

# State of the Space Weather Prediction Center 2012

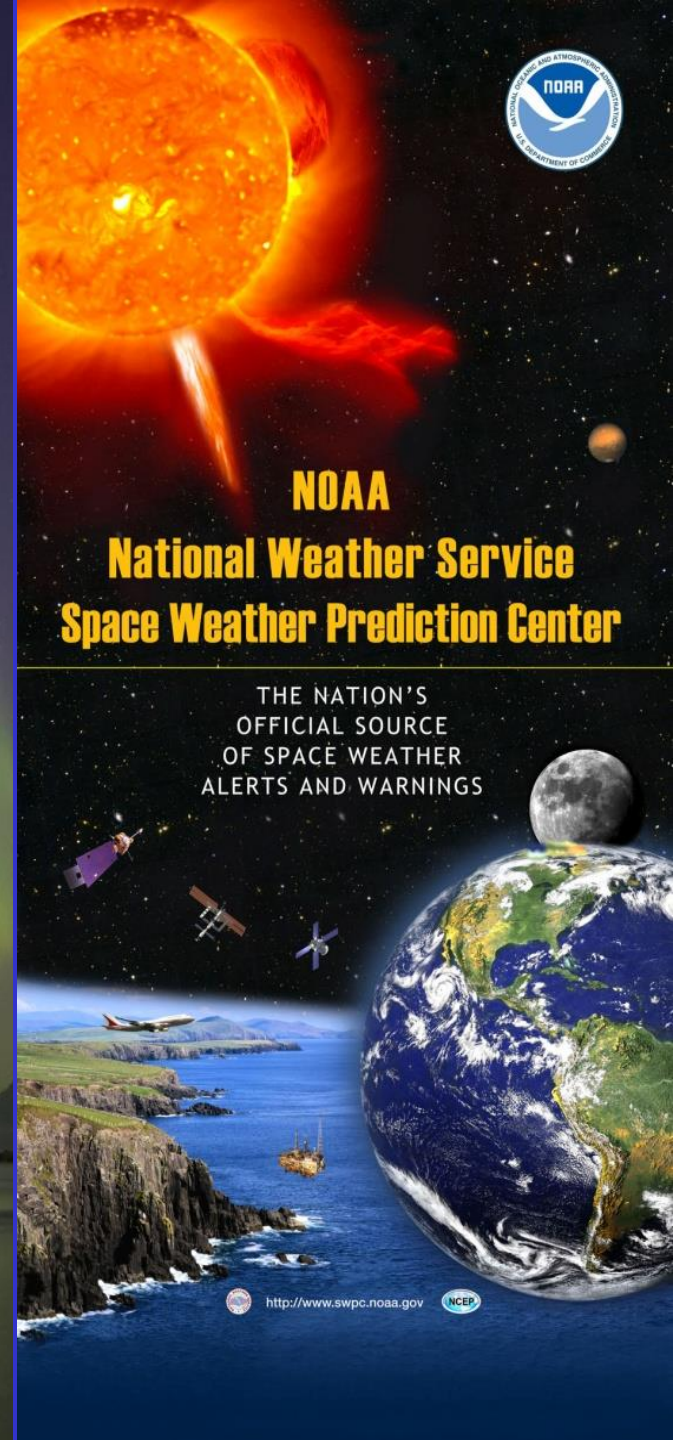
**Bill Murtagh**

**Program Coordinator**

**NOAA Space Weather Prediction  
Center**

Space Weather Workshop

24 Apr 2012

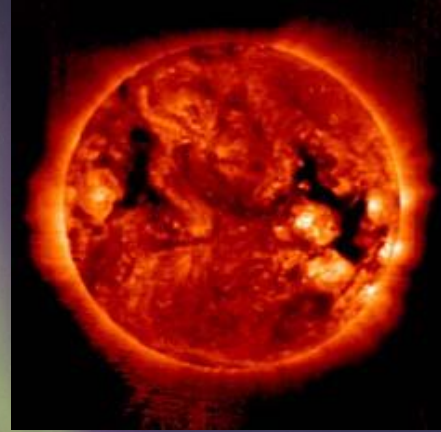
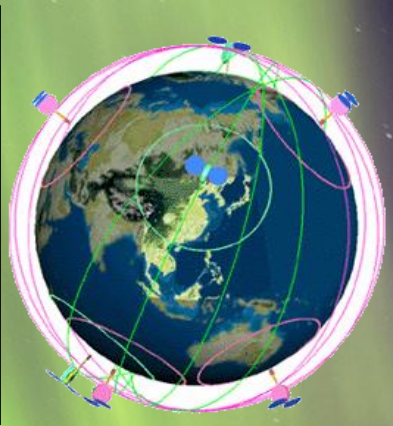
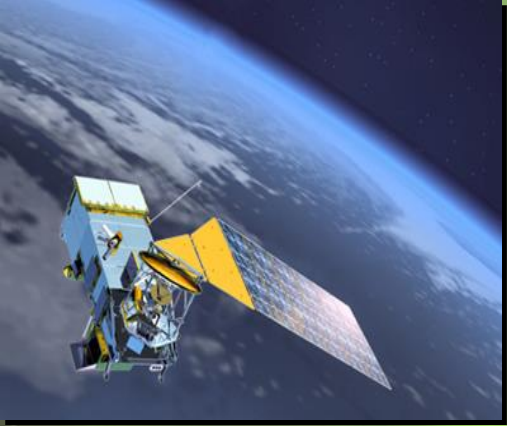


**NOAA**  
**National Weather Service**  
**Space Weather Prediction Center**

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

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





**Global Impact**

**Global Challenge**

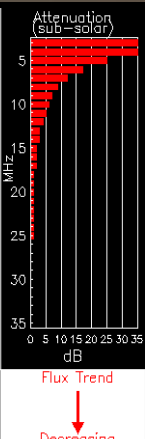
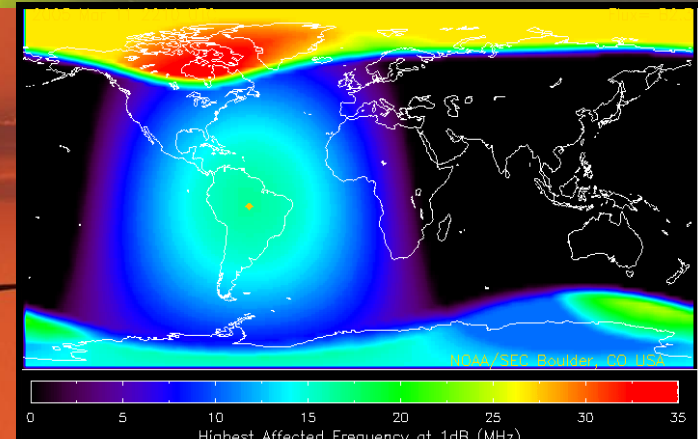
**Global Response**

**Partnering with YOU to:**

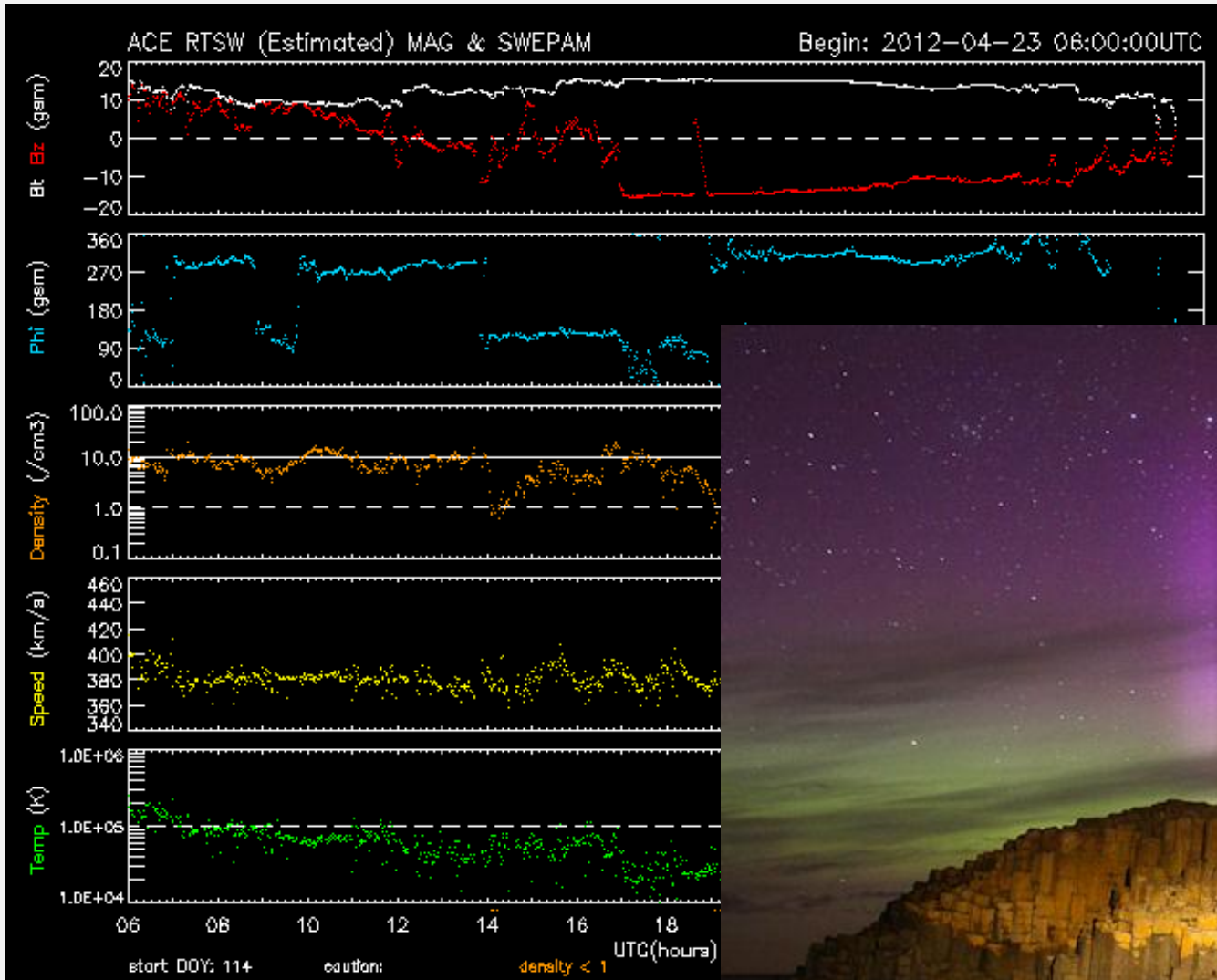
Provide the *right*  
at the *right*  
to make the *right* decisions!

*right*

*right* format...



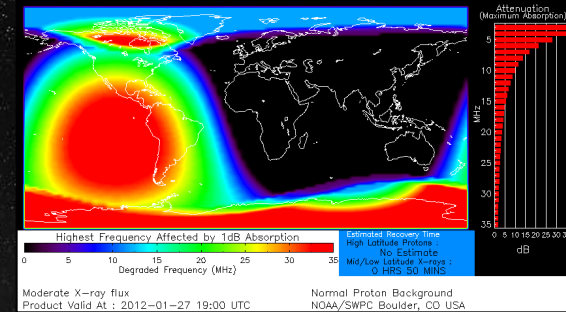
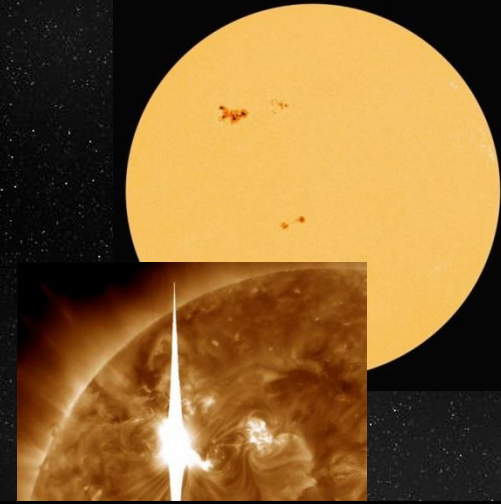
24 Apr 2012



1  
0  
Apr  
Update

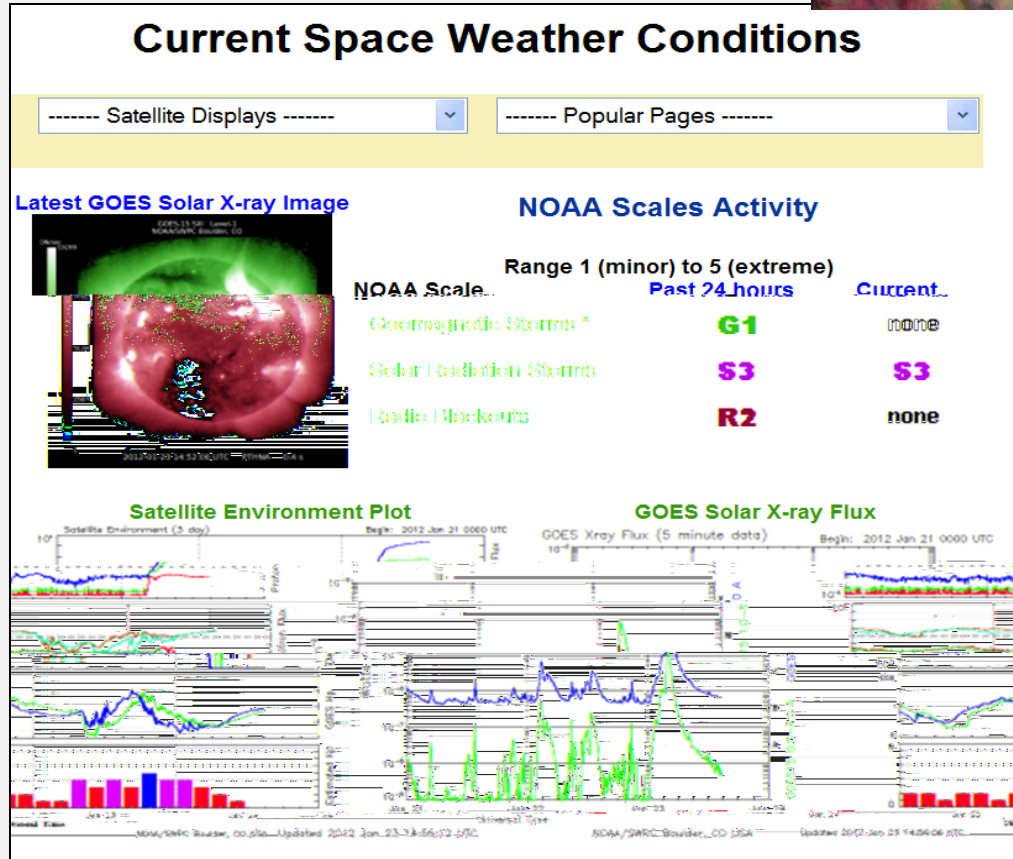
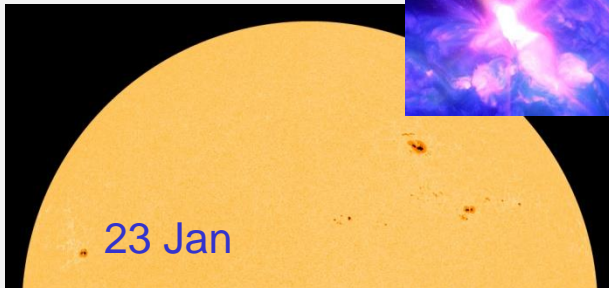
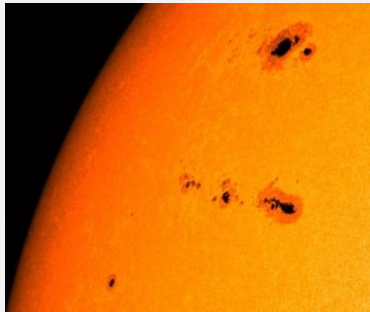
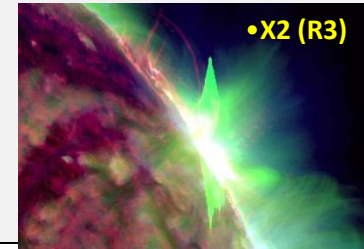
# Overview

- 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



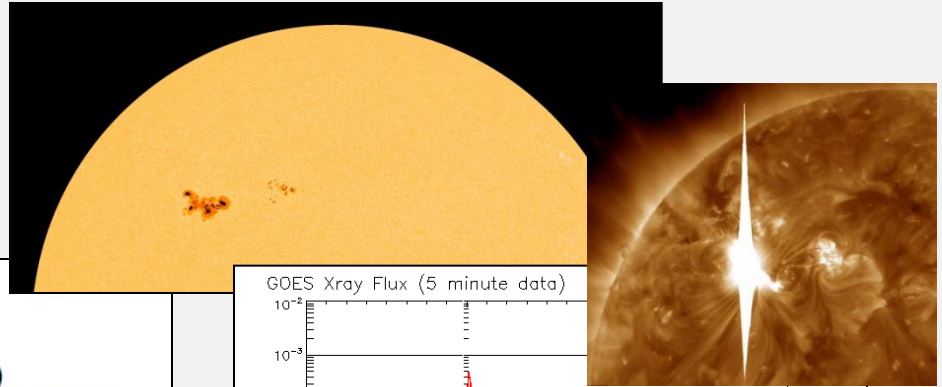
# January 2012

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

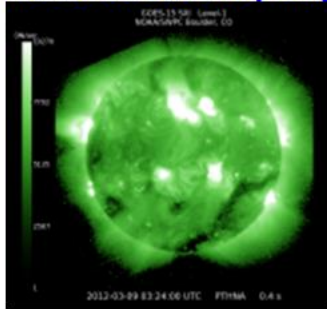


# March 2012

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



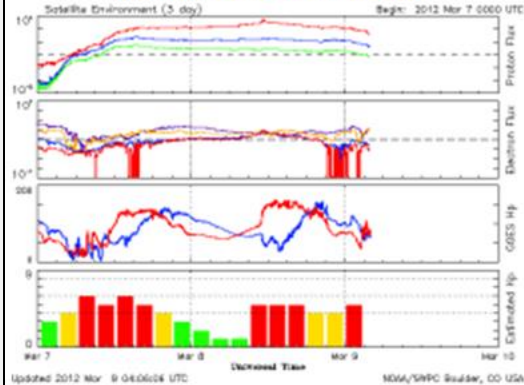
Latest GOES Solar X-ray Image



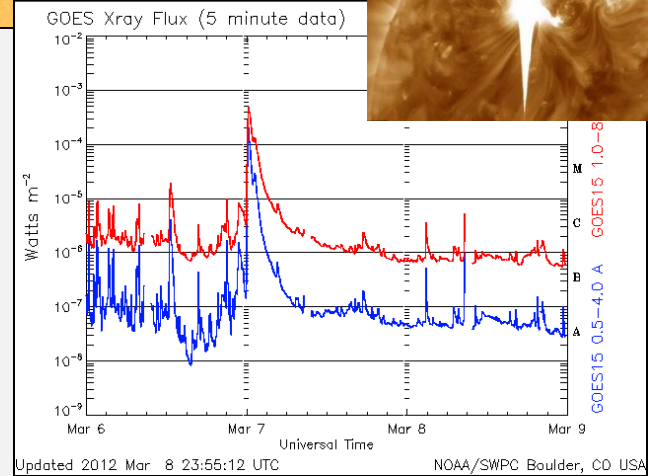
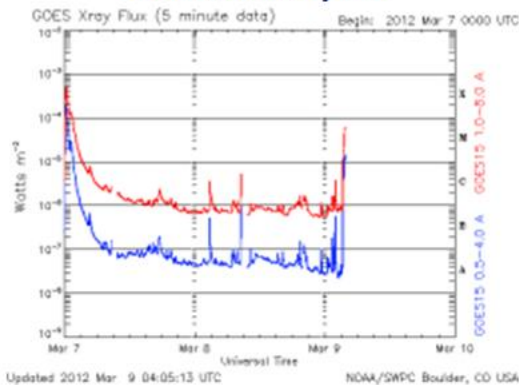
NOAA Scales Activity

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

Satellite Environment Plot



GOES Solar X-ray Flux



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

Oct 24, 2011

~01:30 UTC

G2/K6

G3...aurora in  
Alabama???



Missouri

Alex Roberts

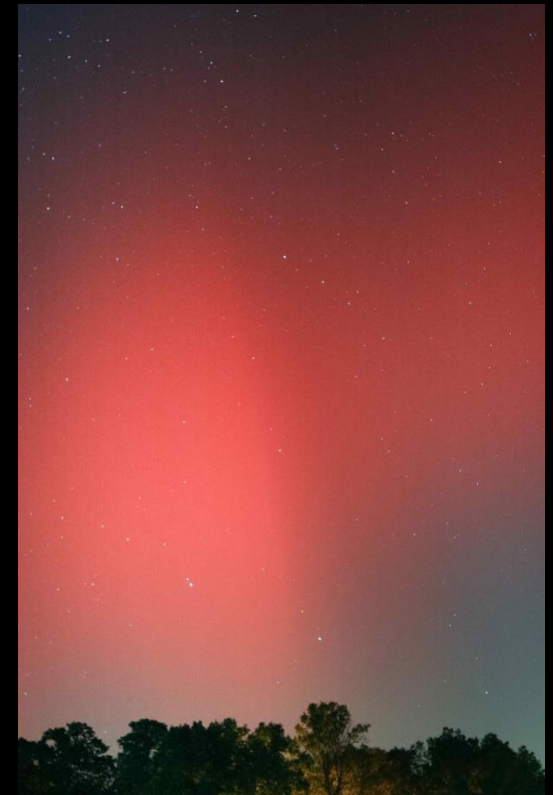
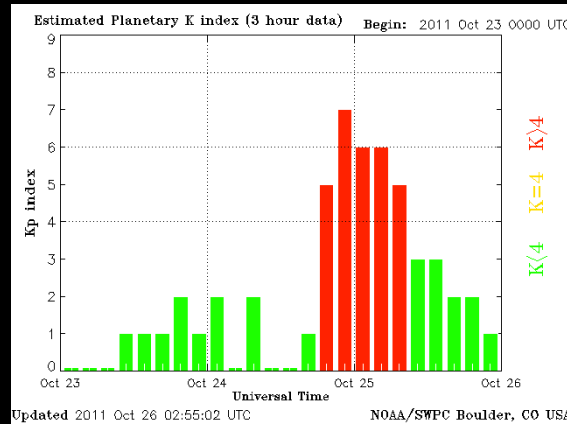


Oklahoma

Peter Henshaw



New York



Alabama

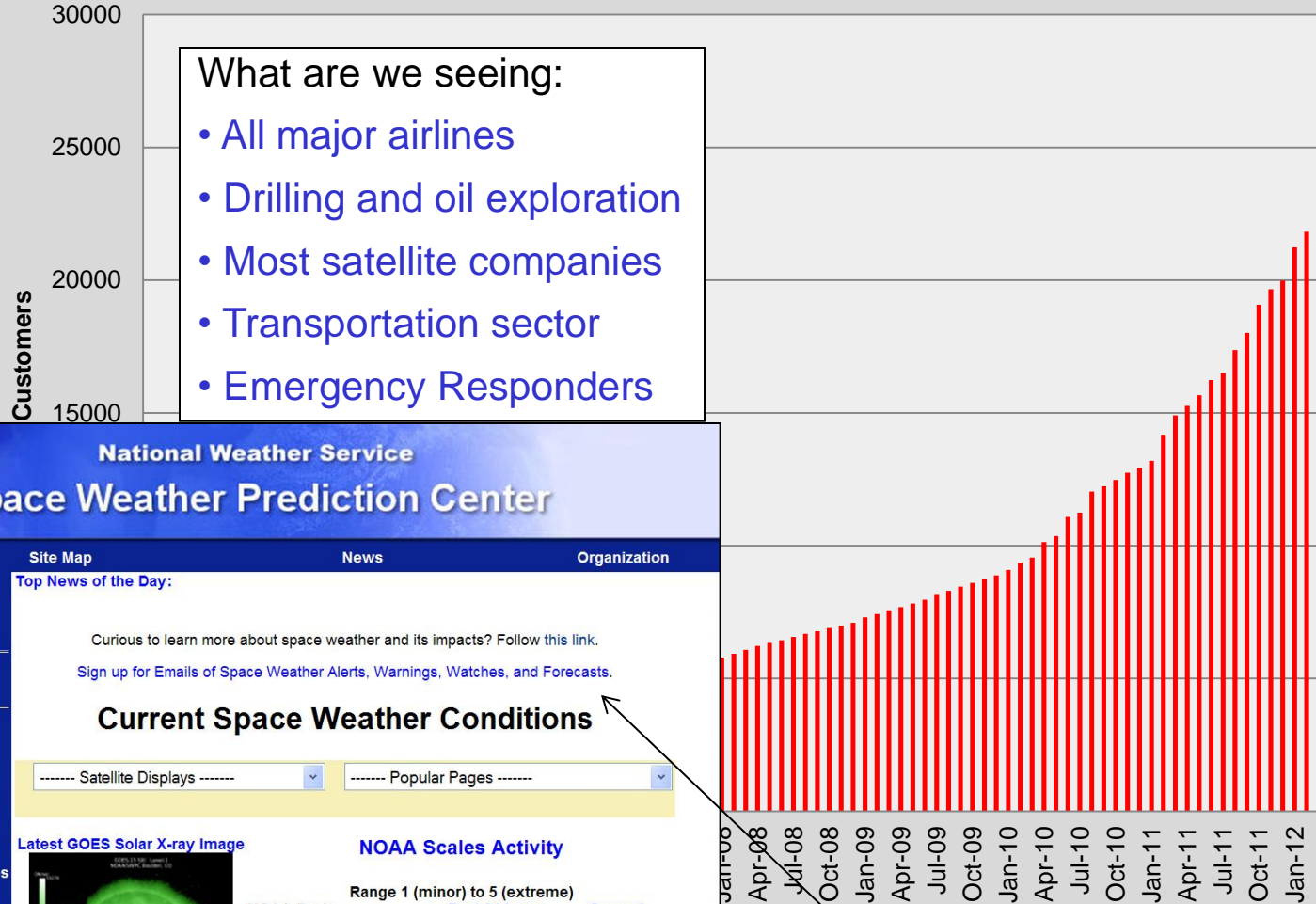


Arkansas

Brian Emfinger

# 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

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 -----

**Latest GOES Solar X-ray Image**

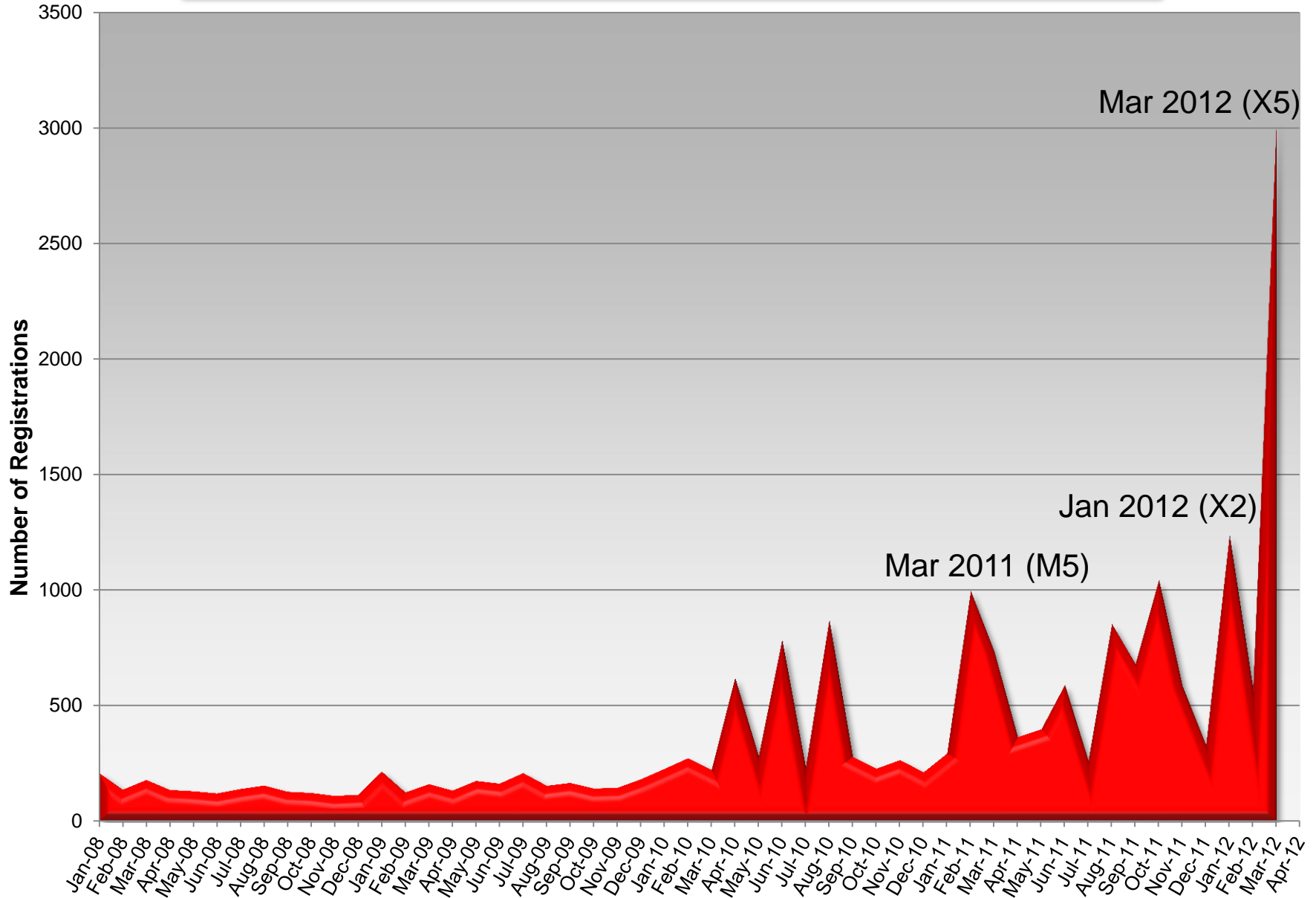
**NOAA Scales Activity**

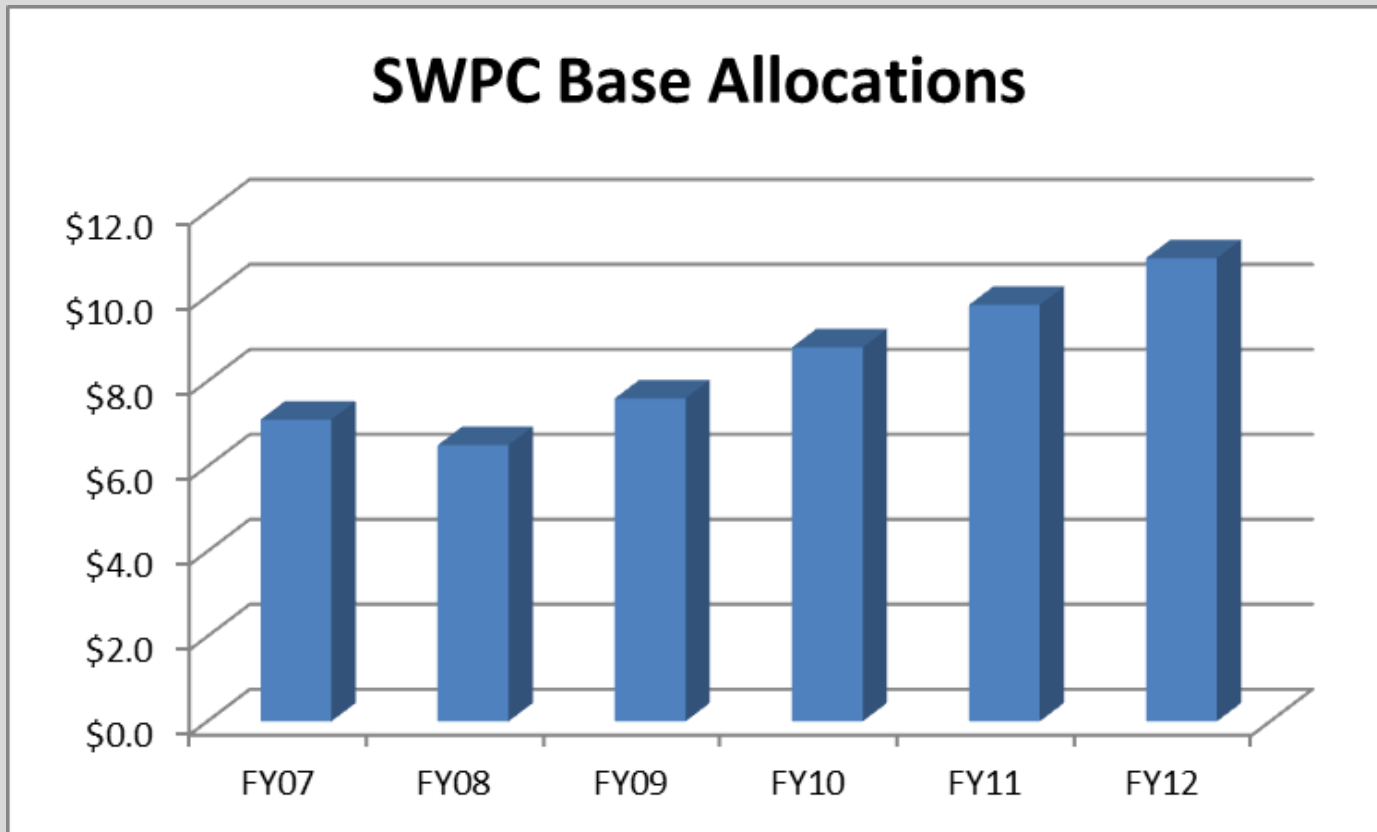
NOAA Scale	Range 1 (minor) to 5 (extreme)	Past 24 hours	Current
Geomagnetic Storms *		none	none
Solar Radiation Storms		none	none
Radio Blackouts		none	none

Sign up for alerts/warnings



# New SWPC Product Subscription Registrations by Month





- 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: 09:00 AM - 12:00 PM  
Location: NJ Office of Homeland Security & Preparedness  
1200 Neggon Drive Hamilton, NJ 08691



## 2011 Virginia Emergency Response Team Exercise (VERTEX)

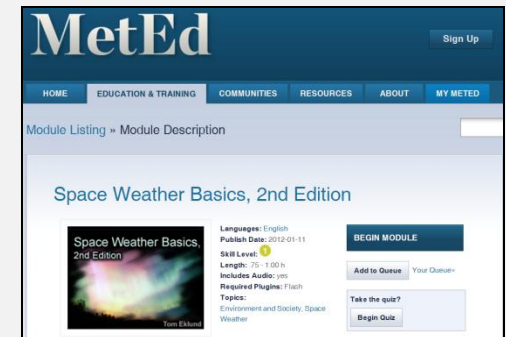
### Space Weather Workshop

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,

Energy Assurance State-wide Geomagnetic Storm Table Top Exercise

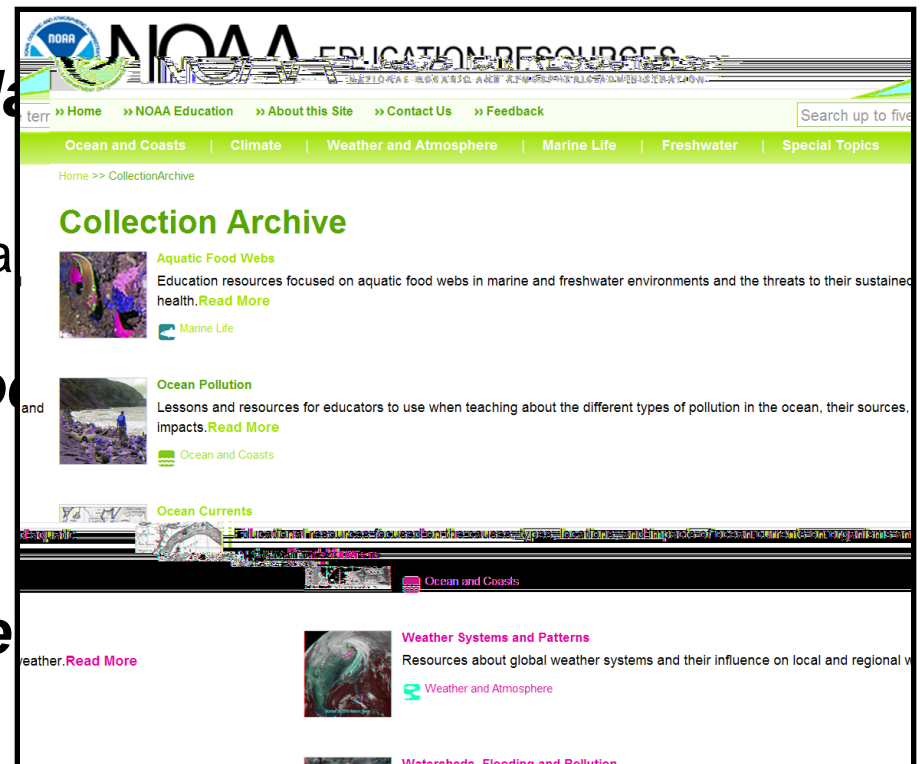
# Education & Outreach

- ***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
- ***SWx Aviation Training Module and COMET (2012)***
- ***Space Weather to be added to "Collection" (2012)***



# New Models and Products

- **Model transition**

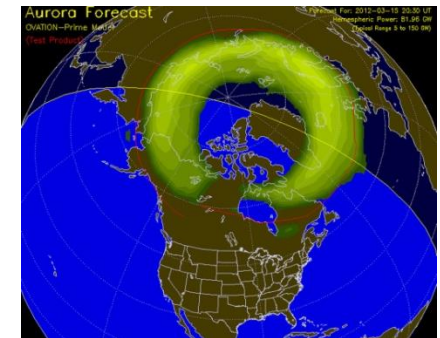
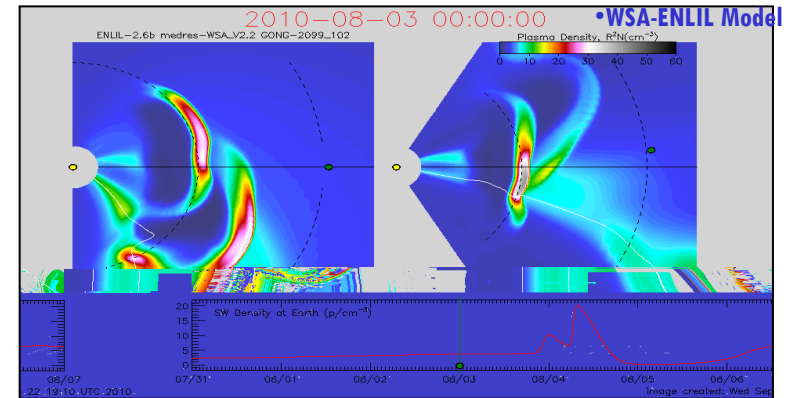
- WSA-Enlil
- Ovation (2012)

- **Space Weather Prediction Testbed**

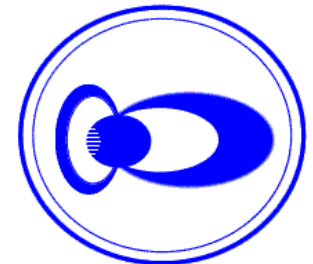
- Geospace Model
- The Whole Atmosphere Model

- **Upgrade operational product suite**

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



- **critical new data sets**



# 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**
- **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

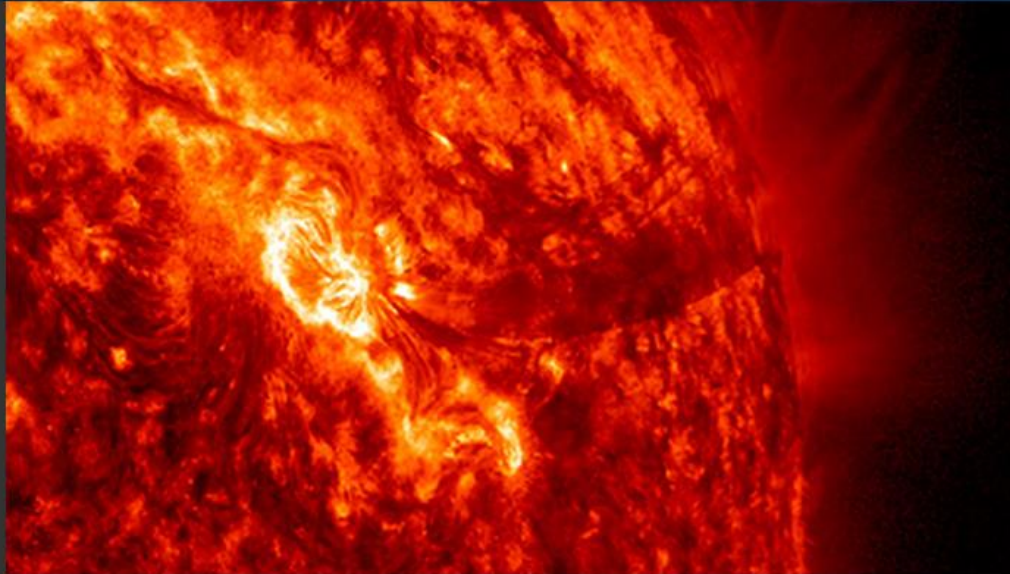
[\(Check local listings\)](#)

[Watch a Preview](#)

## The Nature of Reality

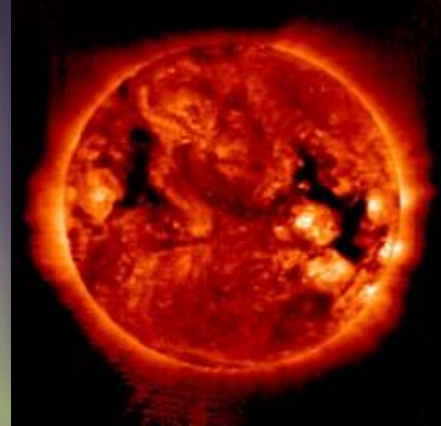
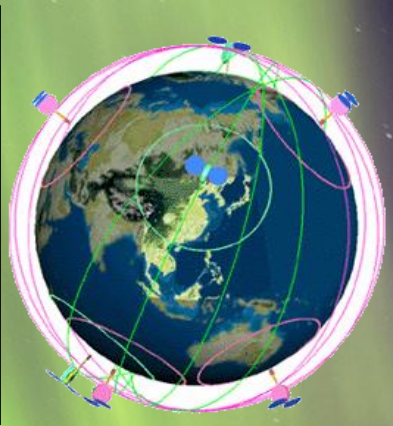
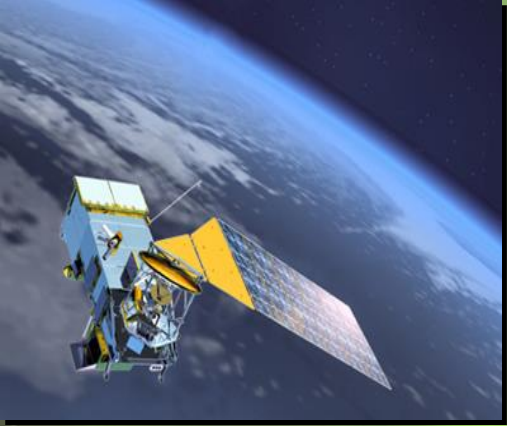
[Who's Afraid of the Dark?](#)

[Alternatives to Dark Energy](#)



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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**

**Partnering with YOU to:**

Provide the *right*  
at the *right*  
to make the *right* decisions!

*right*

*right* format...

