional and other reasons, State plays a facilitation, coordination and clearance role in **international space cooperation**.
- In its coordination role, State leads on **government-to-government framework agreements**, and in its clearance role on **agency-to-agency implementing agreements**.
- Also advances cooperation with specific countries or groups of them for broader foreign policy reasons.

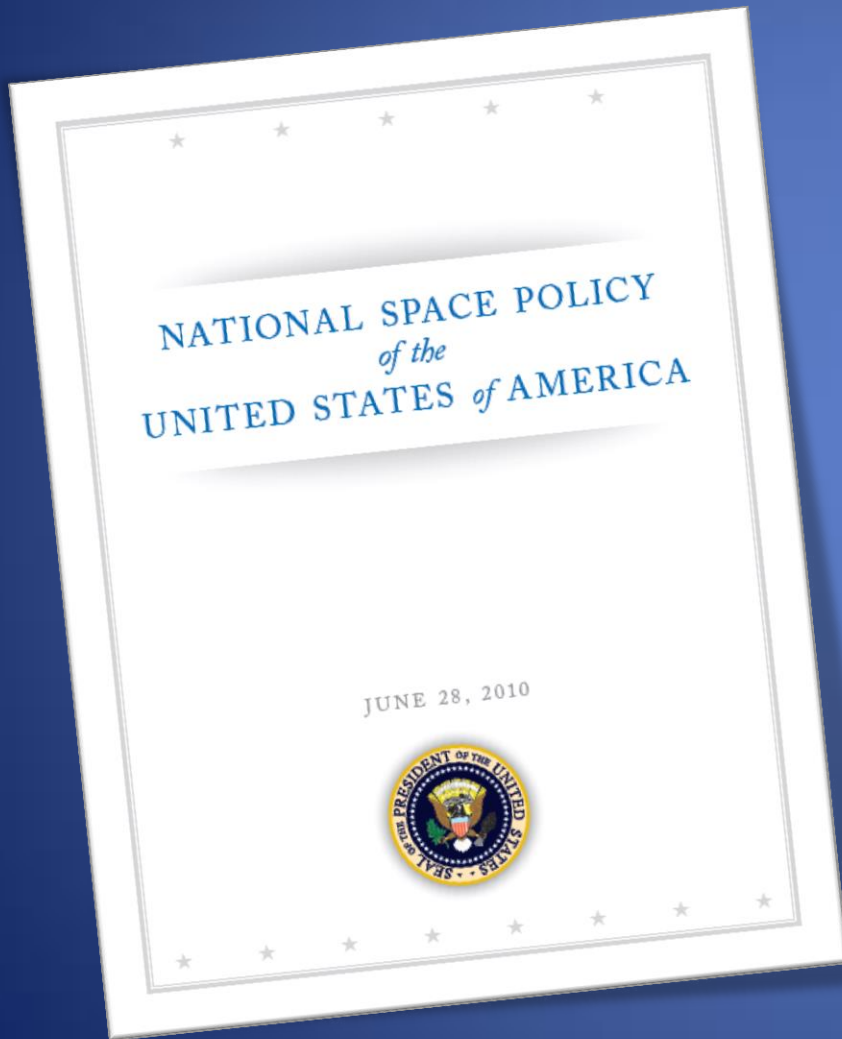


Nasa's Solar Probe Plus spacecraft



Prime Minister Narendra Modi at the White House, September 2014

# U.S. National Space Policy

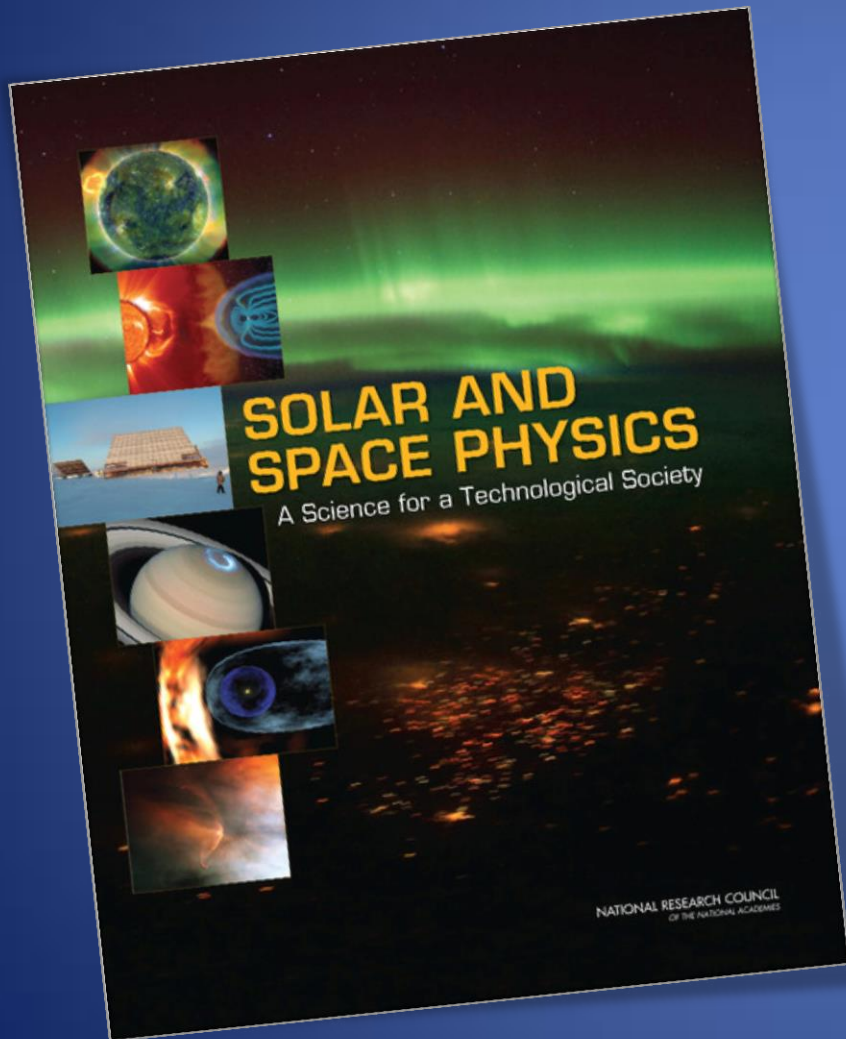


The **Secretary of State**, after consultation with the heads of appropriate departments and agencies, **shall carry out diplomatic and public diplomacy efforts to strengthen understanding of, and support for, U.S. national space policies and programs...**

Goals:

- **Expand international cooperation** on mutually beneficial space activities to: broaden and extend the benefits of space; [and] further the peaceful use of space...
- **Improve space-based Earth and solar observation capabilities needed to** conduct science, **forecast terrestrial and near-Earth space weather**, [...] and support disaster response and recovery.

# U.S. National Space Policy (cont'd)



And as noted in the **2013-2022 Decadal Survey\***, understanding space weather and climate is a prerequisite for fulfilling at least two directives of **U.S. National Space Policy**:

1. Take necessary measures to **sustain the radiofrequency environment** in which critical U.S. space systems operate.
2. **Preserve the outer space environment**, in part by pursuing “research and development of technologies and techniques” and **by leading “the continued development and adoption of international and industry standards to minimize debris.”**

# Space Weather Awareness

Multiple efforts underway across government agencies, nationally and internationally

**Congress** – Critical Infrastructure Protection Act, H.R. 3410, Dec 2014; NASA Authorization Act of 2010

**U.S. Regulatory Action** – FERC reliability standards

**Space weather in Strategic National Risk Assessment**

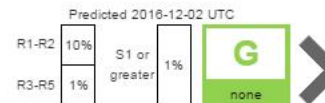
**FEMA Federal Interagency Response Plan** – Will include a Long-Term Power Outage Annex

**International** – UN COPUOS Space Weather Expert Group; UN WMO Inter-Programme Coordination Team on Space Weather; FAA and UN International Civil Aviation Organization; NATO space weather teams



Search

**SPACE WEATHER CONDITIONS** on NOAA Scales



Solar Wind Speed: **325** km/sec

Solar Wind Magnetic Fields: Bt **3** nT, Bz **-1** nT

Noon 10.7cm Radio Flux: **85** sfu



**Latest GOES Satellite now in Successful Orbit; Re-designated GOES-16**

*published: Thursday, December 01, 2016 21:47 UTC*

On November 29, 2016, the newest GOES satellite was successfully placed into geostationary orbit (approximately 22,000 miles away from Earth) and h

**Winter Weather Preparedness and Safety Tips from the NWS**

*published: Thursday, December 01, 2016 05:18 UTC*

Winter can bring with it a wide variety of potentially dangerous weather that can impact roadways, outdoor activities, infrastructure, and more. Be

**Executive Order to Prepare Nation for Space Weather Events**

*published: Monday, November 07, 2016 16:51 UTC*

An Executive Order to coordinate efforts to prepare the nation for space weather events was signed by President Obama on 13 Oct. Read the full ord

**New Experimental Regional Geomagnetic Products Available**

*published: Monday, November 07, 2016 14:22 UTC*

SWPC deployed experimental products from the new operational Geospace model on Oct 5th.

**SERVING ESSENTIAL SPACE WEATHER COMMUNITIES**

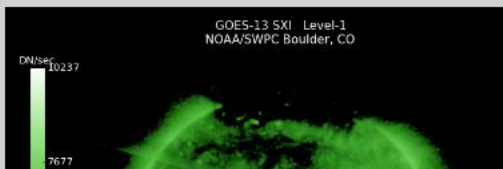
Aviation  
Radio Communications

Electric Power  
Satellites

Emergency Management  
Space Weather Enthusiasts

Global Positioning System (GPS)

**THE SUN'S X-RAYS**



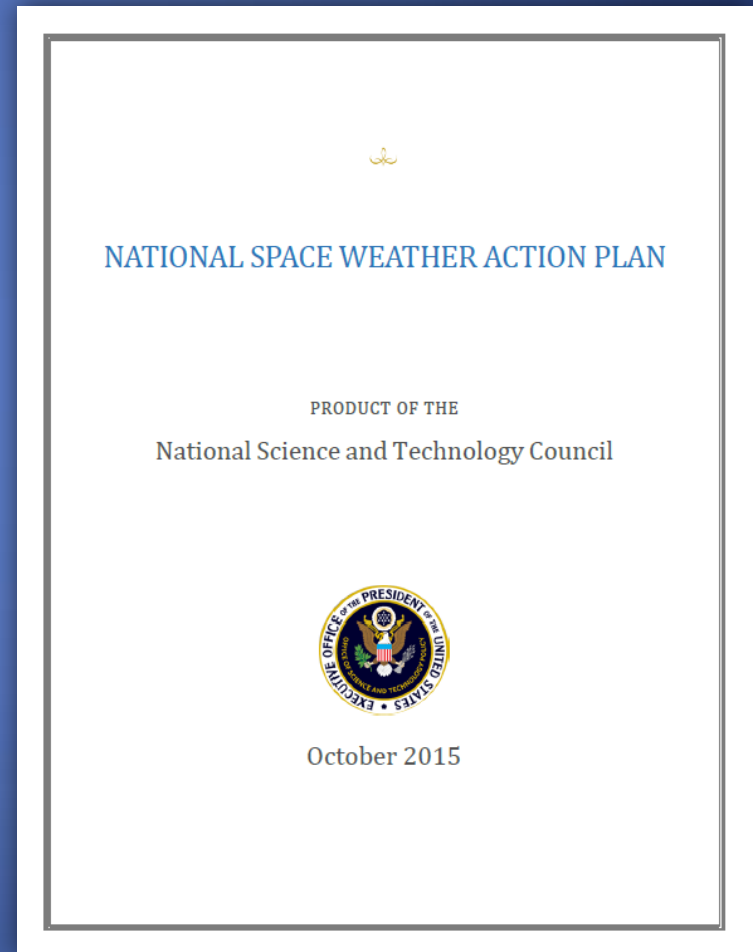
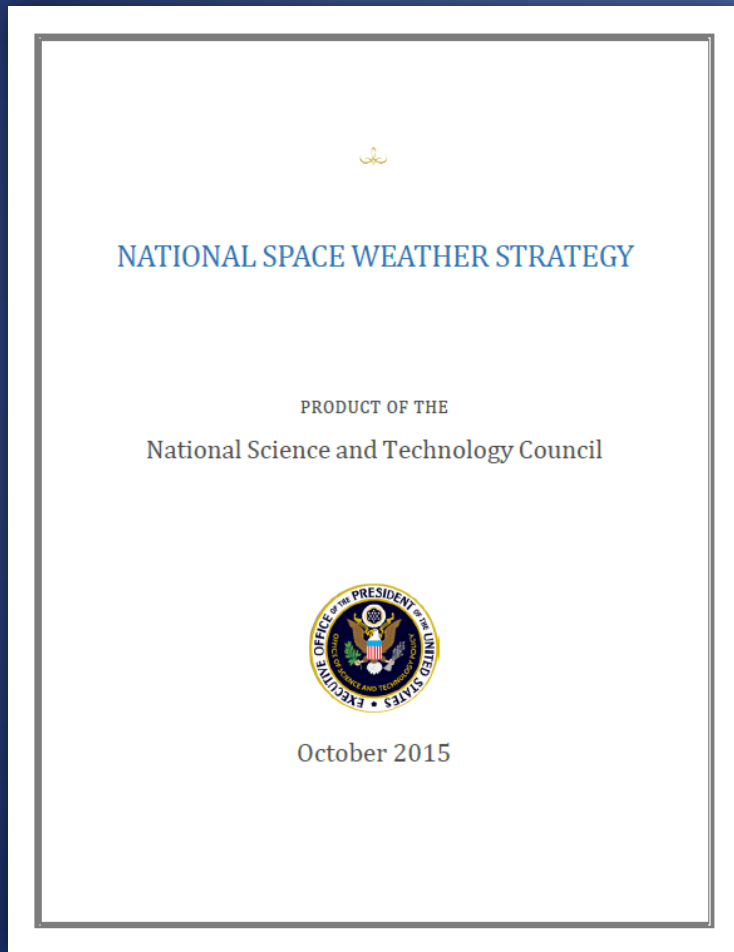
**CORONAL MASS EJECTIONS**



**THE AURORA**



# National Space Weather Strategy and Action Plan – released October 2015



# National Space Weather Strategy – Structure

Strategy and Action Plan articulate six high-level goals:

1. Establish Benchmarks for Space Weather Events
2. Enhance Response and Recovery Capabilities
3. Improve Protection and Mitigation Efforts
4. Improve Assessment, Modeling, and Prediction of Impacts on Critical Infrastructure
5. Improve Space Weather Services through Advancing Understanding and Forecasting
- 6. Enable Increased International Cooperation**



# Goal 6 - Enable Increased International Cooperation

## OBJECTIVES:

- Build international support at the **policy level** for acknowledging space weather as a global challenge
- Increase engagement with the international community on **observation** infrastructure, data sharing, numerical **modeling**, and scientific **research**
- Strengthen international coordination and cooperation on space weather **products and services**
- Promote a collaborative international approach to extreme space weather **preparedness**



HOME · BLOG

# Preparing the Nation for Space Weather: New Executive Order

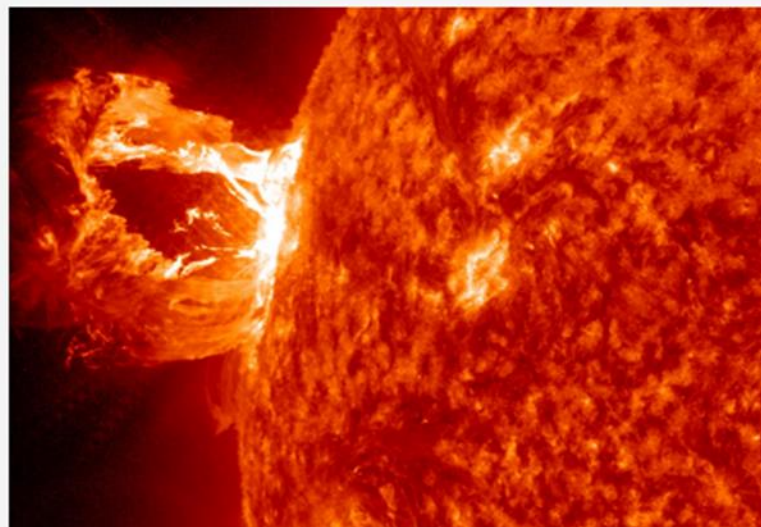
OCTOBER 13, 2016 AT 10:00 AM ET BY DR. TAMARA DICKINSON



**Summary:** The Administration takes significant step towards preparing critical infrastructure and technology for the risk of space weather.

Today, President Obama signed an [Executive Order](#) that seeks to coordinate efforts to prepare the Nation for space weather events. The Executive Order will help reduce economic loss, save lives, and enhance national security by ordering the creation of nationwide response and recovery plans and procedures that incorporate technologies that mitigate the effects of space-weather events. By this action, the Federal Government will lead by example and help motivate state and local governments, and other nations, to create communities that are more resilient to the hazards of space weather.

The term “space weather” refers to effects on the



# Select Workshops and Events

**January 24-29, 2016:** COSPAR/ILWS Workshop, the “Science for Space Weather” was held in GOA, India

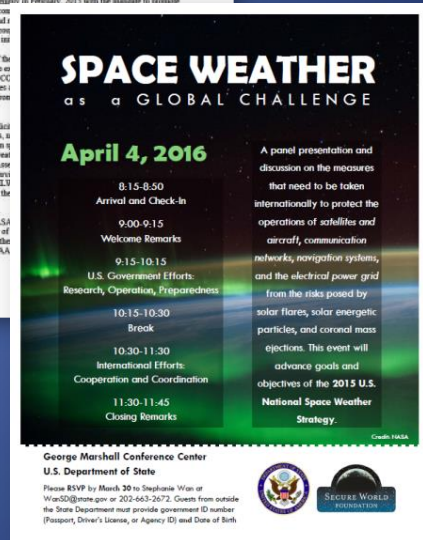
<http://www.cessi.in/ssw/information.html>

**February 15-17, 2016:** COSPAR/ILWS Workshop – “From Science Discovery to Applications, Services, and Infrastructure Protection”, held during the UN COPUOS Space Weather Expert Group Meeting

<http://www.unoosa.org/oosa/en/ourwork/topics/space-weather.html>

**April 4, 2016:** “Space Weather as a Global Challenge” held in Washington, DC.

<http://swfound.org/events/2016/space-weather-as-a-global-challenge>



# Summary

- The importance of addressing impacts of severe space weather is growing.
- The White House has established a **national policy** for space weather, and coordinated the development of a **National Space Weather Strategy and Action Plan**.
- Significant **International Cooperation** is already underway, notably COPUOS' Space Weather Expert Group, WMO's four-year plan, COSPAR's Roadmap.

**THANK YOU!**