International Cooperation in Space Weather

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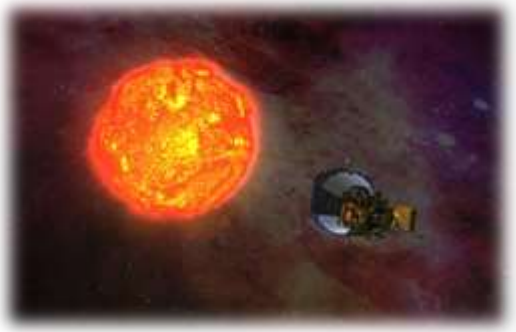
What Cooperation and Why?

- 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.



Nasa's Solar Probe Plus spacecraft

- Also pushes for space cooperation with specific countries or groups of them for broader foreign policy reasons.

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.

"National Space Policy of the United States of America," June 28, 2010, available at: http://www.nasa.gov/pdf/649374main_062810_national_space_policy.pdf.

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

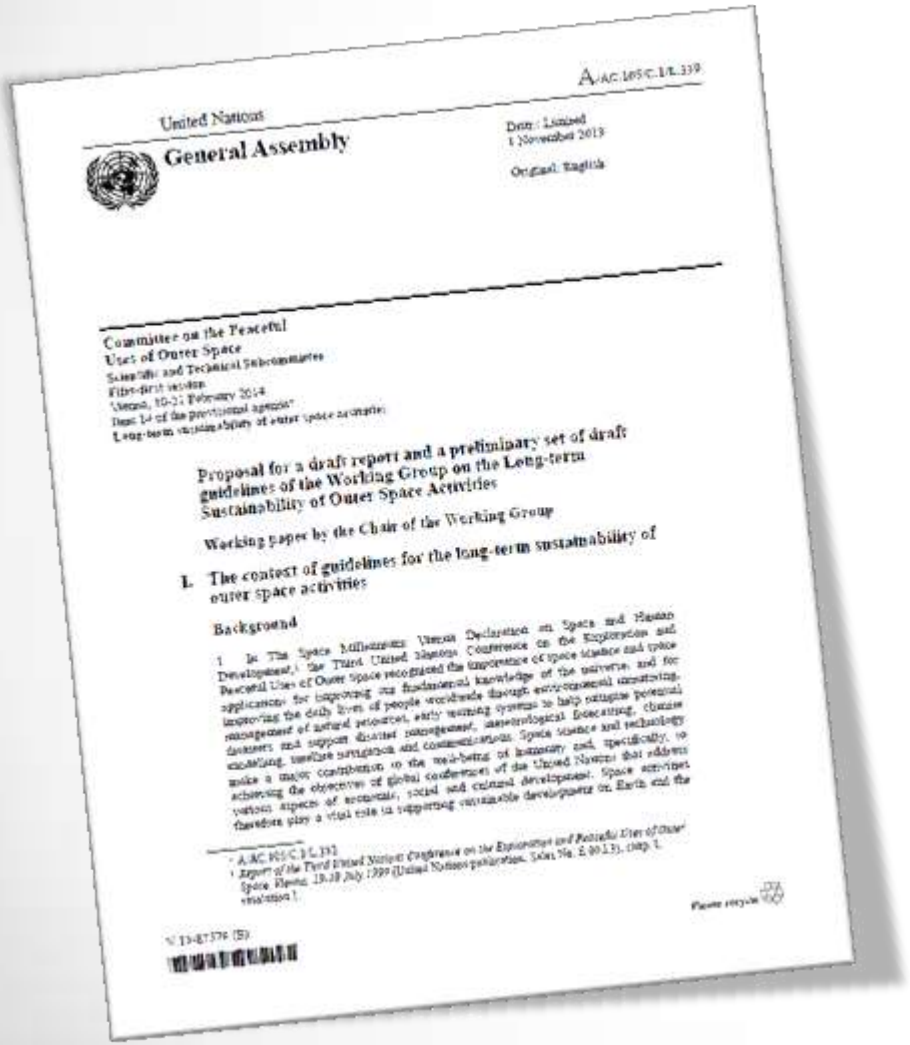
And as noted in the **2013-2022 Decadal Survey***, understanding space weather and climate is a prerequisite for fulfilling at least two directives of U.S. National Space Policy:

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."

* See, National Research Council report on Solar and Space Physics: A Science for a Technological Society (2013)

Preserving the Outer Space Environment
UN COPUOS



United Nations
General Assembly
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Committee on the Peaceful Uses of Outer Space
Scientific and Technical Subcommittee
Fifty-first session
Vienna, 10-21 February 2014
Item 14 of the provisional agenda*
Long-term sustainability of outer space activities

Proposal for a draft report and a preliminary set of draft guidelines of the Working Group on the Long-term Sustainability of Outer Space Activities

Working paper by the Chair of the Working Group

I. The context of guidelines for the long-term sustainability of outer space activities

Background

1. In The Space Millennium: Vienna Declaration on Space and Human Development,[1] the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space recognized the importance of space science and space applications for improving our fundamental knowledge of the universe, and for improving the daily lives of people worldwide through environmental monitoring, management of natural resources, early warning systems to help mitigate potential disasters and support disaster management, meteorological forecasting, climate modelling, satellite navigation and communications. Space science and technology make a major contribution to the work being of humanity and, specifically, to achieving the objectives of global conferences of the United Nations that address various aspects of economic, social and cultural development. Space activities therefore play a vital role in supporting sustainable development on Earth and the

* A/AC.105/C.1/L.332
[1] Report of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space, Vienna, 19-30 July 1999 (United Nations publication, Sales No. E.00.I.3), chap. I, resolution 1.

V.13-87376 (E)

Working Group on the Long-term Sustainability of Outer Space Activities adopted **five draft guidelines** from the **Expert Group on Space Weather**

27. Support and promote the collection, archiving, sharing, intercalibration, and **dissemination of critical space weather data**.
28. Support and promote further coordinated **development of advanced space weather models** and forecasting tools in support of user needs.
29. Support and promote the coordinated sharing and **dissemination of space weather model outputs and forecasts**.
30. Support and promote the collection, sharing, and dissemination of and access to information relating to **best practices for mitigating the effects of space weather** on terrestrial and space-based systems and related risk assessments.
31. Promote the **education, training and capacity building** required for a sustainable global space weather capability.

UN Office of Outer Space Affairs, http://unoosa.org/pdf/limited/c1/AC105_C1_L339E.pdf

Space Weather and Diplomacy
past UN COPUOS activities

- International Heliophysical Year in 2007

- International Space Weather Initiative (ISWI)
  - Initiated by the Heliophysics Science community in 2009.
  - Inauguration at the Scientific and Technical Subcommittee (UN COPUOS), Vienna, Austria, February 2010.
  - **Capacity building workshops** held in Egypt, Nigeria, Ecuador, and Austria.

ISWI Instrument Distribution

http://www.iswi-secretariat.org/

Space Weather and Diplomacy
upcoming UN COPUOS activities

February 2015: UN COPUOS Scientific and Technical Subcommittee

- Workshop on Space Weather Services to Build Global Resilience Space Weather
- Expert Focus Group

March 2015: Workshop on Space Weather - Science and Data Products from ISWI Instruments

- Follow-up on ISWI recommendations
- Maintain capacity building momentum established by the IHY and ISWI

Prediction and mitigation requires both space-based and global terrestrial instrumentation

and broad engagement across both the U.S. and international SWx communities