

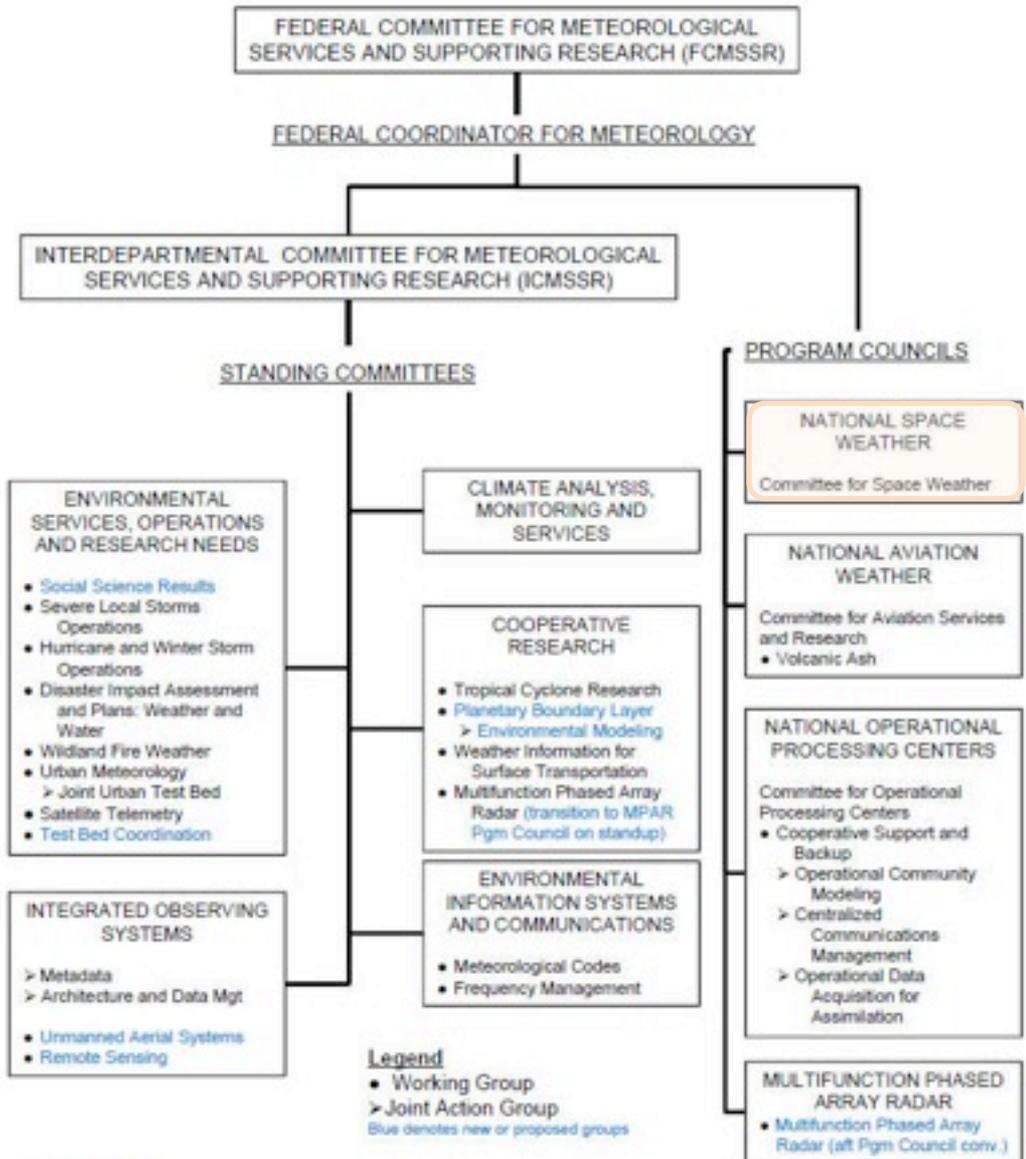
NASA Space Weather Program

**Space
Weather**

**Heliophysics Subcommittee
Presentation
July 3, 2012**

Aurora

FEDERAL METEOROLOGICAL COORDINATING INFRASTRUCTURE



Legend
 • Working Group
 > Joint Action Group
 Blue denotes new or proposed groups

November 2010



National Space Weather Program

AGENCY PARTICIPANTS



THE NATIONAL SPACE WEATHER PROGRAM

- The National Space Weather Program (NSWP)** is an interagency initiative to speed improvement of space weather services. It emerged in 1994 from the efforts of several U.S. government agencies to prepare the country to deal with technological vulnerabilities associated with the space environment. The overarching goal of the NSWP is to achieve an active, energetic, interagency system to provide timely, accurate, and reliable space weather warnings, observations, specifications, and forecasts. The program builds on existing capabilities and establishes an aggressive, coordinated process to set national priorities, focus agency efforts, and leverage resources. It includes contributions from the user community, operational forecasters, researchers, modelers, and experts in instruments, communications, and data processing and analysis and is a partnership among academia, industry, and government. The vehicle to implement and manage the program is the National Space Weather Program Council (NSWPC), sponsored by the Office of the Federal Coordinator for Meteorology, under guidance of the Federal Committee for Meteorological Services and Supporting Research (FCMSR).
- The National Space Weather Program Council** Established in 1994 and sponsored by the Office of the Federal Coordinator for Meteorological Services and Supporting Research (OFCM), the Council is a multi-agency group designed to provide oversight and direction to the integrated process of setting national priorities, focusing agency efforts, and leveraging resources. The Council ensures coordination and collaboration across the agencies involved in space weather activities. Council members include representatives of the Departments of Commerce, Defense, Energy, Interior, State, and Transportation as well as the National Aeronautics and Space Administration and the National Science Foundation. We anticipate the Department of Homeland Security will join soon and the White House Office of Science and Technology Policy and Office of Management and Budget serve as observers on the Council.
- The Committee for Space Weather** The Committee for Space Weather is an interagency group aligned under the Program Council to advance the goals of the NSWP by facilitating working level relationships among the agencies, coordinating agency activities, fostering communication and coordination across all sectors of the space weather enterprise, tracking progress in meeting the NSWP goals, identifying and correcting problems, and recommending actions to the Council. The Committee membership consists of representatives of the same agencies who are Council members.
- Office of the Federal Coordinator for Meteorology** The Office of the Federal Coordinator for Meteorological Services and Supporting Research, more fully known as the Office of the Federal Coordinator for Meteorology or OFCM, was established in 1954 as a result of Public Law 87-543 and direction from the Bureau of the Budget (now the Office of Management and Budget). The federal meteorological coordinating infrastructure of interagency committees, councils, and working groups was established at the same time, under the sponsorship of the OFCM. The office's mission is to ensure the effective use of federal meteorological resources by leading the systematic coordination of operational weather requirements, services, and supporting research among the 15 involved federal agencies and offices.

Samuel P. Williamson is the Federal Coordinator for Meteorology and Chairman of the National Space Weather Program Council.

For more information on OFCM, see <http://www.ofcm.gov>

NSWP MEMBER AGENCIES AND ROLES AND MISSIONS

Listed alphabetically by department, then independent agency.



Department of Defense (DoD) DoD's space weather program focuses on the development, testing, and operation of high frequency (HF) radio and satellite communications. The Air Force Research Laboratory and the Naval Research Laboratory work with each other, a variety of other governmental agencies, and academia to develop operational space weather models, ground- and space-based sensors, and system impact applications.

Department of Energy (DOE) The core space weather program within DOE and its national laboratories supports research, applications and operations in the detection of nuclear explosions from satellites. The program develops and supplies the Air Force and other agencies with instruments flown on the Global Positioning System spacecraft as well as autonomous stations to measure local storms and capture disturbances and events.

- **National Aeronautics and Space Administration (NASA).** The Heliophysics Division of NASA's Science Mission Directorate is tasked to fulfill the science strategy laid out by the National Research Council's Decadal Survey. It advances our understanding of events and conditions in space; develops and uses new technologies; develops and maintains data that determine the nature of space weather conditions and provide insight into physical understanding; and generally observes and interprets the variable heliophysics system. The NASA Human Exploration and Operations Mission Directorate (HEOMD) is responsible for all human space operations in Low-Earth Orbit and beyond. HEOMD provides the agency with all oversight for safe and effective operation of human exploration, including launch services, space transportation, and space communications in support of both human and robotic exploration. The NASA Office of the Chief Engineer is responsible for developing agency standards for environmental impacts on spacecraft systems and subsystems and addresses space weather issues across NASA.

Space Weather at NASA

**NASA
Space Weather Team**

HEOMD, OCE, OIIR, SMD AA

HPD Division Director
Program Executive

CSW members include: GSFC, JPL, JSC, MSFC, HEOMD,

Space Weather Program

Applications of Heliophysics Science

As society becomes increasingly dependent on technologies that are affected by space weather, our vulnerabilities become more obvious and more worrisome. A report issued in December 2008 by the NRC addressed the impacts of space weather events on human technologies. The report, *Severe Space Weather Events—Understanding Societal and Economic Impacts*, estimates that the economic cost of a severe geomagnetic storm could reach \$1–\$2 trillion during the first year, with a recovery period of 4–10 years. These long recovery times would result from damage to large power transformers and other hard-to-replace facilities.



Space Weather Program

Partnerships with one or more other agencies may be the preferred method for satisfying the national need for observations from L1, measuring solar wind input into geospace. Presently, this is accomplished with aging scientific satellites making available highly-compressed, relevant measurements in near real-time. This is one of the examples of interagency cooperation where “beacons” on NASA spacecraft

have provided timely science data to space weather forecasters. Successful examples include ACE measurements of interplanetary conditions from L1, CME alerts arising from SOHO observations, and STEREO beacon images of the far side of the Sun. This roadmap recommends continued cooperation between NASA and other agencies to plan for the eventual loss of capability in space to measure conditions in the solar wind critical to both operational and scientific research.



Heliophysics Funded Programs and Leveraged Initiatives



Solar Terrestrial Probes

fundamental, universal questions in solar and space physics

Living with a Star

physics of the coupled Sun-Earth system that affect life and society

Heliophysics Explorer Program

high-priority, highly-focused science not addressed within STP and LWS

Heliophysics Research

foundational investigations combining data analysis, modeling, and theory

Flight Development	<ul style="list-style-type: none"> • MMS • STP Future 	<ul style="list-style-type: none"> • RBSP • BARREL • SET • SPP • SOC • LWS Future 	<ul style="list-style-type: none"> • IRIS • EX Future 	<ul style="list-style-type: none"> • Research Range* • Sounding Rockets* <p>* Managed for all SMD</p>	Development
Research & Analysis	MMS Interdisciplinary Scientists (IDS)	• LWS Science	EX U.S. Participating Investigators (USPI)	<ul style="list-style-type: none"> • Heliophysics Research and Analysis • SEC Guest Investigator 	Research & Analysis
System Observatory	<ul style="list-style-type: none"> • STEREO • Hinode 	• SDO	<ul style="list-style-type: none"> • THEMIS/ARTEMIS • AIM • IBEX • TWINS • CINDI 	<ul style="list-style-type: none"> • Voyager • Wind • ACE • SOHO • SSC MO Services • TIMED • RHESSI • Cluster II • Geotail 	System Observatory
Technology & Data Systems	Tech Development for future missions	Tech Development for future missions	Tech Development for future missions	<ul style="list-style-type: none"> • Solar Data Center • SEC Data & Modeling • Science Data & Computing • Space Physics Data Archive 	Technology & Data Systems

Applied Heliophysics: Space weather beacon services, research to operations, Intra- & Inter-Agency Coordination, space environment services

• CCMC

Education and Public Outreach

Heliophysics News/Communications and Event Management

International Activities: International Living With a Star, United Nations / Committee on the Peaceful Uses of Outer Space, International Space Weather Initiative, and International Heliophysical Year

Strategic Planning: HPD Roadmap; HPD narrations in NASA Strategic Plan, SMD Science Plan, NASA Performance Report, and Budget Justifications; NAC NRC POC; Heliophysics Subcommittee; NAC Science Committee POC

Secretarial: Mail, office activities, correspondence, travel

Resource Management

Administrative: admin budgeting, logistics, HR, PR/Contracting

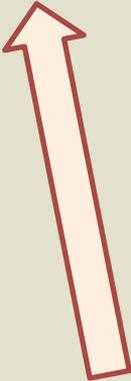
Coordinated and Leveraged Initiatives →

Updated: 01/16/12

Space Weather Program

HPD Organization Plan

Applied Heliophysics: Space weather beacon services, research to operations, Inter & Intra-Agency Coordination, space environment services



Useful Websites

**On the topic
Of
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National Space Weather Program

AGENCY PARTICIPANTS



AGENCIES

ACTIVITIES

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COMMITTEE MEMBERS

RELATED SITES

CONTACT

Space weather refers to conditions on the Sun and in the space environment that can influence the performance and reliability of space-borne and ground-based technological systems, and can endanger human life or health.

The National Space Weather Program (NSWP) is an interagency initiative to speed improvement of space weather services. It emerged in 1994 from the efforts of several U.S. government agencies to prepare the country to deal with technological vulnerabilities associated with the space environment. The overarching goal of the NSWP is to achieve an active, synergistic, interagency system to provide timely, accurate, and reliable space weather warnings, observations, specifications, and forecasts. It will build on existing capabilities and establish an aggressive, coordinated process to set national priorities, focus agency efforts, and leverage resources. The Program includes contributions from the user community, operational forecasters, researchers, modelers, and experts in instruments, communications, and data processing and analysis. It is a partnership between academia, industry, and government. The vehicle to implement and manage the Program is the National Space Weather Program Council (NSWPC) within the [Office of the Federal Coordinator for Meteorology](#) under guidance of the Federal Committee for Meteorological Services and Supporting Research (FCMSSR). The Council, which consists of representatives from Federal agencies involved in space weather activities, provides oversight and policy guidance to ensure common needs are met and the interests of each agency are addressed. Under guidance of the NSWP, the [Committee for Space Weather](#) (CSW) is the principal agent for advancing the goals of the program.



 Associate NASA Official: [Robert Fisher](#)
 Curator: [Jacobus Rind](#)
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 • [Freedom of Information Act](#)
 Last updated: 10/26/11

Done

NOAA / NWS Space Weather Prediction Center - Mozilla Firefox

http://www.swpc.noaa.gov/

National Space Weather Program

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www.weather.gov

National Weather Service Space Weather Prediction Center

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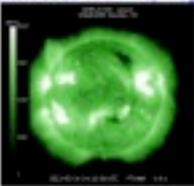
The Office of the Federal Coordinator for Meteorology and the National Space Weather Program will host the 2012 Space Weather Enterprise Forum on June 5, 2012, at the National Press Club in Washington, DC. This year's theme is Solar Maximum 2013 - How Space Weather Will Affect You! To learn more and register, please visit the SWEP web site at http://www.nswp.gov/satellatwf_2012.htm.

Curious to learn more about space weather and its impacts? Follow this link:
Sign up for Emails of Space Weather Alerts, Warnings, Watches, and Forecasts.

Current Space Weather Conditions

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Latest GOES Solar X-ray Image



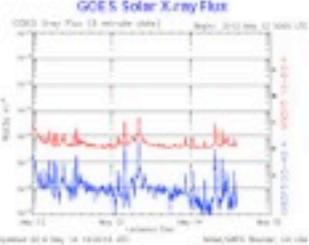
NOAA Scales Activity

	Range 1 (minor) to 5 (extreme)	Past 24 hours	Current
Geomagnetic Storms *		none	none
Solar Radiation Storms		none	none
Radio Blackouts		none	none

Satellite Environment Plot



GOES Solar X-ray Flux



Space Weather Topics:
Alerts / Warnings, Space Weather Now, Today's Space Wx, Space Weather Now, Today's Space Wx, Data and Products, About Us, Email Products, Space Wx Workshop, Education/Outreach, Customer Services, Contact Us

NOAA / National Weather Service
National Centers for Environmental Prediction
Space Weather Prediction Center, SWPC
325 Broadway, Boulder, CO 80515
SWPC Webmaster@noaa.gov
Page last modified: November 5, 2007

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Http://www.spaceweathercenter.org/SWOP/NSWP/1.html

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Space Weather Center

The National Space Weather Program

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As the world moves into the twenty-first century, our civilization is becoming increasingly dependent on technology which is vulnerable to conditions in the space environment: space weather.



A photo of the Southern Lights taken by the space shuttle Discovery in 1991. Photo courtesy of NASA.

To prepare ourselves to deal with these vulnerabilities, several U. S. government agencies have developed a program called the National Space Weather Program (NSWP). "Space weather" refers to conditions on the Sun and in the solar wind, magnetosphere, ionosphere, and thermosphere that can influence the performance and reliability of space-borne and ground-based technological systems and can endanger human life or health. The National Space Weather Program will:

- Assess and document the impacts of space weather
- Identify customer needs
- Set priorities
- Determine agency roles
- Coordinate interagency efforts and resources
- Ensure exchange of information and plans
- Encourage and focus research
- Facilitate transition of research results into operations
- Foster education of customers and the public



Done

CCMC: Community Coordinated Modeling Center - Mozilla Firefox

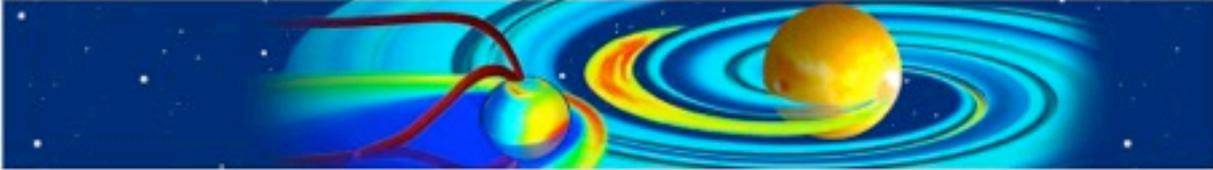
http://ccmc.gsfc.nasa.gov/index.php

national space weather program

COMUNITY COORDINATED MODELING CENTER

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CCMC Mission Statement

The CCMC is a multi-agency partnership to enable, support and perform the research and development for next-generation space science and space weather models.

Student Research Contest

CCMC and NSF announce the first CCMC Student Research Contest: undergraduate and graduate students using (or having used) the CCMC tools and services in a research project or in a project as part of their coursework are encouraged to apply. Winners are to present their work at the upcoming GEM or SRINE workshops this summer, receiving travel support.

[Find out more](#)

Model Additions/Updates at the CCMC

- **GITM 2.0 is now available for Runs-On-Request**
- **CORHEL 4.7.0 is now available for runs on request**
- **SAMI3 replaced SAMI2**
- **CTIPe version 2.0 has replaced CTIP version 1.0**
- **TIE-GCM 1.94.1 has replaced TIE-GCM 1.93**

All available models

GEM-CEDAR Modeling Challenge

CCMC is supporting the CEDAR-GEM Modeling Challenge that is build upon GEM GOCM and CEDAR ETI Challenges. Metrics studies discussed at the mini-workshop in San Francisco in December 2011: Poynting Flux/Joule heating, Auroral boundaries, Role of drivers on ionosphere model

CCMC Services

- We provide, to the scientific community, access to modern space research models
- We test and evaluate models
- We support Space Weather forecasters
- We support space science education

Latest Additions to the CCMC Services

- **Integrated Space Weather Analysis System** is a web-based dissemination system for NASA-relevant space weather information.
- **Space Weather Awareness at NASA** space weather information portal.
- **LWS Supported Tools and Methods**
- **Kameleon software:** model output from different models can now be stored uniformly in a common science data format. Users can request the CDF-formatted output for a CCMC run.
- **Movies on Request:** you can now request to generate a movie, images and ASCII data files for each time step of a model run.
- **CCMC Space Weather on Google Earth:** CCMC is now providing space weather-related Google Earth overlays.

Done

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 DSN: 271-3663
 E-mail: shwpa@offut.af.mil

<https://afweather.af.mil/weather/spaceweather.html>

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main space weather center

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About iSWA

iSWA is a flexible, turn-key, Web-based dissemination system for NASA-relevant space weather information that combines forecasts based on the most advanced space weather models with concurrent space environment information. iSWA is customer-configurable and adaptable for use as a powerful decision-making tool. The system offers an unprecedented ability to analyze the present and expected future space weather impacts on NASA's human and robotic missions.

Mobile Applications

The NASA Space Weather App powered by iSWA is available for iOS devices from the iTunes App Store as well as Android devices from the Android Market

SWx

NASA SWx
(Space Weather)
for IOS & Android

Apple

ANDROID

The iSWA cygnets catalog includes a wide array of space weather analysis products. Simply select the cygnets of interest to create your own custom layout. Once you've created a layout or two that meets your needs, you can save and share it with a link like this: [Sample Layout](#)

Done

Space Weather Enterprise Forum

www.ofcm.gov Last Updated: 04/09/2012

 Space Weather Enterprise Forum
Presented by The National Space
Weather Program Council 

- [2012 Space Weather Enterprise Forum](#) (June 5, 2012)
- [2011 Space Weather Enterprise Forum](#) (June 21, 2011)
- [2010 Space Weather Enterprise Forum](#) (June 8, 2010)
- [2009 Space Weather Enterprise Forum](#) (May 19-20, 2009)

INTERNATIONAL SPACE WEATHER INITIATIVE (ISWI)

UN/NASA/JAXA Workshop
November 6-10, 2010 Helwan, Egypt

Potential Topics:
 DIY instrument array workshops - Follow-on to DIY Researches, results and activities - Solar activities and space environment interaction - How results from solar and Space missions - Solar/Heliosphere activities relationship - Biosphere and Space Weather interaction.

International Scientific Organizing Committee (Co-chairs):
 Davila, J. M. (USA) - Ayman Mahrous (Egypt) - Haubold, H. J. (UN)

Supporting Organizations:
 - United Nations (UN)
 - National Aeronautics and Space Administration (NASA)
 - Japan Aerospace Exploration Agency (JAXA)
 - International Committee on Global Navigation Satellite Systems (ICG)
 - Space Environment Research Center (SERC) Kyushu University
 - Egyptian Academy of Science (ASST)
 - French-Egyptian Year of Science and Technology 2010 (FEYST)
 - Space Weather Monitoring Center, Helwan University (SWMC)

Quick Contact
 If you have any questions or problems please contact Dr. Ayman's Private Secretary at:
 Email: ayman@swmc.helwan.edu.eg

Latest News & Events

Deadline for Abstract submission and UN Applications	01 October 2010
Notification to Authors	01 October 2010
Registration	01 October 2010
Workshop	06-10 November 2010

International Space Weather Initiative - Mozilla Firefox

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

International Space Weather Initiative
ISWI

About Organization Projects Meetings Publications News&Blogs HOME

Country	Instrument / Organization
ARMENIA	SEVAN Aragats Space Environmental Center, Alkhanian Physics Institute
BRAZIL	SAVNET Presbyterian Mackenzie University - Sao Paulo, Brazil
FRANCE	African Dual Frequency GPS Network CETP/SCMIS
ISRAEL	ULF/ELF/VLF network Tel Aviv University
JAPAN	CHAEN Kyoto University GMDN Shizu University MAGDAS Space Environment Research Center (SERC), Kyushu University OMTEs Nagoya University
SWITZERLAND	CALLISTO Institute of Astronomy, ETH-Zentrum in Zurich
UNITED STATES	AMBER University of California - Los Angeles AWESOME/SID Stanford University CIDR University of Texas at Austin, USA RENOIR University of Illinois SCINDA Air Force Research Laboratory (AFRL)

Latest News:
 03 May 2012 **Armenia Invited to Join International Scientific Team** published on the website of "USA Armenian Life" on March 16, 2012 ...As a member of this site group (ISWI) of scientists from around the world, Prof. Ashot Chilingarian reported on ... (click [here](#))
 02 May 2012 **Karen C. For ISWI: Global Space Weather Science** published on the website of NASA on April 24, 2012 (click [here](#)) or see as [file](#)

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http://www.unoosa.org/osa/ehp/SAP/act2011/aw/index.html

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Programme on Space Applications

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Accomplishments

Regional Centres for Space Science and Technology Education
Basic Space Science
Basic Space Technology
Human Space Technology
Global Navigation Satellite Systems/International Committee on GNSS
Natural Resources Management & Environmental Monitoring
Satellite Communications
Space Technology and Disaster Management
UN/Austria/ESA Symposia
Expert Report Archive
PSA Activities Report Archive
Space Activities of the UN System
Seminars of the Programme on Space Applications

UN-SPIDER
International Committee on GNSS
Regional Centres for Space Science and Technology Education
Space Law
Register of Space Objects

United Nations/Nigeria Workshop on the International Space Weather Initiative (ISWI)

17-21 October 2011, Abuja, Nigeria

Hosted by the Center for Basic Space Science of the National Space Research and Development Agency of Nigeria on behalf of the Government of the Federal Republic of Nigeria

Co-organized and co-sponsored by National Aeronautics and Space Administration (NASA, US), Japan Aerospace Exploration Agency (JAXA, Japan), Space Environment Research Center of Kyushu University (SERC, Japan), International Committee on Global Navigation Satellite Systems (ICG), International Astronomical Union (IAU) and Committee on Space Research (COSPAR)

Background of the Workshop

Initiated in 1990, the United Nations Basic Space Science Initiative (UNBSSI) has contributed to the international and regional development of astronomy and space science through annual workshops organized under the umbrella of the United Nations, focusing specifically on the International Heliophysical Year 2007 (IHY, 2006-2009) and the International Space Weather Initiative (ISWI, 2010-2012). UNBSSI has led to the establishment of planetariums, astronomical telescope facilities, and IHY/ISWI instrument arrays worldwide, particularly in developing countries.

ISWI is envisioned to continue the tradition of IHY in the worldwide deployment of space weather monitoring instrument arrays. To date, ISWI contributes to the observation of space weather through 14 instrument arrays with close to 1000 operating instruments in 97 countries supported by designated national ISWI coordinators in 82 countries. The first workshop on ISWI was held in Helwan, Egypt and hosted by the Helwan University, Egypt, in 2010. The UN/Nigeria Workshop on ISWI has been endorsed by the United Nations General Assembly as part of the 2011 activities of the Programme on Space Applications of the United Nations Office for Outer Space Affairs. The third ISWI workshop will be hosted by Ecuador in 2012.

The purpose of the UN/Nigeria Workshop on ISWI is to continue the scientific study of universal processes in the solar system that affect space weather and the terrestrial environment, and to continue to coordinate the deployment and operation of new and existing instrument arrays aimed at understanding the impacts of space weather on Earth and the near-Earth environment. The workshop will provide a unique opportunity for potential instrument providers and operators to engage collaborators from specific geographical locations, to broaden the coverage of existing instrument arrays, and to provide scientific background needed for analyzing the data and modeling the physical processes.

Online application

NEW: Online application for the Workshop is now available. We encourage all candidates to apply for the Workshop online, as it helps us to streamline the processing of applications as well as helps applicants to save their time.

Done

Click on this link if you wish to be considered by us as a candidate for full or partial funding support for attending the

Space Radiation Analysis Group - NASA, JSC - Mozilla Firefox

http://srag.jsc.nasa.gov/Education/SpaceWeather.htm

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Space Radiation Analysis Group, Johnson Space Center

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Space Weather Monitoring for Mission Operations

Today's News!!!

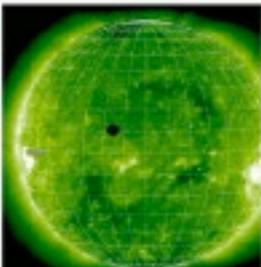
We are currently expanding our resources for monitoring space weather by building new tools for console operators. We would like to work with ALL those who have radiation instruments slated for satellites / probes / rovers that may be useful to space weather monitoring and/or modeling and begin a working relationship of useful data to incorporate into our manned space flight operational community. If you have a data set or product that may be of use, please contact SRAG.



Sun-earth image courtesy of the Astrophysics Division, NASA Goddard Space Flight Center.

Monitoring Requirements

As part of the agency's ongoing commitment to safe space transportation, NASA has adopted the recommendations that the National Council on Radiation Protection and Measurements (NCRP) presented in its Report 95, "Guidance on Radiation Received in Space Activities" (July, 1999) as the basis for the standards applied to spaceflight crew radiation exposures. To fulfil our responsibilities of radiation protection, the Space Radiation Analysis Group (SRAG) provides the following:



- Monitoring of space weather
- Space radiation environment contingency response and analysis
- Radiation instrument operations to characterize and quantify the radiation environment inside and outside the spacecraft
- Tracking of crew daily and cumulative dose
- Comprehensive crew exposure modeling capability
- EVA planning, support and monitoring (Pre-flight and extra-vehicular activity (EVA) crew exposure projections, in flight EVA dose monitoring)
- Interfacing with support groups (Mission Planners, flight controllers, directors and surgeons, NOAA, DOD)
- Updates mission planners, flight controllers, flight directors and flight surgeons on mission significant radiation events
- Evaluation of radiological safety with respect to exposure to isotopes and radiation producing equipment carried on the spacecraft.

SOHO-EIT image - courtesy of the SOHO Extreme Ultraviolet Imager team, NASA Goddard Space Flight Center.

Current Weather Monitoring

In addition to the instruments onboard the ISS and Shuttle that were designed specifically for crew exposure monitoring during mission operations, SRAG utilizes instruments aboard



Done

Space Radiation Analysis Group - Internal Page - Microsoft Internet Explorer

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SRAG INTERNAL WEB

ISS Radiation Instruments

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- All Instruments
- TEPC
- IV-CPDS
- EV1-CPDS (Forward Velocity)
- EV2-CPDS (Zenith)
- EV3-CPDS (Anti-Velocity)

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References

- UNSWC MOU (sig cyc)
- UNSWC MOU ANNEX#1 (sig cyc)
- HPD Roadmap-2009
- NSWP Strategic Plan-2010/1995
- NSWP Implementation Plan ed#2-2000
- NASA SRAG-ISSRadMeasureandDataArchive-2002

MEMORANDUM OF UNDERSTANDING
BETWEEN THE

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
OF THE
U.S. DEPARTMENT OF COMMERCE

UNITED STATES AIR FORCE
OF THE
U.S. DEPARTMENT OF DEFENSE

THE U.S. GEOLOGICAL SURVEY
OF THE
U.S. DEPARTMENT OF THE INTERIOR

THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
AND THE
THE NATIONAL SCIENCE FOUNDATION

To Coordinate and Cooperate in Activities Involving the Development and Execution of a
Unified National Space Weather Capability (UNSWC)

Article I. Parties

A. The Parties and their affiliation with the National Space Weather Program (NSWP) are identified as follows:

The Air Force Weather (AFW) mission is to develop, advance, and champion innovative, mission-focused and highly integrated capabilities to organize, train, and equip the weather career field to enable the Air Force, Army, special operations forces, combatant commands, and the intelligence community to exploit the weather for operations. AFW is responsible for space environmental operations in support of all elements of the Department of Defense. AFW

ANNEX #1 TO THE MEMORANDUM OF UNDERSTANDING
TO
COORDINATE AND COOPERATE ACTIVITIES INVOLVING THE DEVELOPMENT AND
EXECUTION OF A UNIFIED NATIONAL SPACE WEATHER CAPABILITY

BETWEEN THE

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
OF THE
U.S. DEPARTMENT OF COMMERCE
AND THE
THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

I. BACKGROUND

The National Oceanic and Atmospheric Administration of the U.S. Department of Commerce, the United States Air Force of the U.S. Department of Defense, the U.S. Geological Survey of the U.S. Department of the Interior, the National Aeronautics and Space Administration, and the National Science Foundation (hereafter, "the Agencies") on (INSERT DATE HERE) entered into a Memorandum of Understanding (hereafter, "the MOU") to coordinate and cooperate in activities involving the development and execution of a unified national space weather capability (hereafter, "the UNSWC").

II. PURPOSE

The purpose of this Annex is to define a prototype activity for the transition of research models to operational use. This activity will be undertaken by the National Aeronautics and Space Administration (NASA) and the National Oceanic and Atmospheric Administration (NOAA). This Annex is entirely consistent with and supportive of the provisions of the UNSWC.

III. RESPONSIBILITIES

Up to six Geospace forecast models will be evaluated by the NASA Goddard Space Flight Center Community Coordinated Modeling Center (hereafter, "CCMC") to provide a quantitative determination of the ability of the models to forecast geomagnetic disturbance information of value to the electric power industry and other industry and government activities impacted by geomagnetic disturbances.

Up to four physics-based, magnetohydrodynamic (MHD) models of the coupled magnetosphere-ionosphere system and two empirical models will be evaluated. The model output will be compared with ground magnetic field measurements to assess model value to the electric power grid operators. The model performance will be evaluated based on metrics provided to CCMC by NOAA Space Weather Prediction Center (hereafter, "SWPC") and the Geospace model-development community. A report on how the models performed for a number of historic space weather conditions will be agreed to by both agencies, by December 2012.

UNSWC_MOU_ANNEX1_2012-05-15_NASA_NOAA

HPD_2009_Roadmap_Heliophysics_FINAL.pdf - Adobe Acrobat Pro

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Recommendation No.8
 Plan with other agencies for the eventual loss of capability in space to measure conditions in the solar wind critical to both operational and scientific research.

Currently, protection of humans in space is an operational activity within the Space Operations Mission Directorate, which supports the International Space Station and Space Shuttle flights. The Heliophysics Division cooperates with the Space Radiation Analysis Group at Johnson Space Center, which is responsible for ensuring that the radiation exposure of astronauts remains below established safety limits.

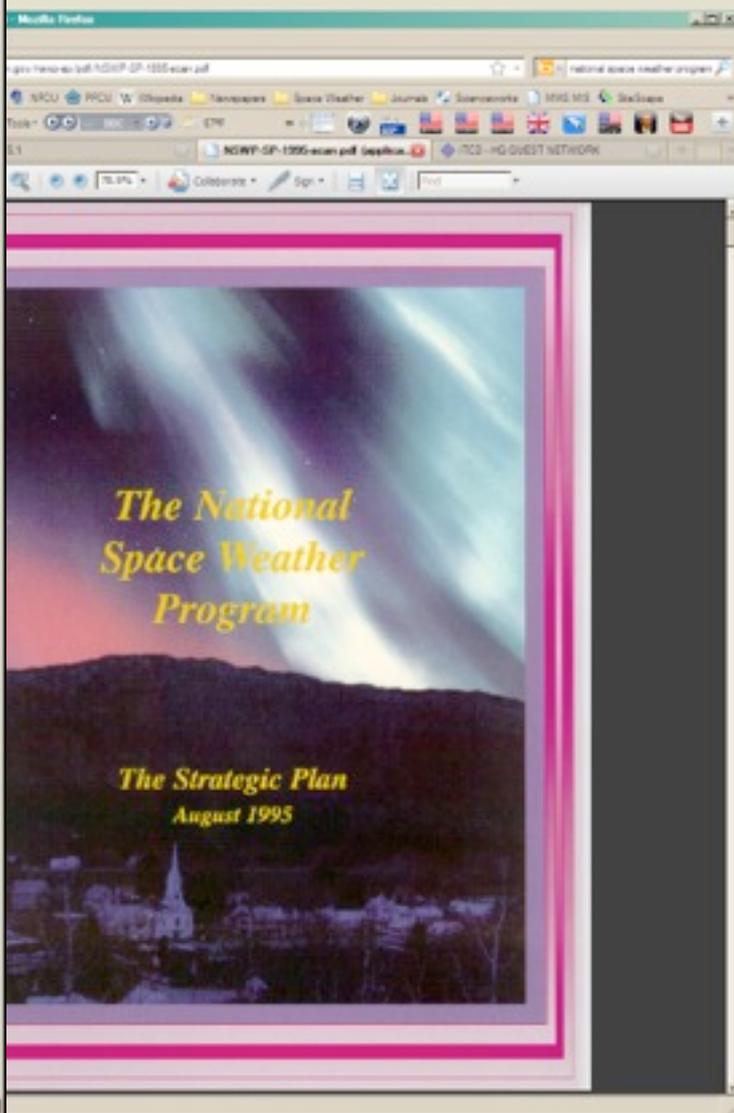
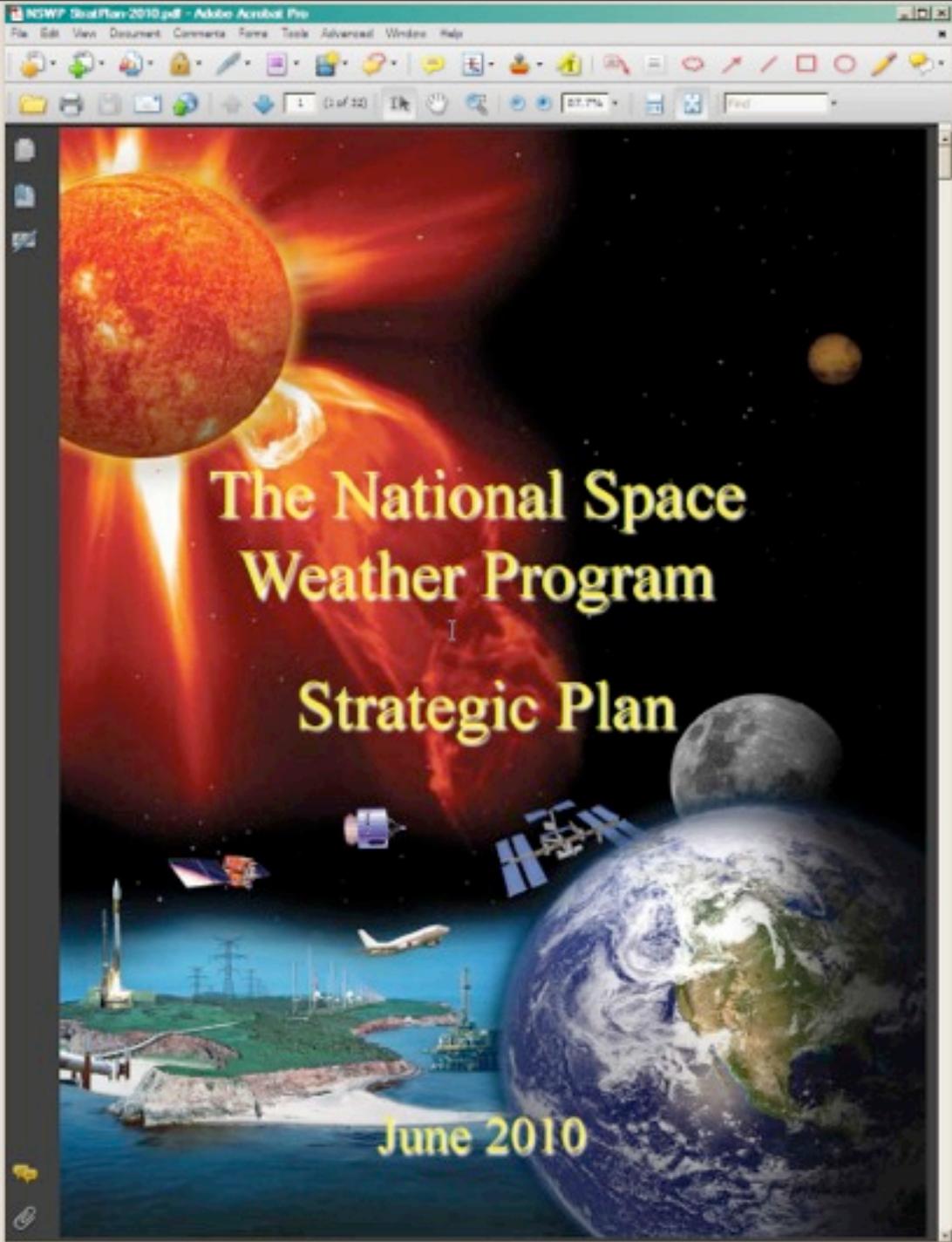
Beyond NASA, interagency coordination in space weather activities has been formalized through the Committee on Space Weather, which is hosted by the Office of the Federal Coordinator for Meteorology. This multiagency organization is co-chaired by representatives from NASA, NOAA, DoD, and NSF and functions as a steering group responsible for tracking the progress of the National Space Weather program. External constituencies reporting and making use of new knowledge and data from NASA's efforts in heliophysics include the FAA, DoD, and NOAA.

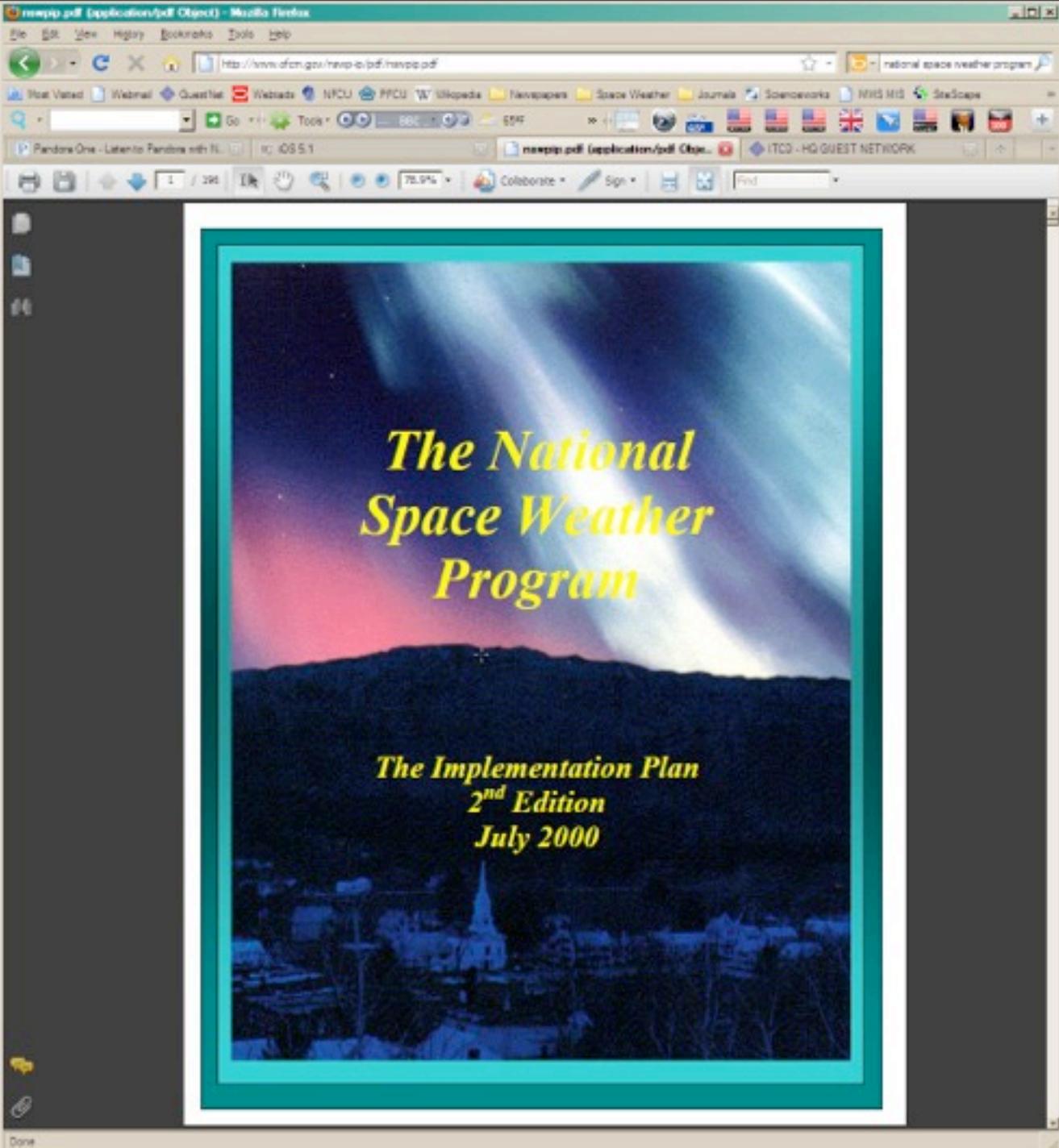
Partnerships with one or more other agencies may be the preferred method for satisfying the national need for observations from L1, measuring solar wind input into geospace. Presently, this is accomplished with aging scientific satellites making available highly-compressed, relevant measurements in near real-time. This is one of the examples of interagency cooperation where "beacons" on NASA spacecraft have provided timely science data to space weather forecasters. Successful examples include ACE measurements of interplanetary conditions from L1, CME alerts arising from SOHO observations, and STEREO beamed images of the far side of the Sun. This roadmap recommends continued cooperation between NASA and other agencies to plan for the eventual loss of capability in space to measure conditions in the solar wind critical to both operational and scientific research.

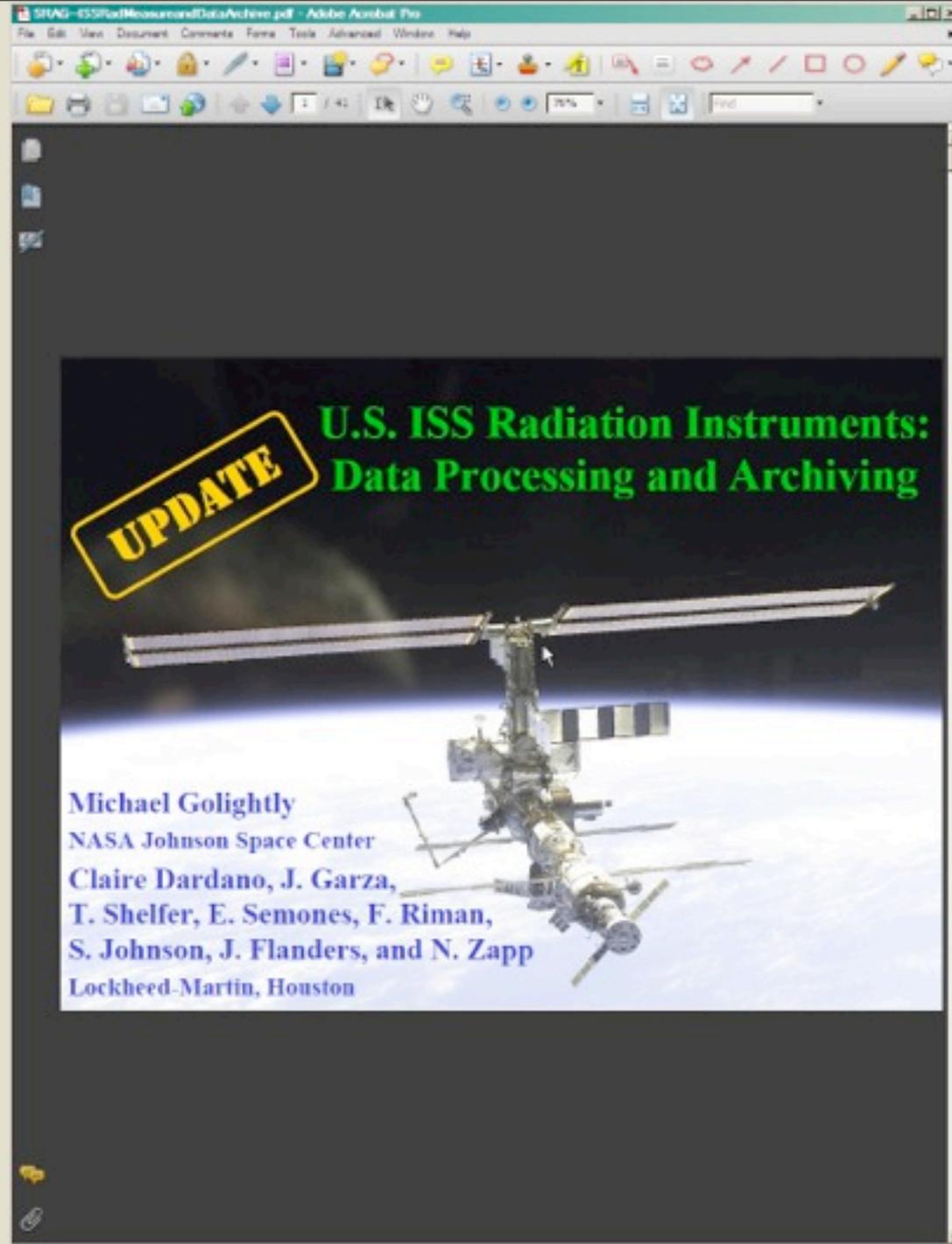
Sense of the commercial sectors impacted by space weather are shown below. The power industry has been aware of the vulnerability of the grid for many decades, and satellite manufacturers and operators take environmental risks into account during the design phase and during flight operations. More recently, space weather awareness has expanded into industries that include operators of transpolar aviation routes and precision positioning and navigation companies.

	Real-Time Space Weather Data	Space Environment Specification	Satellite Anomaly Diagnosis	Navigation, Radio, Communication, Transmission, Media Error Corrections	Spacecraft Subsystem Technology Transfer	Models of Space Processes for Use in Navigating and Forecasting
NASA CONSTITUENCIES						
Space Operations Mission Directorate	•		•			
Satellite Operations Directorate	•	•				•
Exploration Systems Directorate		•				•
OSW/TDRSS/Other Communications	•		•	•		•
EXTERNAL CONSTITUENCIES						
NOAA/National Weather Service (NWS)	•	•				•
FAA	•			•		
DoD	•	•	•	•		
Commercial Satellites Operators	•	•	•			
Power Industry	•					•
Communication Industry	•			•	•	•
Airline Industry	•			•		•
Precision Navigation Industry	•			•		•

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UPDATE

U.S. ISS Radiation Instruments: Data Processing and Archiving

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