State of the Space Weather Prediction Center 2012

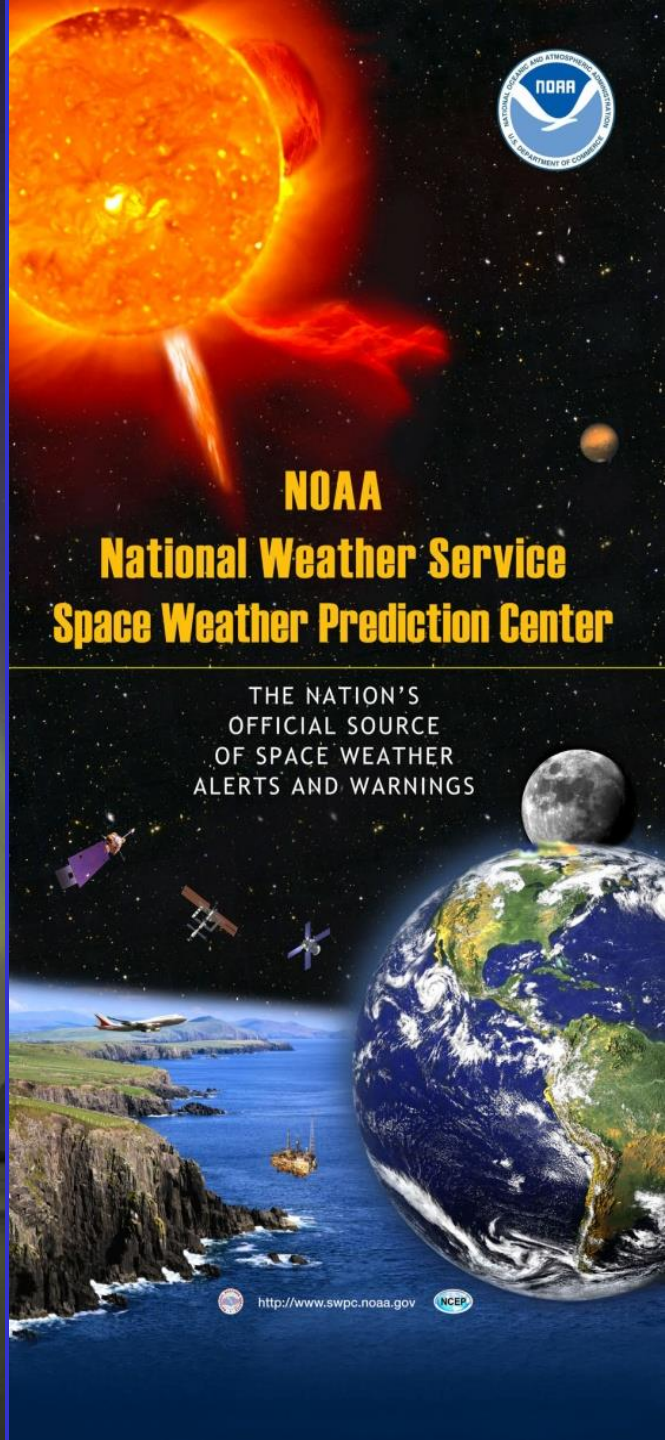
Bill Murtagh

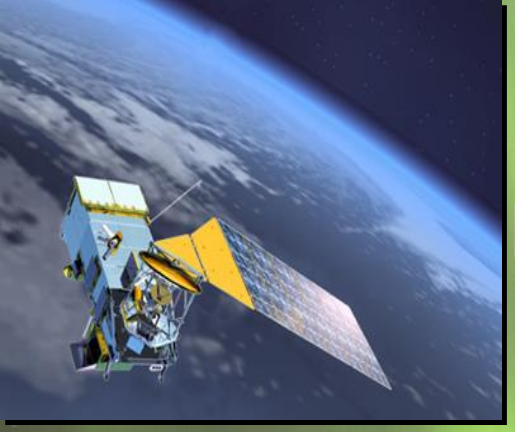
Program Coordinator

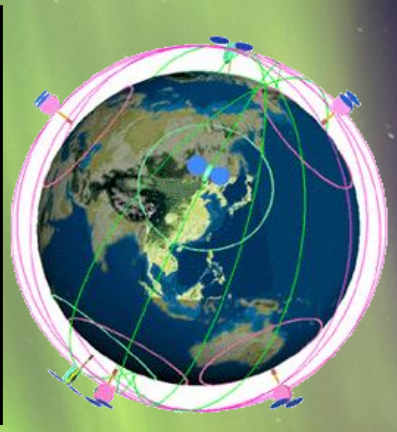
NOAA Space Weather Prediction Center

Space Weather Workshop

24 Apr 2012







Global Impact Global Challenge Global Response

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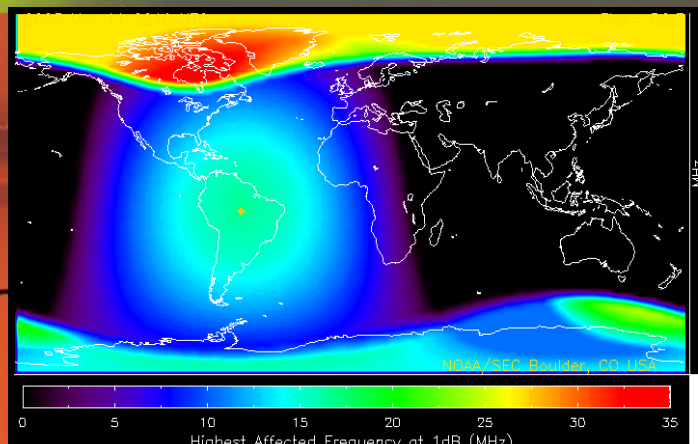
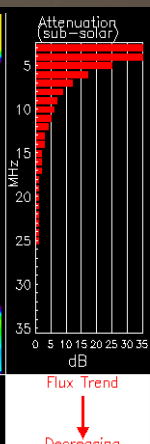
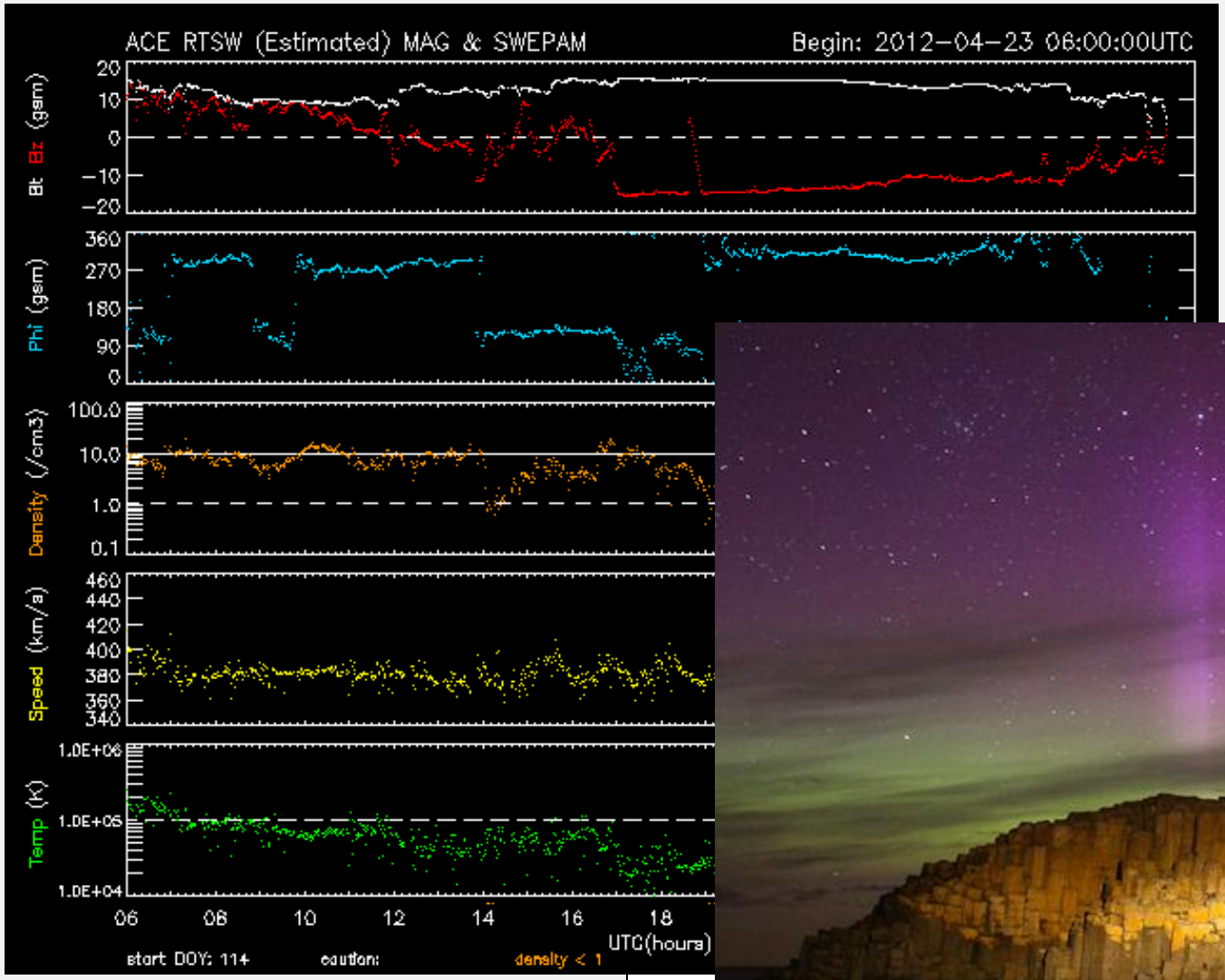
at the *right* *right*

to make the *right* decisions!



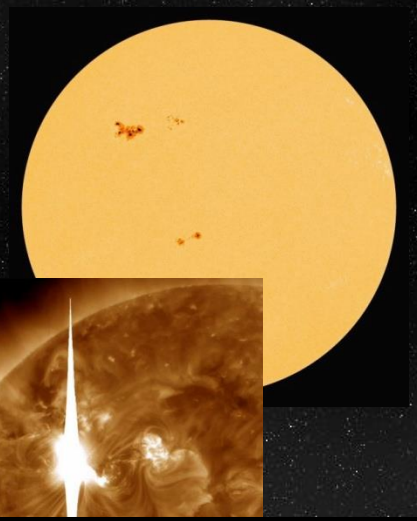


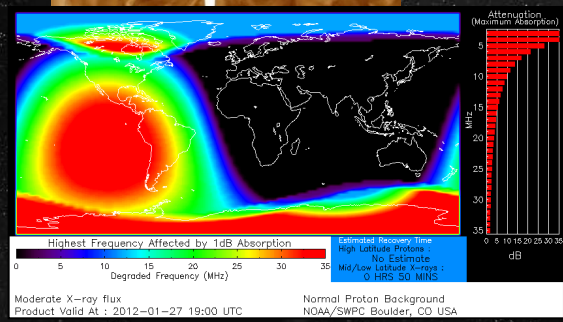
24 Apr 2012


ACE RTSW (Estimated) MAG & SWEPAM
Begin: 2012-04-23 06:00:00UTC
Bt Bz (gsm)
Phi (gsm)
Density (/cm3)
Speed (km/s)
Temp (K)
UTC(houra)
start DOY: 114
caution:
density < 1

Overview

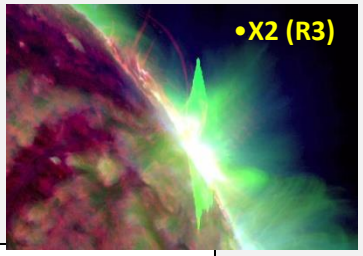
- Solar Activity On the Rise
- Customer Subscriptions Skyrocket
- SWPC Base Budget
- SWPC contributing to National and State-level exercises
- Education/Outreach
- Commitment to improved operations – Testbed activities
- Commercial Service Providers
- International Activities

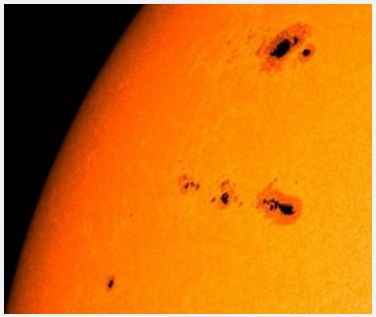


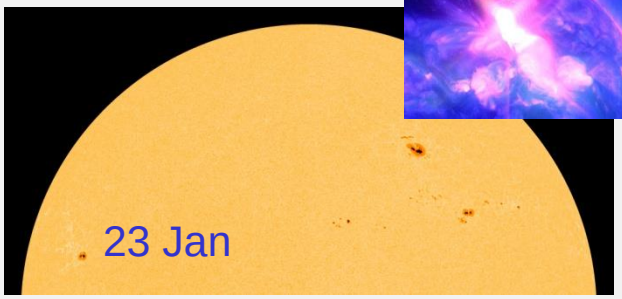


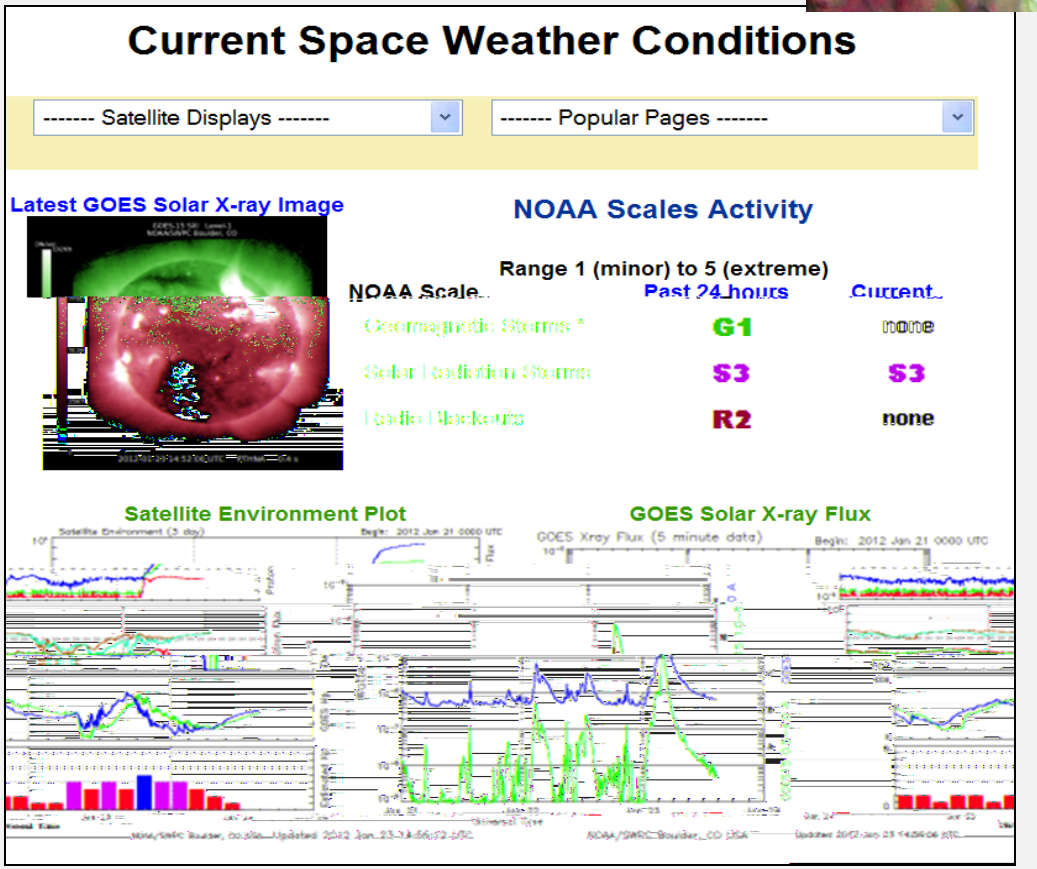
January 2012

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



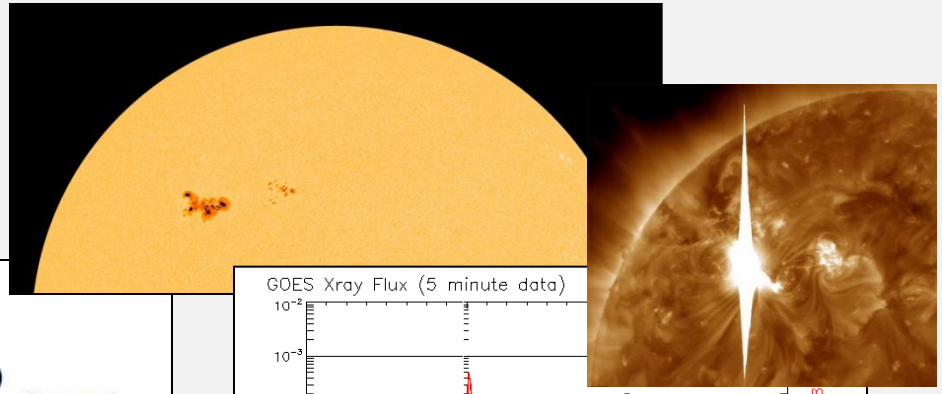


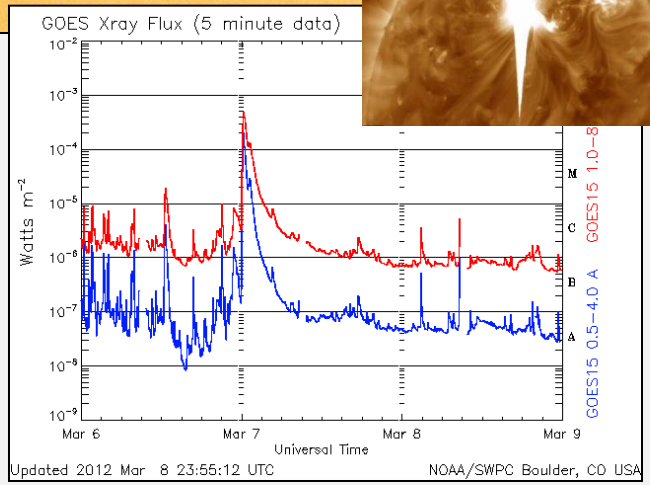




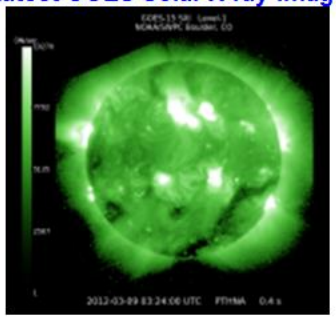
March 2012

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





Latest GOES Solar X-ray Image

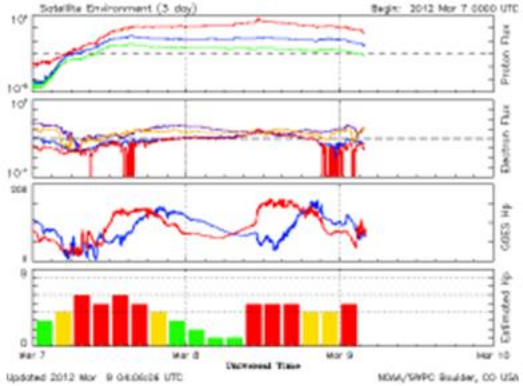


NOAA Scales Activity

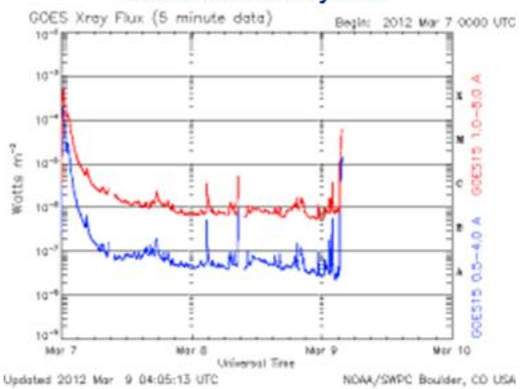
Range 1 (minor) to 5 (extreme)

NOAA Scale	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.

Oct 24, 2011

~01:30 UTC

G2/K6

G3…aurora in Alabama???

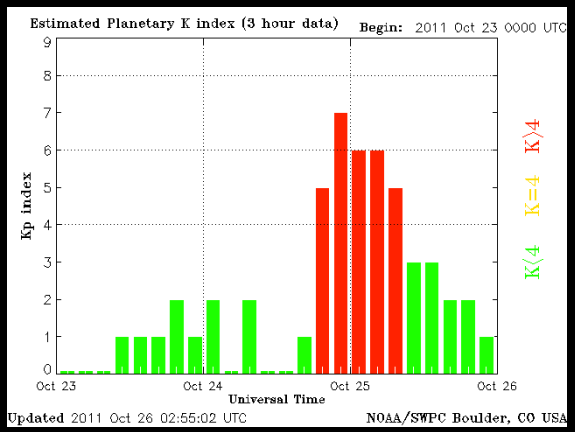
Missouri

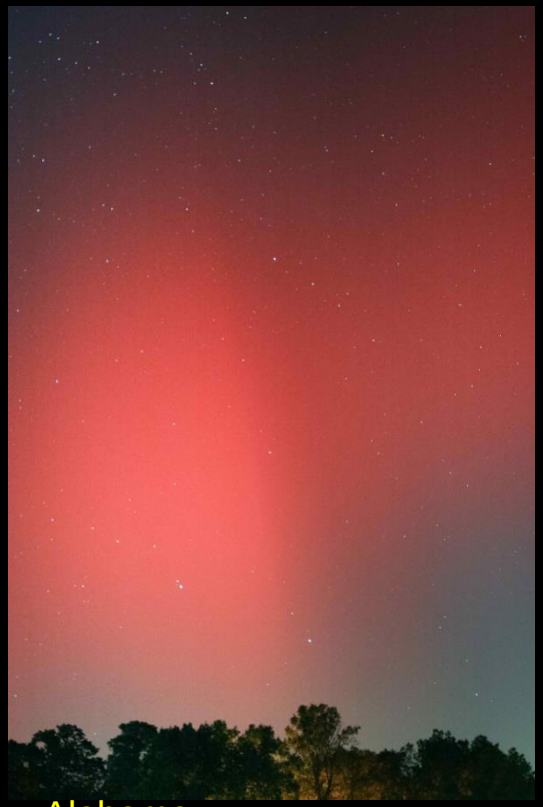
Alex Roberts

Oklahoma

Peter Henshaw

New York



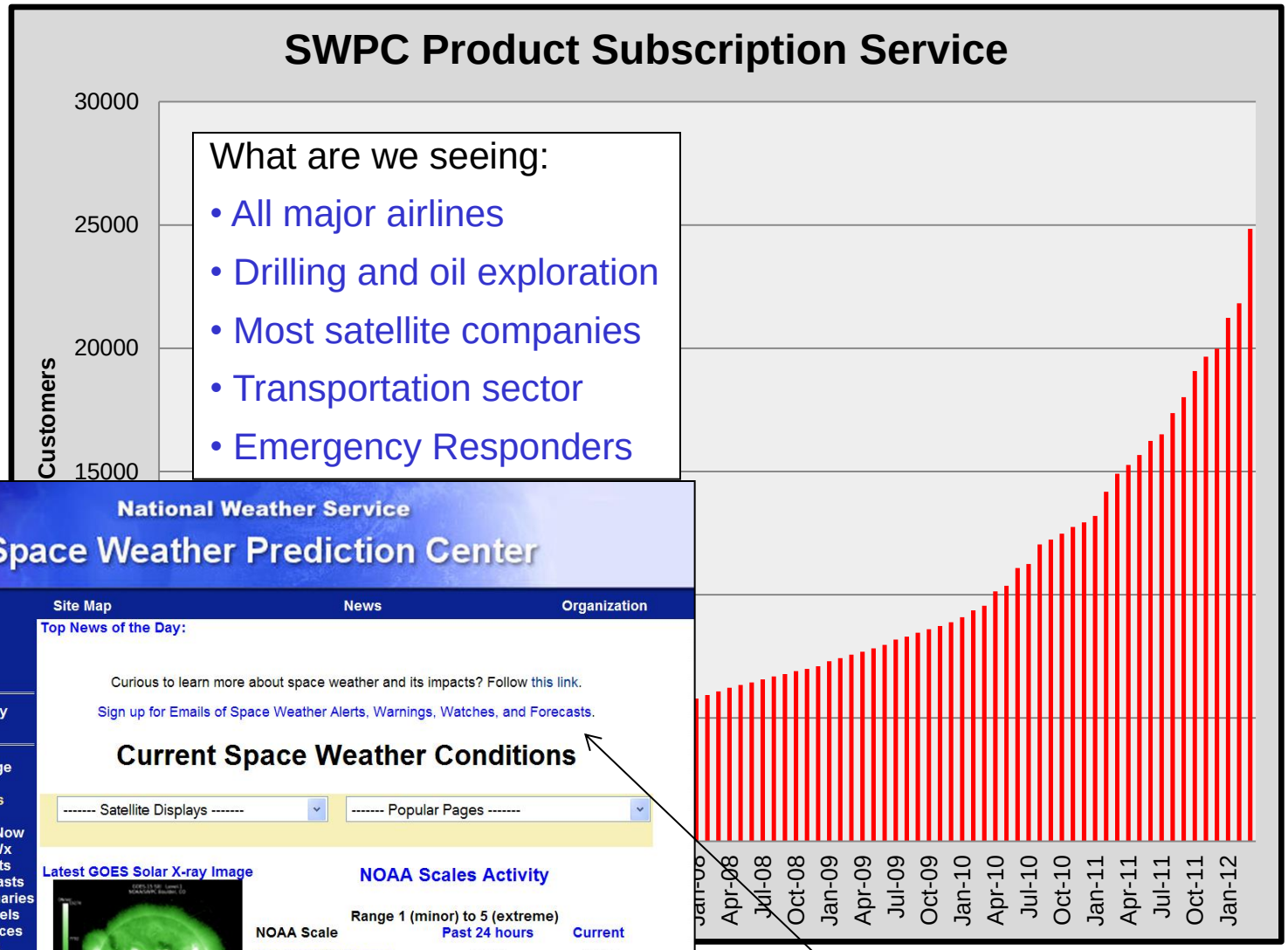


Alabama

Arkansas

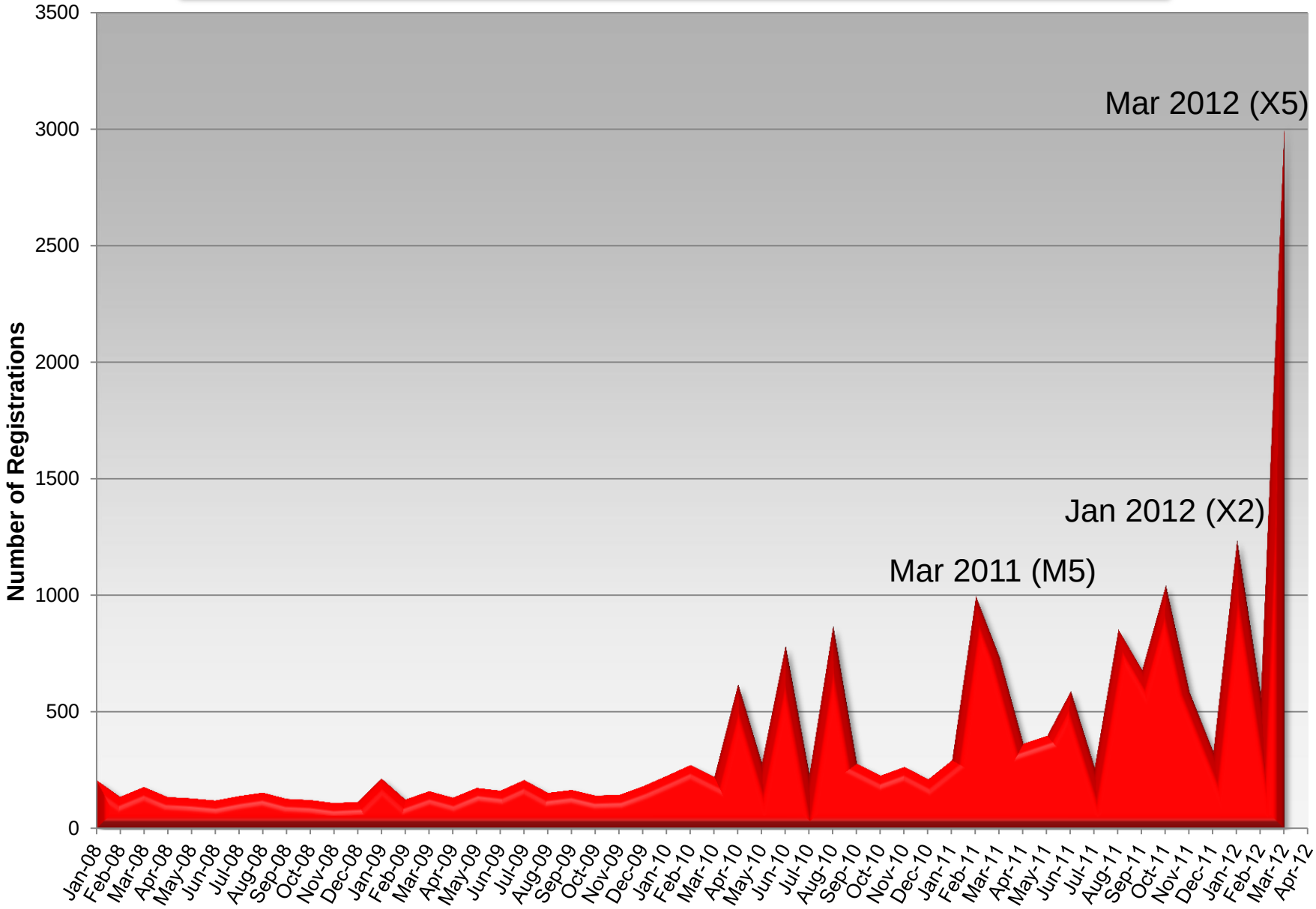
Brian Emfinger

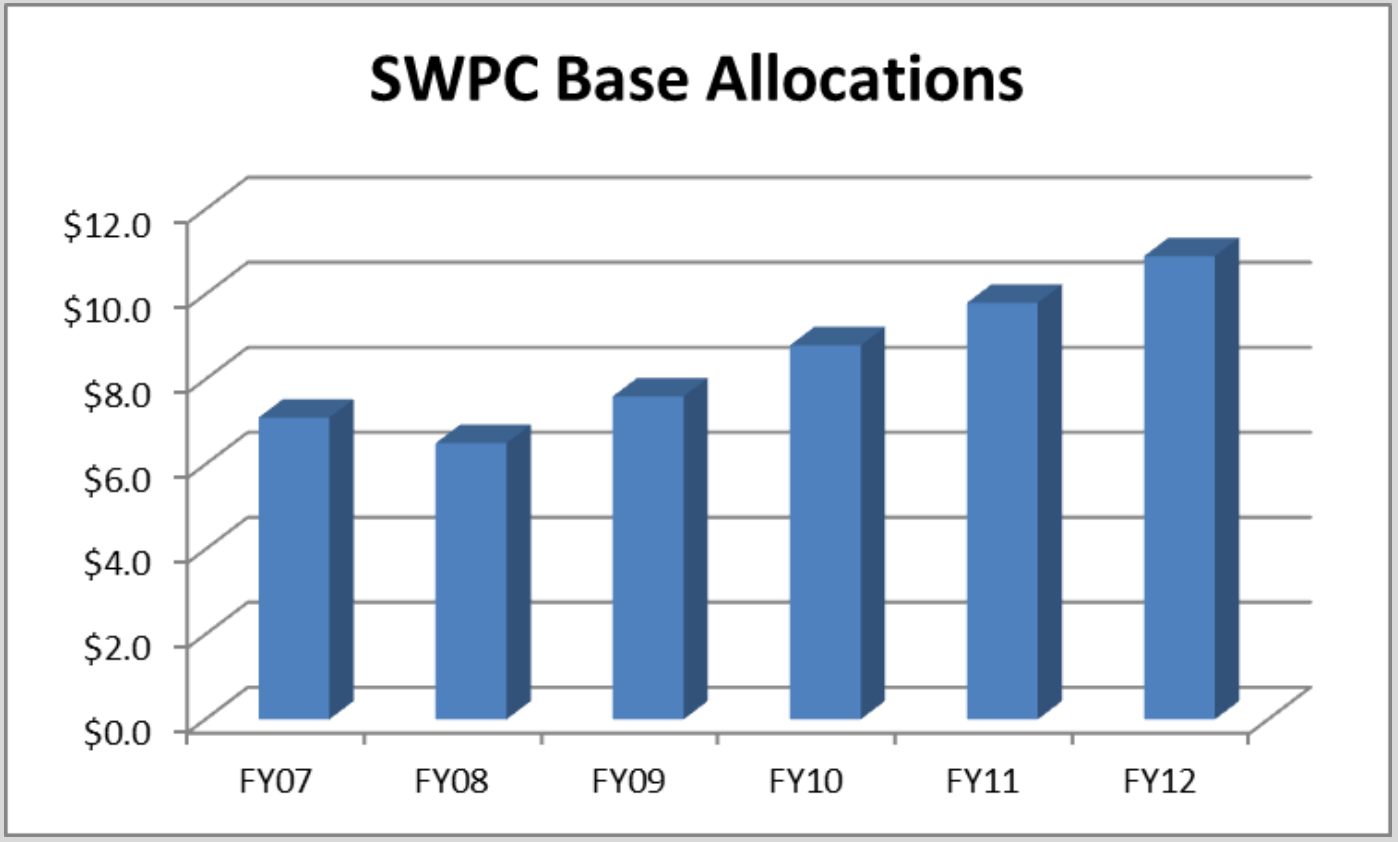
Customer Subscriptions Skyrocket…



Sign up for alerts/warnings

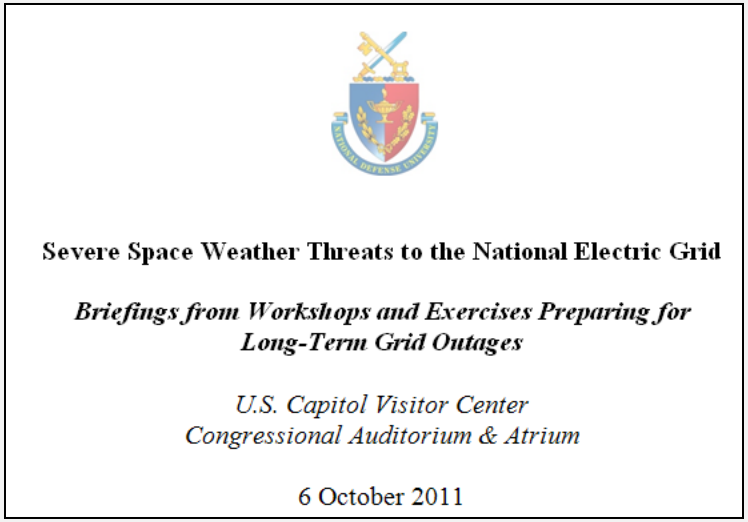
New SWPC Product Subscription Registrations by Month

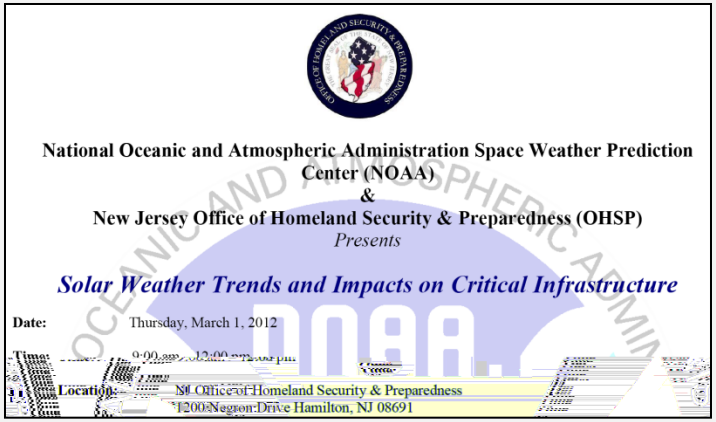


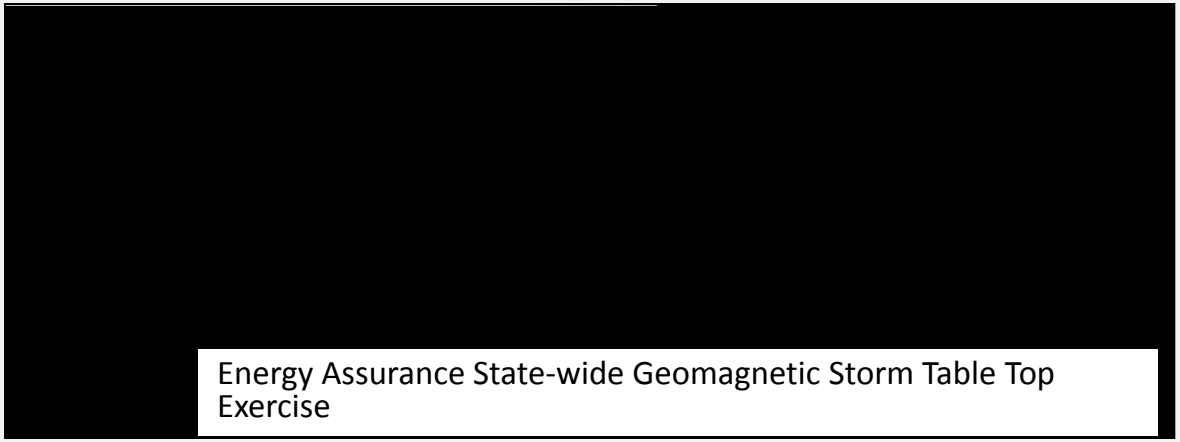


- Gradual increase to base budget past several years
- FY12 SWPC base allocation $10.9M
- Future years – difficult to predict due to federal budget climate

Contributing operational support to national and state exercises on space weather

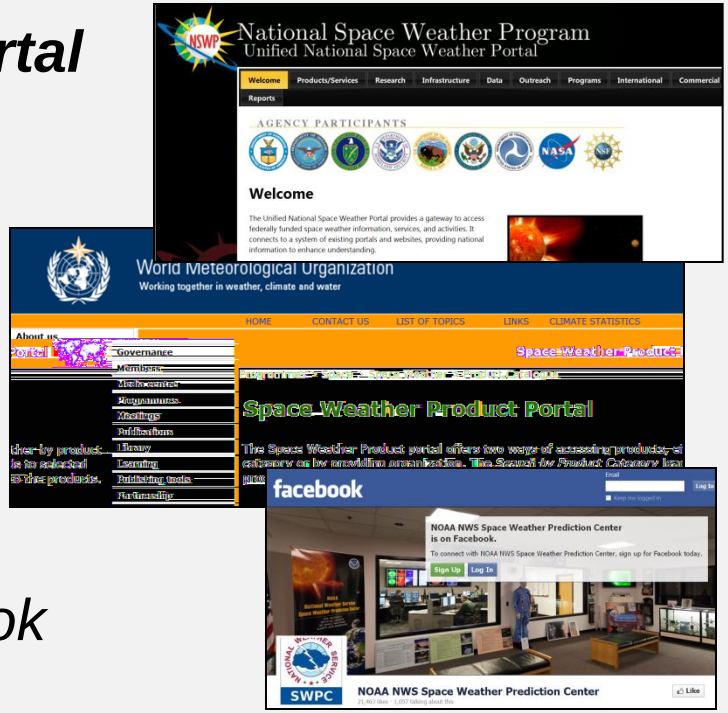






Education & Outreach

- ***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

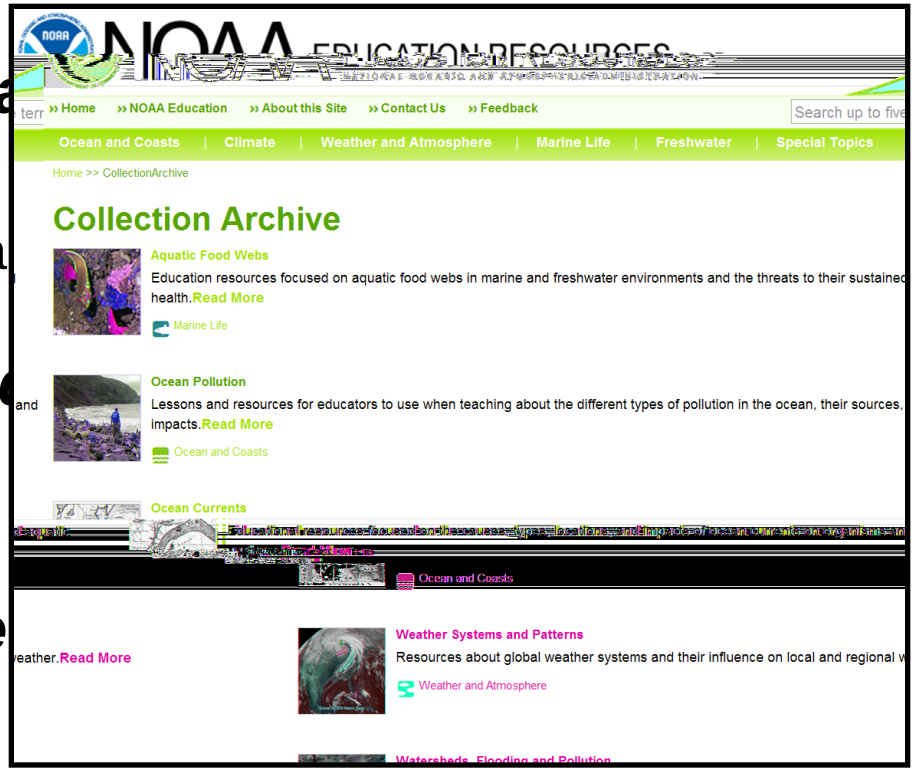
- ***Social Media –*** *Visit SWPC on Facebook*

- ***SWPC Released "Space Weather Basics" Module via COMET***
  - Focus is general public

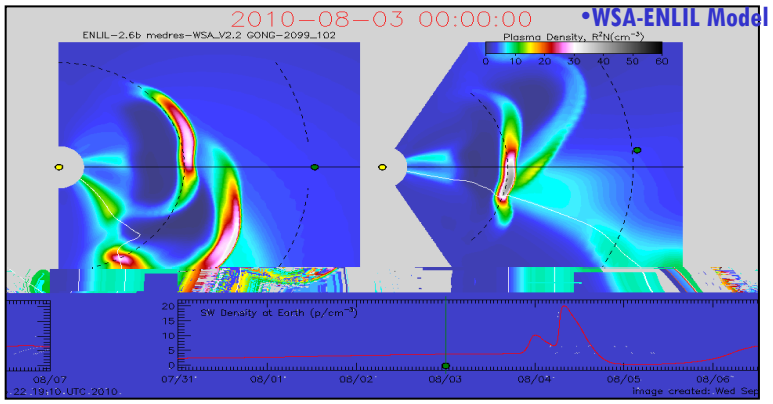
- ***Overhaul of SWPC Web Page –***
  - currently in progress

Education & Outreach

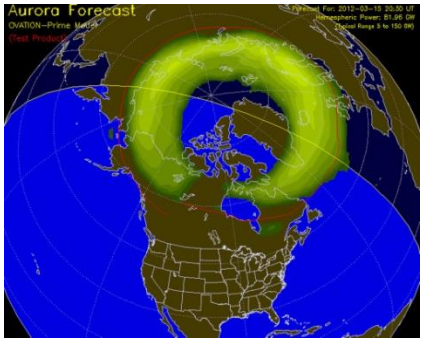
- ***NWS Training Center developing training module for NWS Weather Forecast Offices*** *(2012)*
  - Goal is to have NWS Weather Offices prepared to communicate with public
- ***WMO Training Modules pla Center*** (2013)
  - Provides training on impacts a
- ***SWx Aviation Training Mo COMET*** (2012)
- ***Space Weather to be adde 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 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
- 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

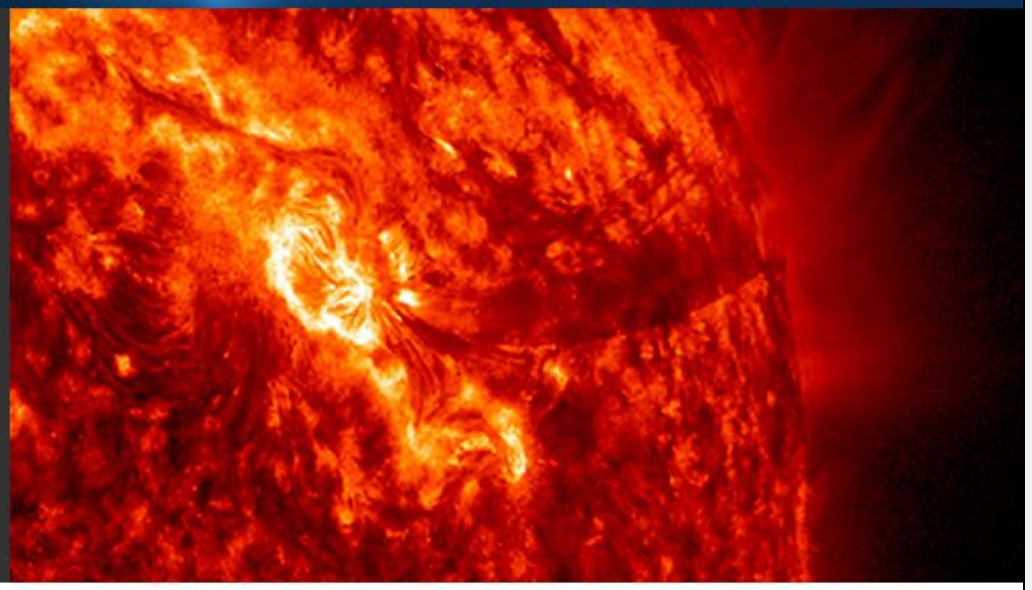
NOVA

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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ITUNES
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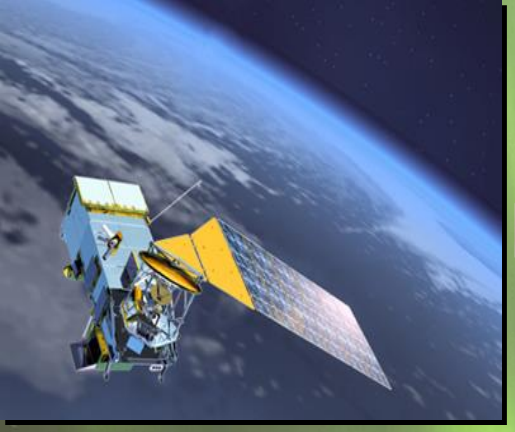
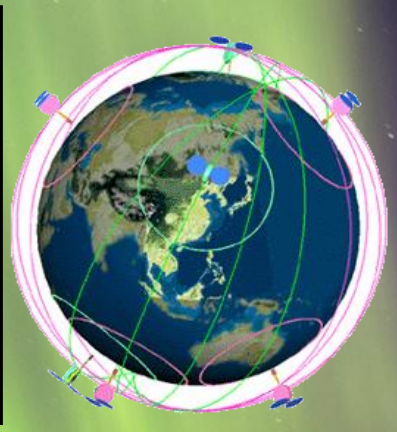
RSS
INSIDE NOVA

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.





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