

State of the Space Weather Prediction Center 2012

Bill Murtagh

Program Coordinator

NOAA Space Weather Prediction Center

Space Weather Workshop

24 Apr 2012



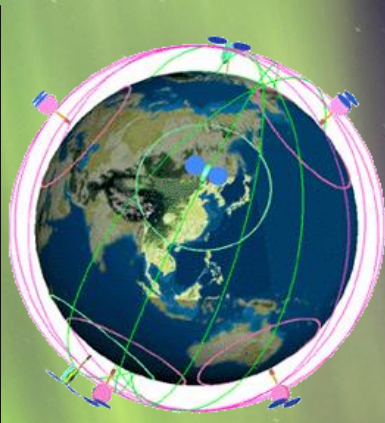
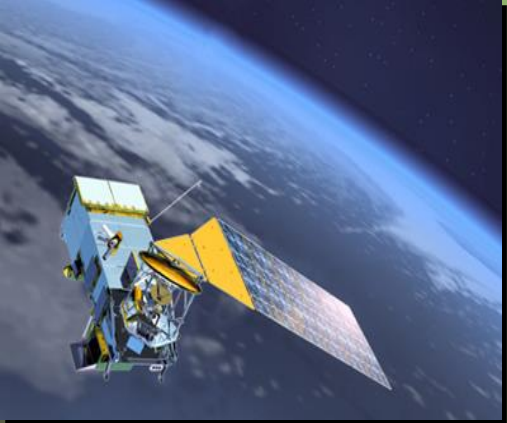
NOAA
National Weather Service
Space Weather Prediction Center

THE NATION'S
OFFICIAL SOURCE
OF SPACE WEATHER
ALERTS AND WARNINGS



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

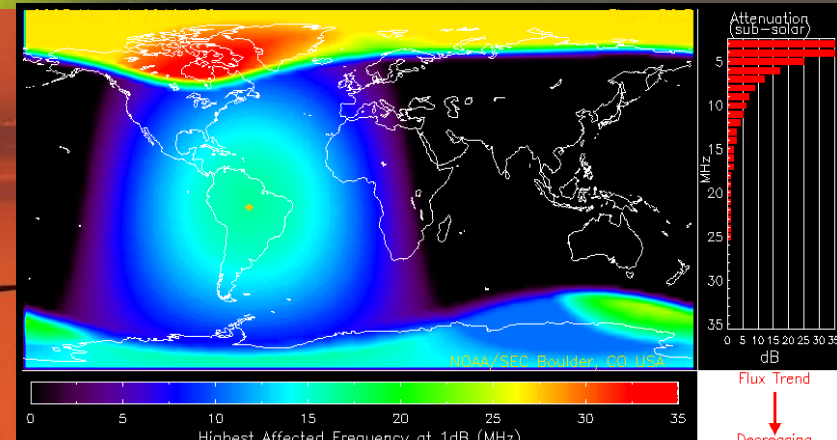




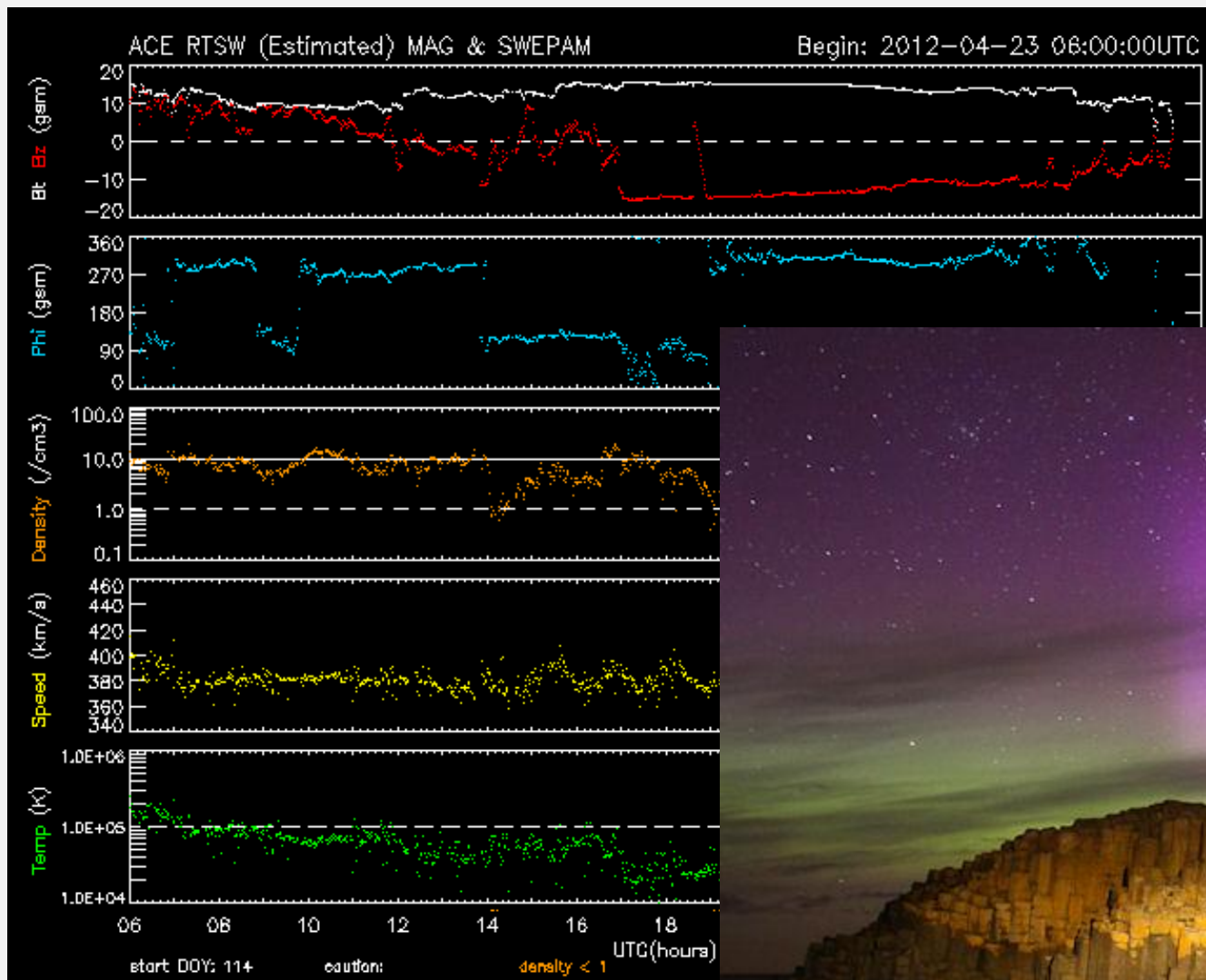
Global Impact – Global Challenge – Global Response

Partnering with YOU to:

Provide the *right* information... in the *right* format...
at the *right* time... to the *right* people...
to make the *right* decisions!



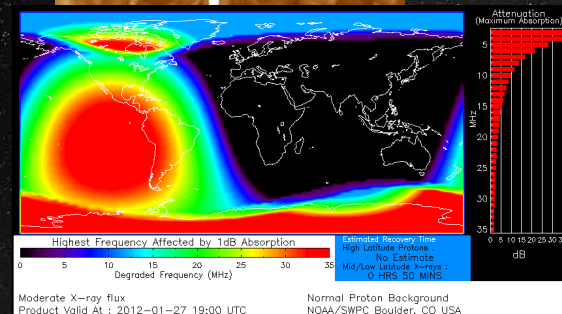
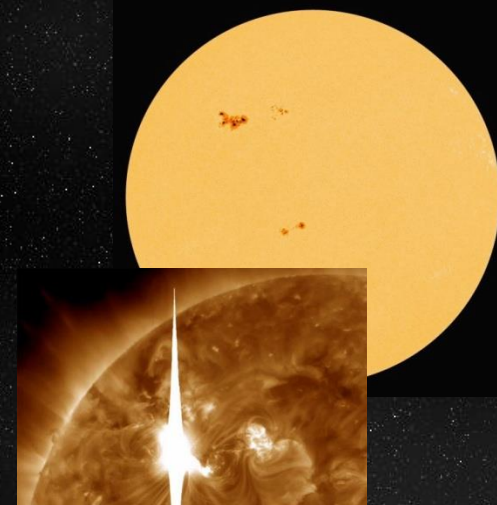
24 Apr 2012



Update

Overview

- Solar Activity On the Rise
- Customer Subscriptions Skyrocket
- SWPC Base Budget
- SWPC contributing to National and State-level exercises
- Education/Outreach
- Commitment to improved operations – Testbed activities
- Commercial Service Providers
- International Activities



 **World Meteorological Organization**
Working together in weather, climate and water

HOME CONTACT US LIST OF TOPICS LINKS CLIMATE STATISTICS

Space Weather Product Portal

Programmes > Space > Space Weather > Product Catalogue

Space Weather Product Portal

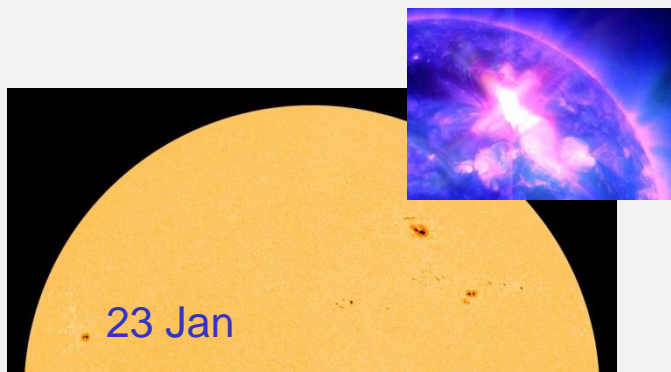
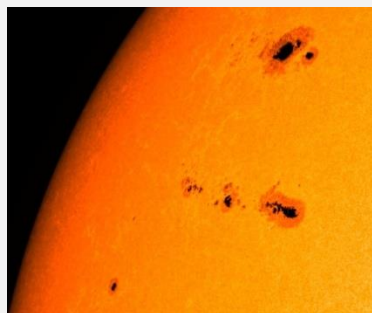
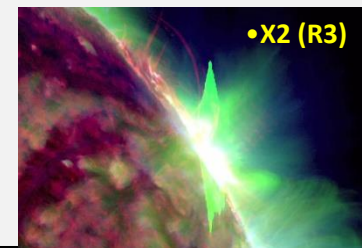
The Space Weather Product portal offers two ways of accessing products, either by product category or by providing organization. The Search by Product Category leads to selected product collections on local pages of the providing organizations with links to the products.

Navigation Menu:

- About us
- Governance
- Members
- Media centre
- Programmes
- Meetings
- Publications
- Library
- Learning
- Publishing tools
- Partnership

January 2012

- R2 and R3 Solar Flare Radio Blackouts
- S3 Radiation Storm
- G1-G2 Geomagnetic Storm

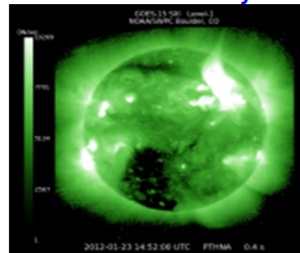


Current Space Weather Conditions

----- Satellite Displays -----

----- Popular Pages -----

Latest GOES Solar X-ray Image

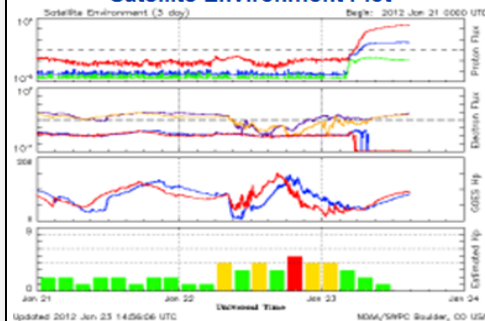


NOAA Scales Activity

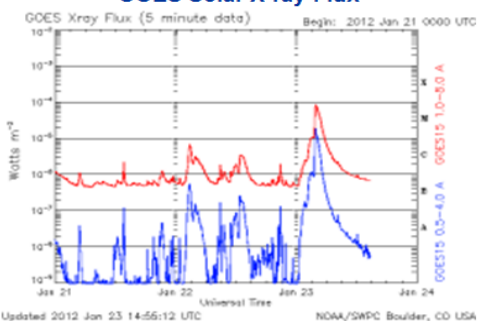
Range 1 (minor) to 5 (extreme)

NOAA Scale	Past 24 hours	Current
Geomagnetic Storms *	G1	none
Solar Radiation Storms	S3	S3
Radio Blackouts	R2	none

Satellite Environment Plot

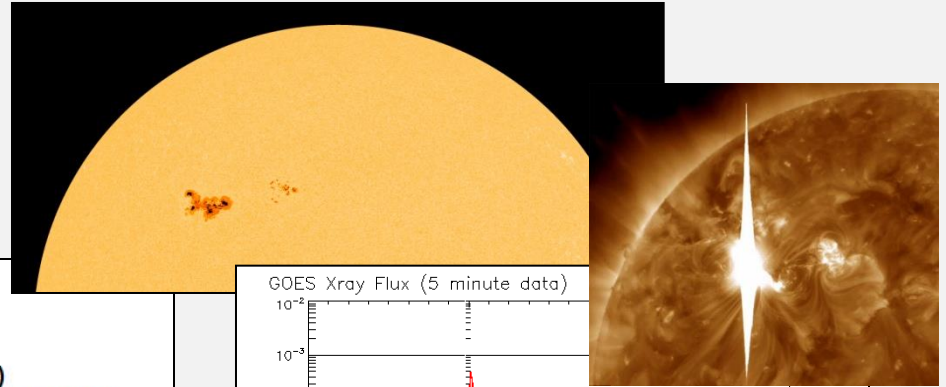


GOES Solar X-ray Flux

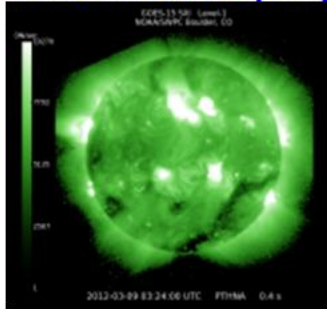


March 2012

- R2 and R3 Solar Flare Radio Blackouts
- S3 Radiation Storm
- G3 Geomagnetic Storm



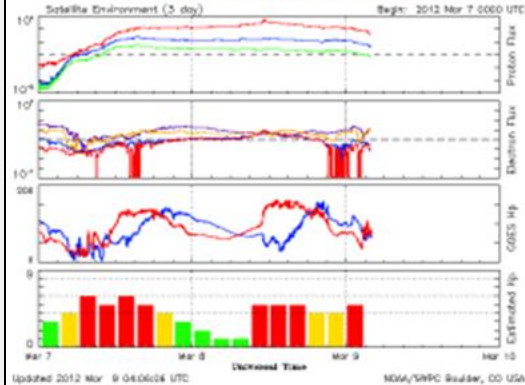
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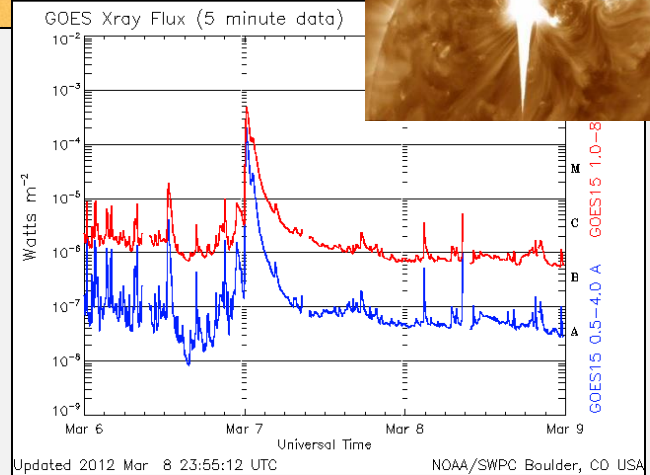
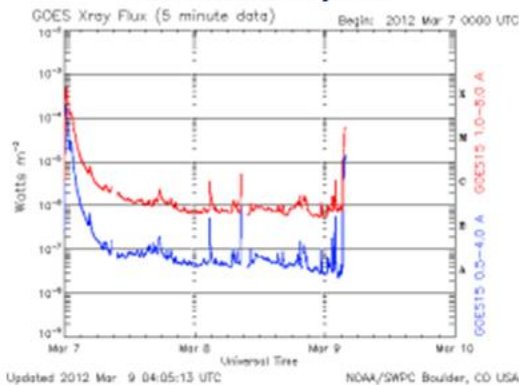
NOAA Scales Activity

NOAA Scale	Range 1 (minor) to 5 (extreme)	Past 24 hours	Current
Geomagnetic Storms *		G1	G1
Solar Radiation Storms		S3	S2
Radio Blackouts		R2	R1

Satellite Environment Plot



GOES Solar X-ray Flux



Signature event: X5/R3
on 7 March and
associated S3 and G3
events.



Missouri

Alex Roberts



Oklahoma

Peter Henshaw

Oct 24, 2011

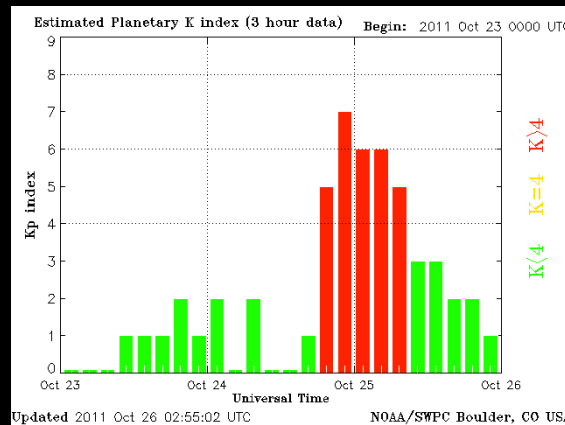
~01:30 UTC

G2/K6

G3...aurora in
Alabama???

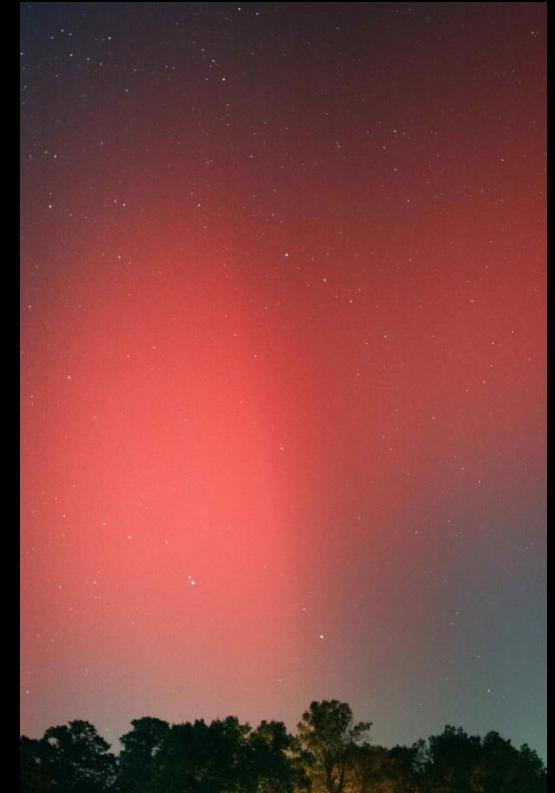


New York



Arkansas

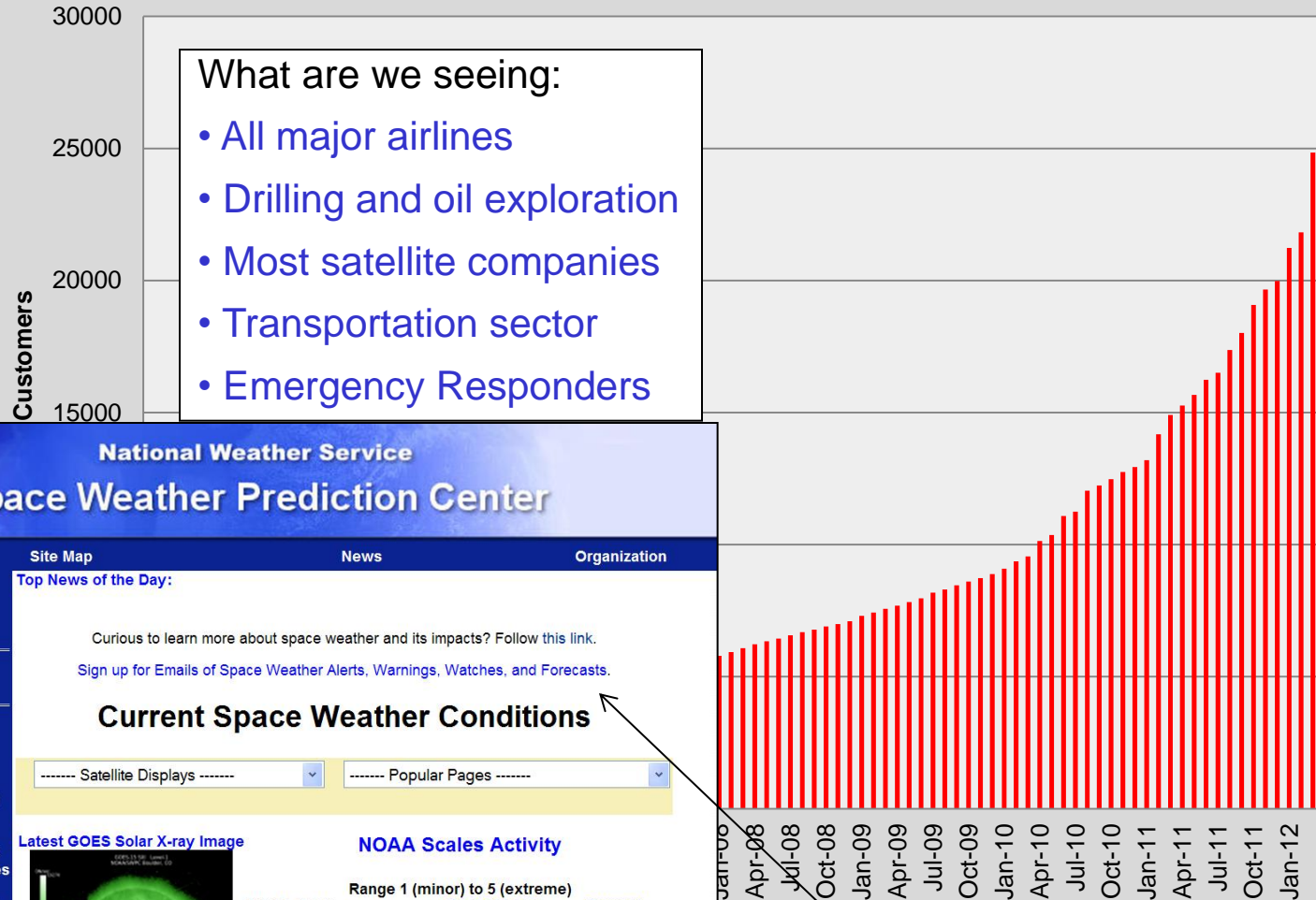
Brian Emfinger



Alabama

Customer Subscriptions Skyrocket...

SWPC Product Subscription Service



What are we seeing:

- All major airlines
- Drilling and oil exploration
- Most satellite companies
- Transportation sector
- Emergency Responders

National Weather Service
Space Weather Prediction Center

Site Map News Organization

Search SWPC

NCEP Quarterly Newsletter

SWPC Home Page

Current Conditions
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Space Weather Now
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Alerts & Forecasts
Reports/Summaries
Space Wx Models
Solar/Geo. Indices
Measurements

Support Services
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Staff
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Space Wx Workshop
Education/Outreach
Customer Services

Top News of the Day:

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

----- Satellite Displays ----- ----- Popular Pages -----

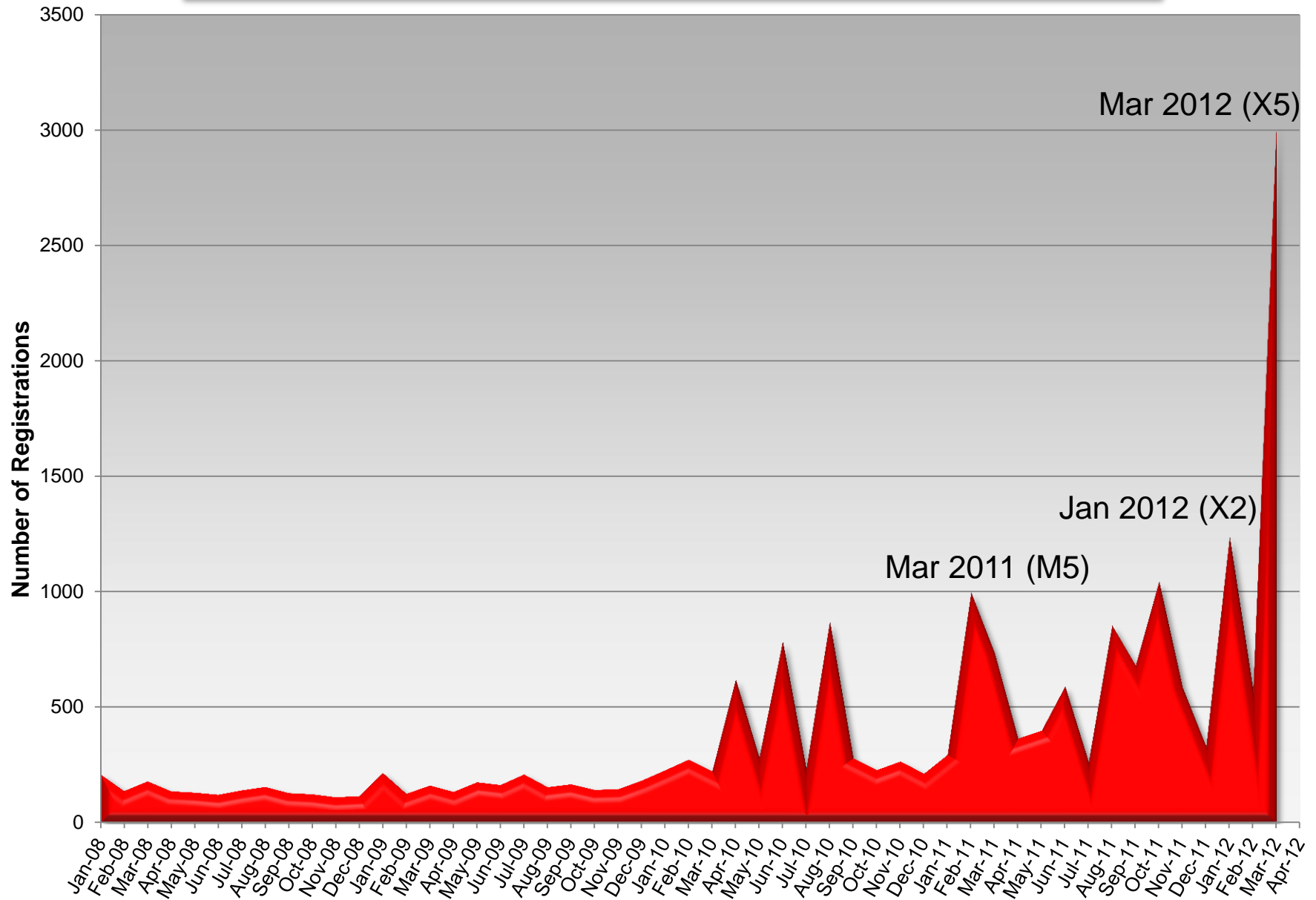
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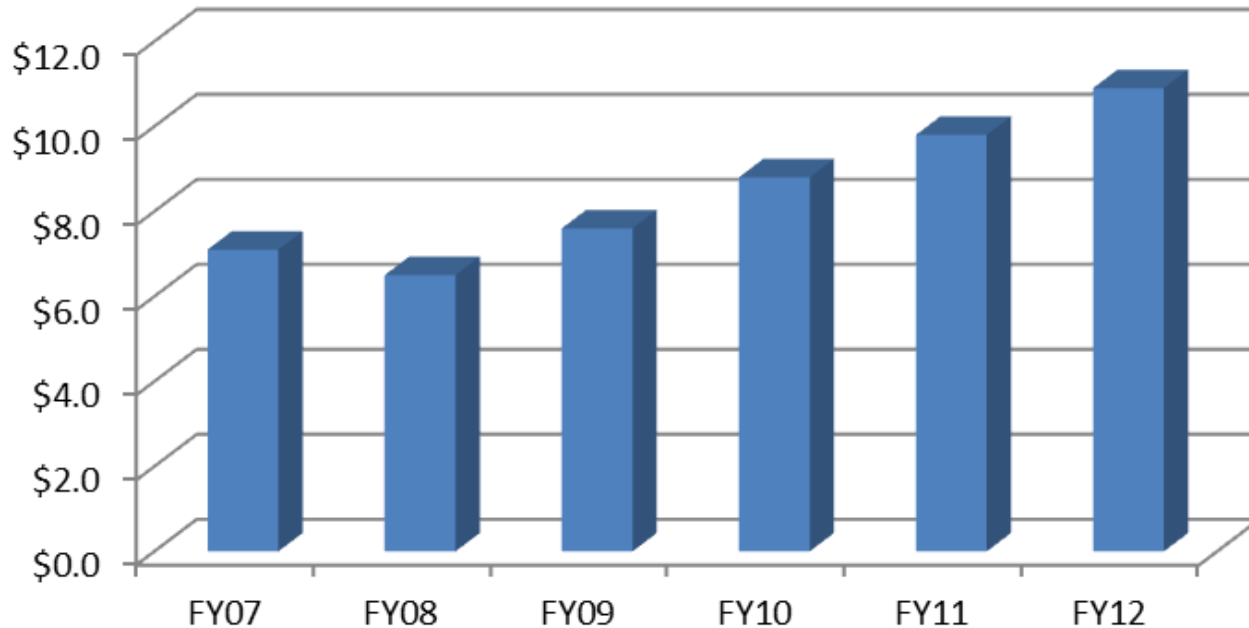
NOAA Scale	Range 1 (minor) to 5 (extreme)	Past 24 hours	Current
Geomagnetic Storms *		none	none
Solar Radiation Storms		none	none
Radio Blackouts		none	none

Sign up for alerts/warnings

New SWPC Product Subscription Registrations by Month



SWPC Base Allocations



- Gradual increase to base budget past several years
- FY12 SWPC base allocation \$10.9M
- Future years – difficult to predict due to federal budget climate

Contributing operational support to national and state exercises on space weather



Severe Space Weather Threats to the National Electric Grid

*Briefings from Workshops and Exercises Preparing for
Long-Term Grid Outages*

*U.S. Capitol Visitor Center
Congressional Auditorium & Atrium*

6 October 2011



National Oceanic and Atmospheric Administration Space Weather Prediction
Center (NOAA)

&
New Jersey Office of Homeland Security & Preparedness (OHSP)
Presents

Solar Weather Trends and Impacts on Critical Infrastructure

Date: Thursday, March 1, 2012

Time: 9:00 am – 12:00 pm

Location: NJ Office of Homeland Security & Preparedness
1200 Negron Drive Hamilton, NJ 08691

2011 Virginia Emergency Response Team Exercise (VERTEX)

Space Weather Workshop

The overarching purpose of the 2011 (VERTEX) series is to develop and test a statewide strategy to respond to and manage the effects of Geomagnetically Induced Currents on the Commonwealth's electrical power and communications systems,

FloridaDisaster.org
Florida Division of Emergency Management

SENT (State Emergency Response Team)

Public | Business | EM Community | Organization | News Media | Kids

Prepare and Stay Aware!

[Training / Events Home](#) > More Information

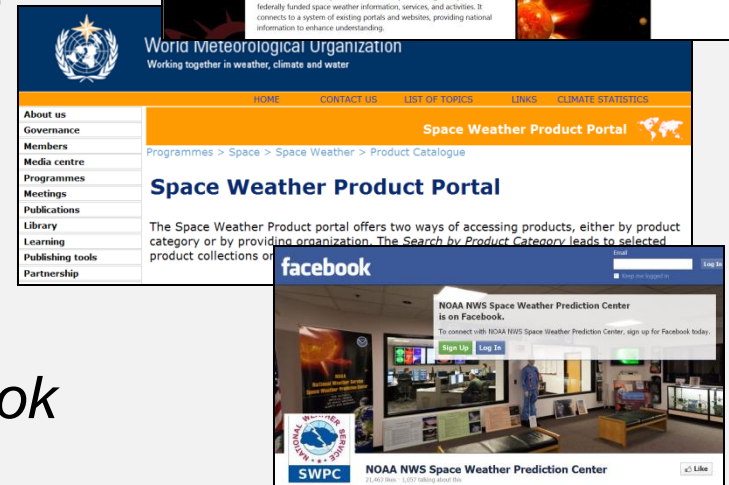
Exercise Information page

[Summary](#)
[Point of Contact](#)
[Participant List](#)
[Standby List](#)
[Apply for this Exercise](#)

Name Energy Assurance State-wide Geomagnetic Storm Table Top Exercise

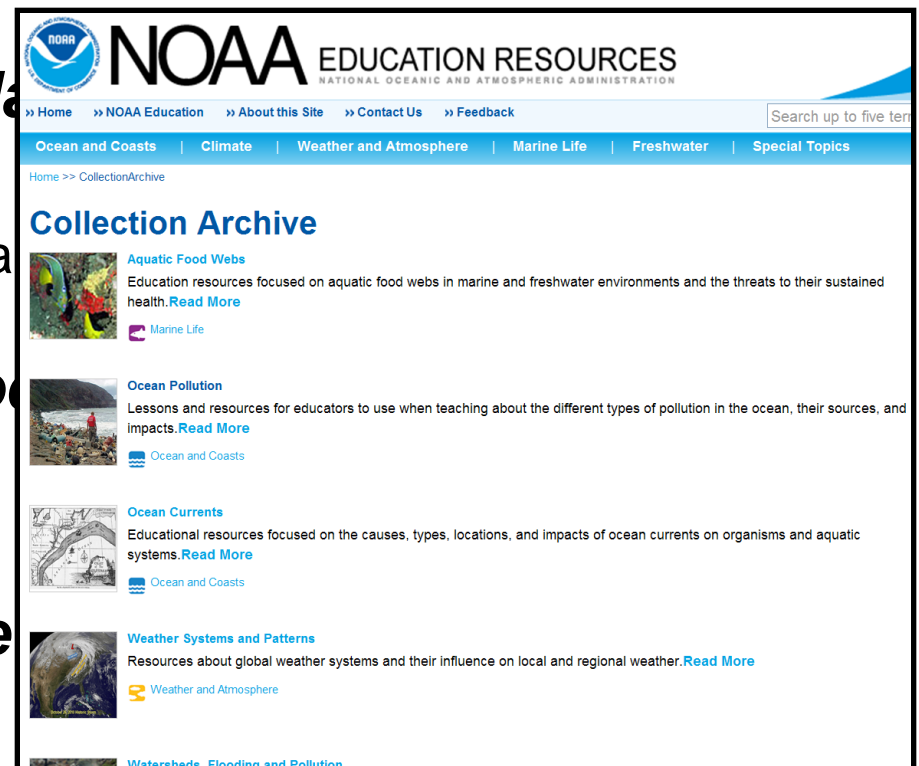
Education & Outreach

- ***Unified Space Weather Capability Portal***
 - Looking for your feedback now
 - Official roll-out planned for June 5, 2012
- ***WMO Space Weather Product Portal***
 - Released January 2012
- ***Social Media – Visit SWPC on Facebook***
- ***SWPC Released “Space Weather Basics” Module via COMET***
 - Focus is general public
- ***Overhaul of SWPC Web Page –***
 - currently in progress



Education & Outreach

- ***NWS Training Center developing training module for NWS Weather Forecast Offices (2012)***
 - Goal is to have NWS Weather Offices prepared to communicate with public
- ***WMO Training Modules planned for NWS Training Center (2013)***
 - Provides training on impacts and adaptation
- ***SWx Aviation Training Module for NWS Training Center COMET (2012)***
- ***Space Weather to be added to NWS Training Center Collection” (2012)***

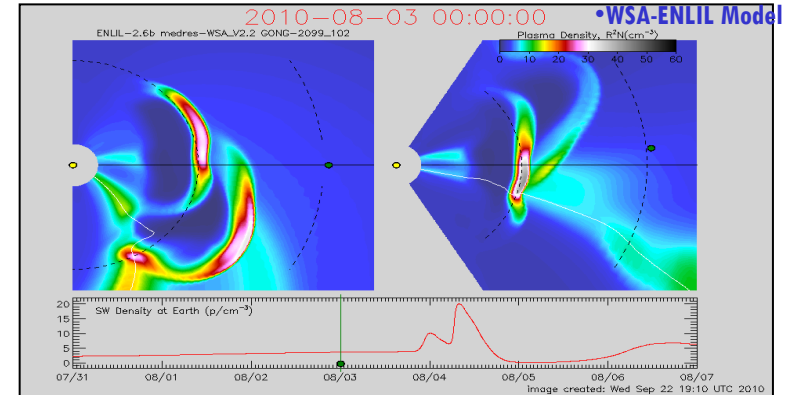


NOAA's commitment to improved operations

New Models and Products

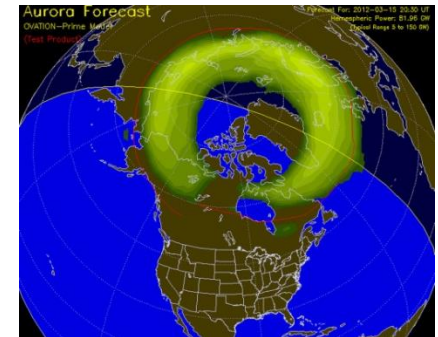
- **Model transition**

- WSA-Enlil
- Ovation (2012)



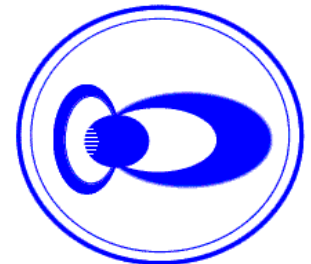
- **Space Weather Prediction Testbed**

- Geospace Model
- The Whole Atmosphere Model



- **Upgrade operational product suite – critical new data sets**

- Geomagnetic Storm Products
- USGS and INTERMAGNET data
- International Partners – magnetometer data



Leaning Forward: Growing the Space Weather Enterprise

- **An Evolving Market for Commercial Space Weather Services**
 - Satellite Operators
 - Commercial Space Flight
 - Air Traffic Management and Control
 - Electric Power Generation/Distribution Industries
- **Dedicated E-SWDS server**
- **NOAA's SBIR (Small Business Innovative Research) Opportunity in Space Weather**
- **Partnering in our efforts to ensure continuity of critical observations (e.g., solar wind L1 measurements)**



Increased Global Interaction

- *18 Nations represented here at SWW 2012*
- *SWPC engaged in many international activities with many organizations*
- *Important UN efforts underway*
 - *World Meteorological Organization*
 - *International Civil Aviation Organization*



Current Bi-lateral Agreement Partners in Space Weather

1. UK Meteorological Office
2. German Aerospace Center
3. Korea Radio Research Agency
4. China Meteorological Administration
5. Russian Federation Hydrometeorology
6. Korea Meteorological Administration



Many other collaborative efforts underway with international partners

NOVA PRESENTS

Secrets of the Sun

Airing Wednesday

April 25 at 9pm ET on PBS

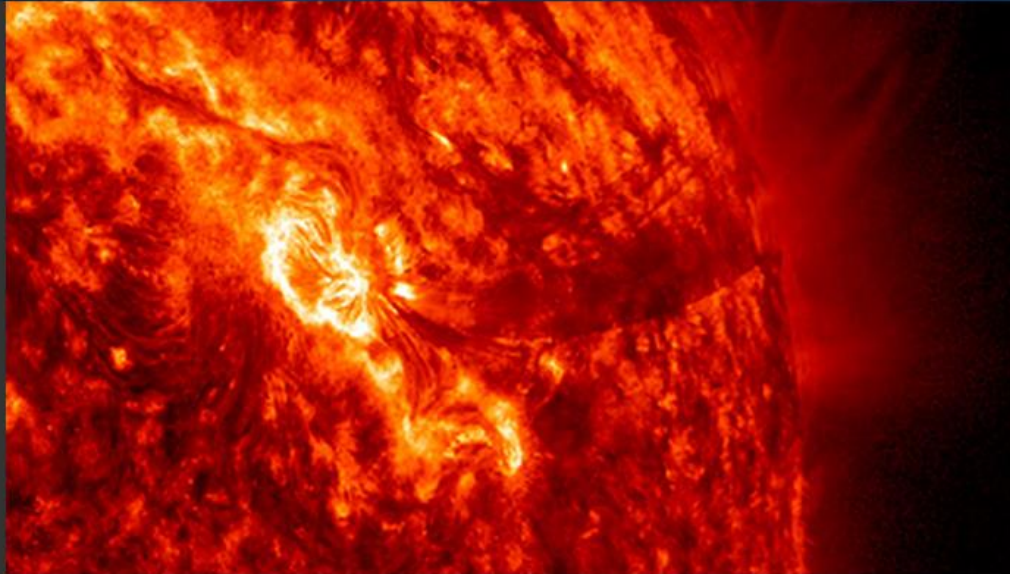
[\(Check local listings\)](#)

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The Nature of Reality

[Who's Afraid of the Dark?](#)

[Alternatives to Dark Energy](#)



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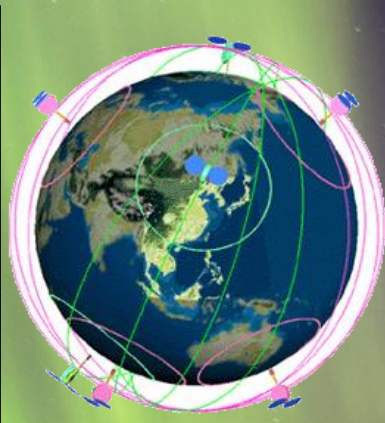
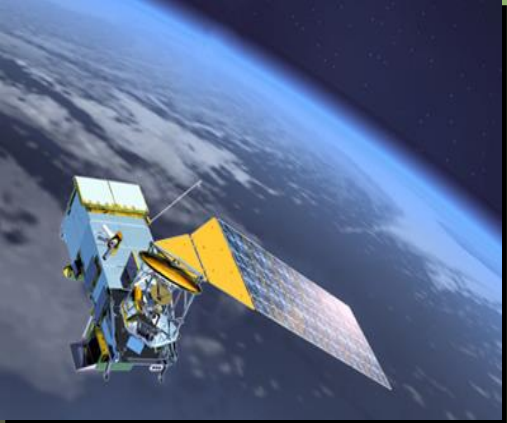


[RSS](#)



[INSIDE NOVA](#)

It contains 99.9 percent of all the matter in our solar system and sheds hot plasma at nearly a million miles an hour. The temperature at its core is a staggering 27 million degrees Fahrenheit. It convulses, it blazes, it sings. You know it as the sun. Scientists know it as one of the most amazing physics laboratories in the universe. Now, with the help of new spacecraft and Earth-based telescopes, scientists are seeing the sun as they never have before and even recreating what happens at its very center in labs here on Earth. Their work will help us understand aspects of the sun that have puzzled scientists for decades. But more critically, it may help us predict and track solar storms that have the power to zap our power grid, shut down telecommunications, and ground global air travel for days, weeks, or even longer. Such storms have happened before—but never in the modern era of satellite communication. "Secrets of the Sun" reveals a bright new dawn in our understanding of our nearest star—one that might help keep our planet from going dark.



Global Impact – Global Challenge – Global Response

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