



# Embedding Educational Material into ISWA (and feedback)

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# What is Integrated Space Weather Analysis (ISWA) System?

Web-based dissemination system for NASA-relevant space weather information

## What does it do?

Combines forecasts based on advanced space weather models with concurrent space environment information. Provides images, line plots, 2-D renderings with multi-perspective view

## How is it used?

**Operators-** Monitoring, decision-making tool/aid, post event analysis

## Educators/Sophisticated Users-

Source of broad spectrum “instances” of model output and observations

Ensembles, composites, consolidation of data

Each model output/observation instance is in a time sequenced/ fixed format

ISWA layouts can be configured/reconfigured to explore space weather event chain

Develop case studies

What’s new at CCMC?

**Novice students/Interested Professionals-** SWREDI / Bootcamp

**Public Users-** Homework and Curiosity-driven inquiries

## Is more needed?

# CCMC Infrastructure ( Highlights )-ISWA

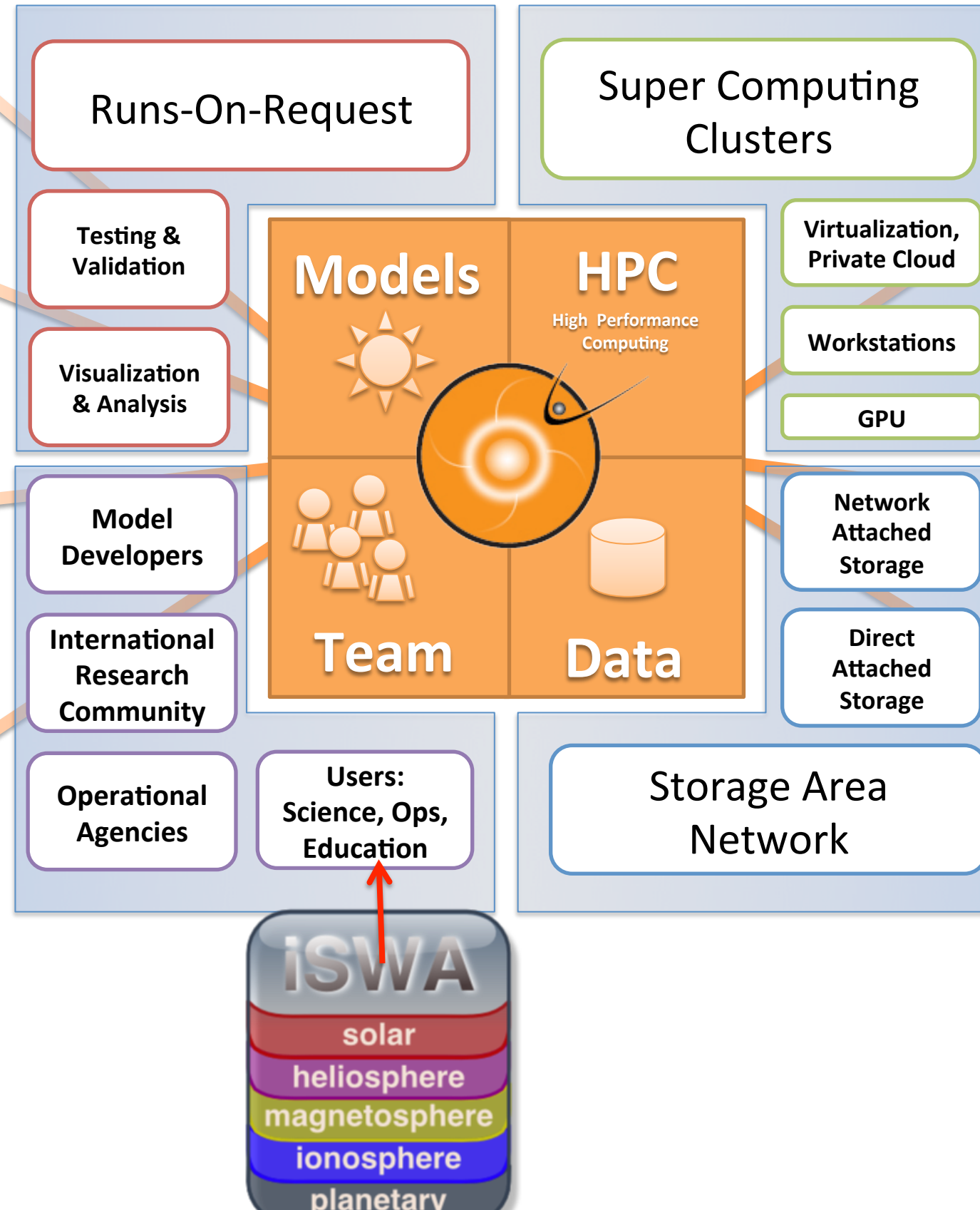
ROR  
NEXT GEN  
**FlexDIT**  
Flexible Data Ingestion Tool



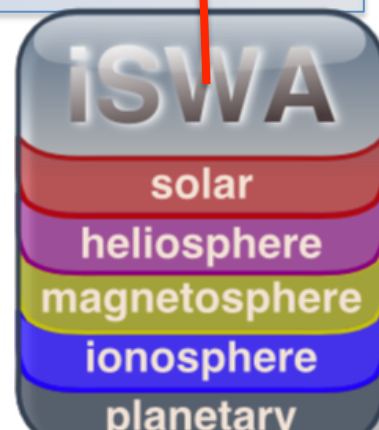
StereoCat



Space Weather  
Scoreboard



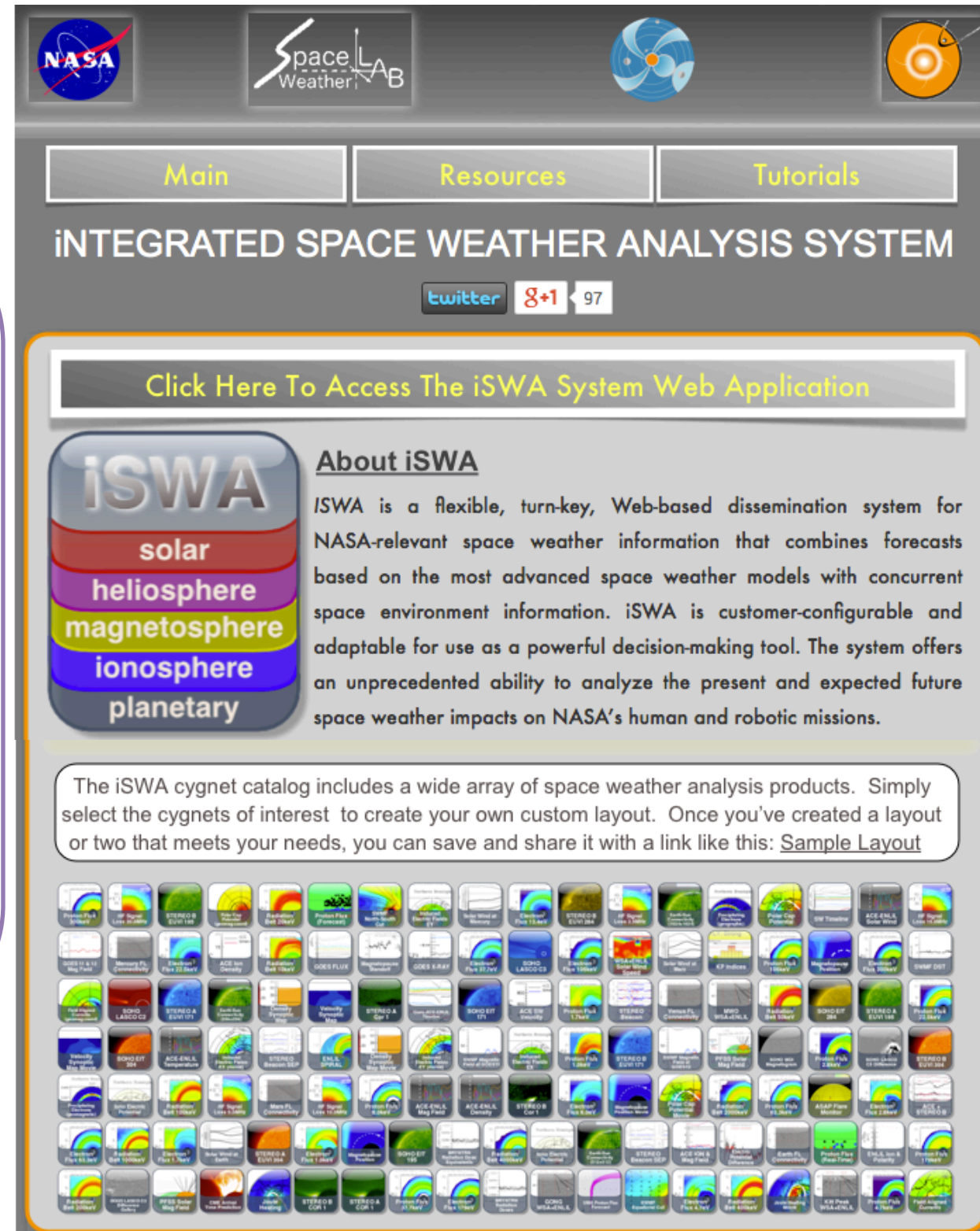
DONKI



KameleonJ, Kameleon+



# Integrated Space Weather Analysis



**Data and Product Push:**

**“Web-based dissemination system for NASA-relevant space weather information”**

**Users are “knowledgeable” of their needs and products related to these needs**

**User/Education Pull:**

**Web-based window into CCMC’s vast array of models and data**

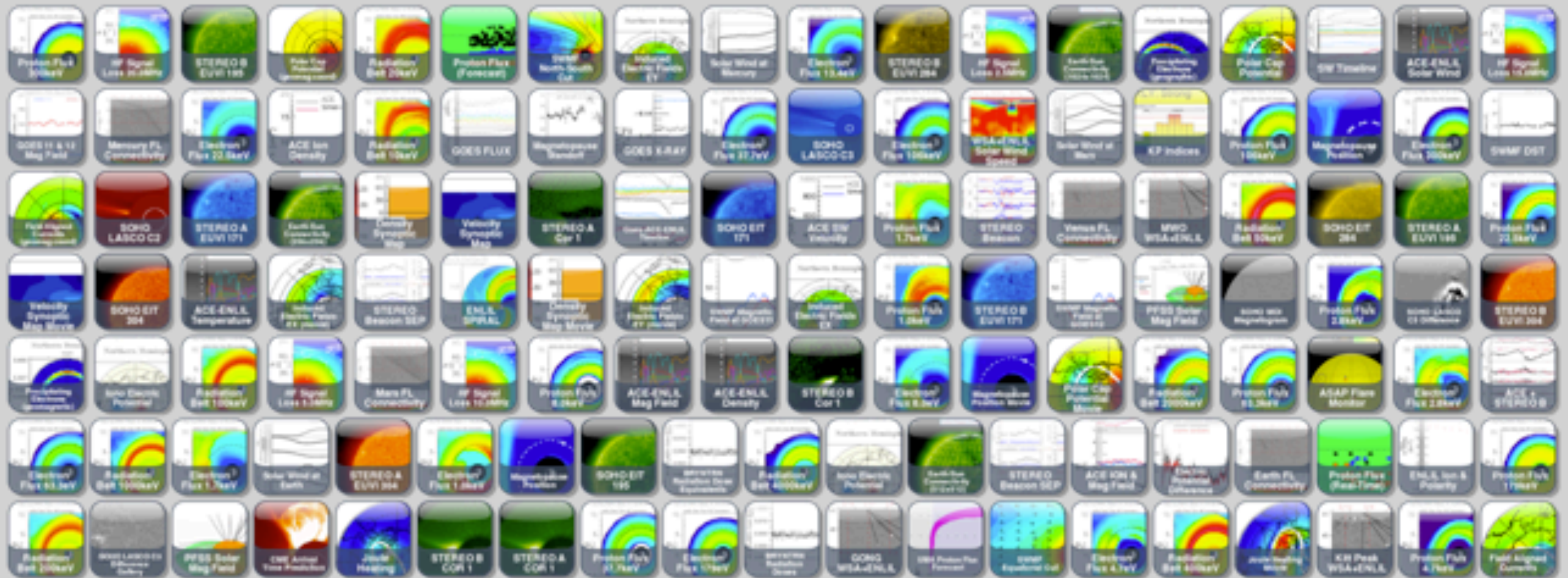
**Users are unsure/unaware of their needs and products related to these needs**



# ISWA Catalog

<http://iswa.ccmc.gsfc.nasa.gov/IswaSystemWebApp/>

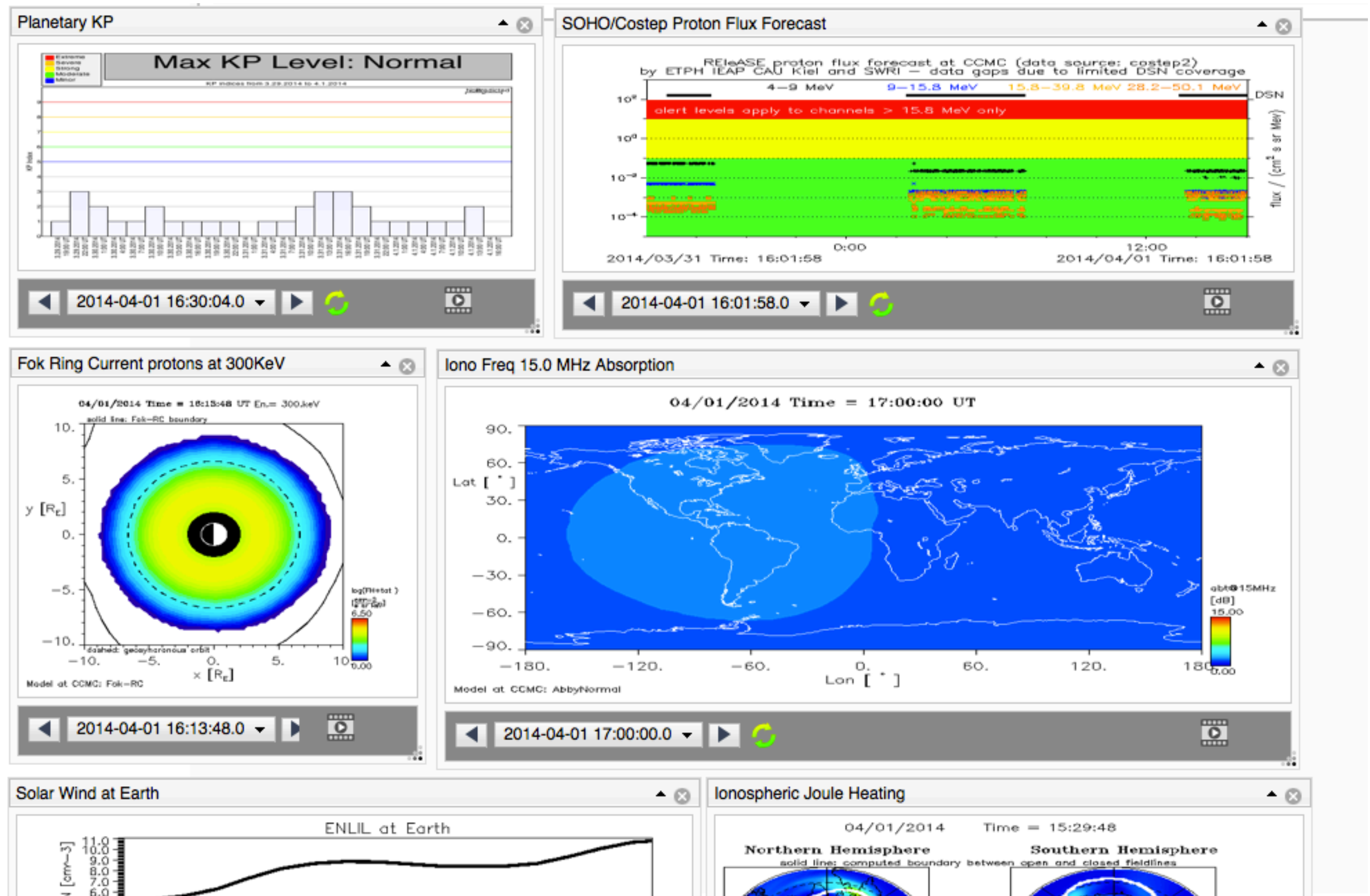
The iSWA cygnet catalog includes a wide array of space weather analysis products. Simply select the cygnets of interest to create your own custom layout. Once you've created a layout or two that meets your needs, you can save and share it with a link like this: [Sample Layout](#)



More than 500 “cygnets”!

Cygnet= small unit of information including visuals, movies, and short explanations

# SAMPLE LAYOUT



Layout = Array of interactive product images, usually for a monitoring, forecasting or post event analysis application



[1.16 T](#)

[1.17 U](#)

[1.18 X](#)

## Glossary of Space Weather related terms

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### A

#### ambient solar wind

the outflow of the Sun's ionized atmosphere into interplanetary space

#### ACE

the Advanced Composition Explorer (ACE) spacecraft is positioned on the that will impact Earth. [Glossary/ACE](#)

#### active regions

A disturbed volume of the Sun's atmosphere that often consists of (from bo release significant amounts of energy during magnetic eruptions that produ

#### ambient solar wind

the outflow of the Sun's ionized atmosphere into interplanetary space

#### aurora

transient displays of light, often displaying as moving curtains and rays, at l

#### auroral region

oval-shaped, high-latitude zone centered on the geomagnetic pole, in which

#### auroral activity

usually refers to visible aurora and the particles that create them, but may : hemispheric power

#### auroral boundary

The high and low latitude edges of the auroral zone, typically 72 deg (polev

#### auroral precipitation

ionized particles that fall, or are accelerated, into Earth's atmosphere to cre

### C

#### Carrington event

An atmospheric layer in which a small fraction of electrons have been particles, with sufficient energy, strip the electrons to produce a wea

#### ionospheric disturbance

#### ionospheric effects of a solar flare

### K

#### KeV

Kilo electron Volt - see electron Volt

#### kinematic properties of a CME

#### Kp Index

The Kp index indicates the magnitude of geomagnetic disturbance c shows a three-day history of the real-time Kp index in 3 hours period page. [2] [↗](#)

### L

#### L1 magnetic field observations

#### L1 point

Lagrange Point 1 is an (unstable) gravitational fix point between the spacecraft are in orbit around the L1 point.

#### leading edge of the CME /nose of the CME front

#### LEO orbit

### M

#### magnetic connectivity

#### magnetic polarity

#### magnetopause

#### magnetopause compression

#### magnetopause standoff distance

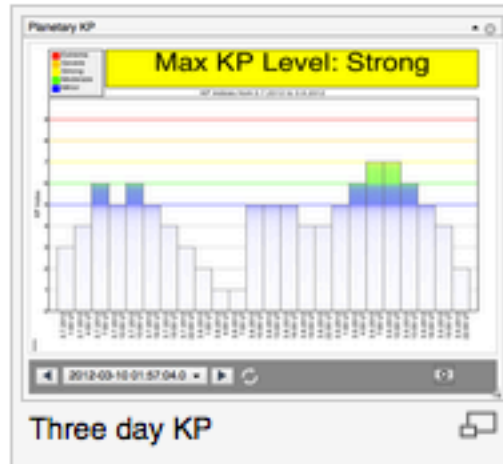
#### magnetosphere

The region of space dominated by the magnetic field of a star or pla

[Glossary/magnetosphere](#)

#### magnetospheric plasma

## KP Indices



### Contents [\[hide\]](#)

- 1 Kp Index
- 2 Description
- 3 Uses
- 4 Examples
- 5 References and Credits

## Kp Index

The Kp index reports the magnitude of geomagnetic disturbance on a 0-9 scale, with zero being very quiet and 9 indicating an extreme geomagnetic storm. The index has a three hour cadence. This cygnet shows a three-day history of the real-time Kp index produced by the NOAA Space Weather Prediction Center.

## Description

Kp is an indicator of the disturbance level in Earth's mid- and high-latitude magnetic field compared to a quiet day. Higher values of Kp are associated with geomagnetic storming, the appearance of auroral lights at lower than normal latitudes, and stronger linkages between Earth's upper atmosphere and magnetosphere. The official index and most real-time versions of the index cover three-hour intervals in Universal Coordinated Time (UT) beginning with 00-03 UT, and progressing through the end of the UT day. There are no units associated with the Kp index. Rather the index values relate to classes of geomagnetic activity: quiet, unsettled, and storm level. In the cygnet the colored horizontal lines indicate the level of geomagnetic storming listed in the legend.

The Kp scale is a relative scale and varies from 0-9, with "0" indicating no disturbance from background, and "9" indicating a severe disturbance associated with an extreme

magnetosphere  
ionosphere  
planetary

Navigation

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[Recent changes](#)

[Help](#)

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Links

[ISWA](#)

[ISWA Tutorials](#)

[CCMC](#)

[NASA Anomaly Database](#)

Toolbox

[What links here](#)

[Related changes](#)

[Special pages](#)

[Printable version](#)

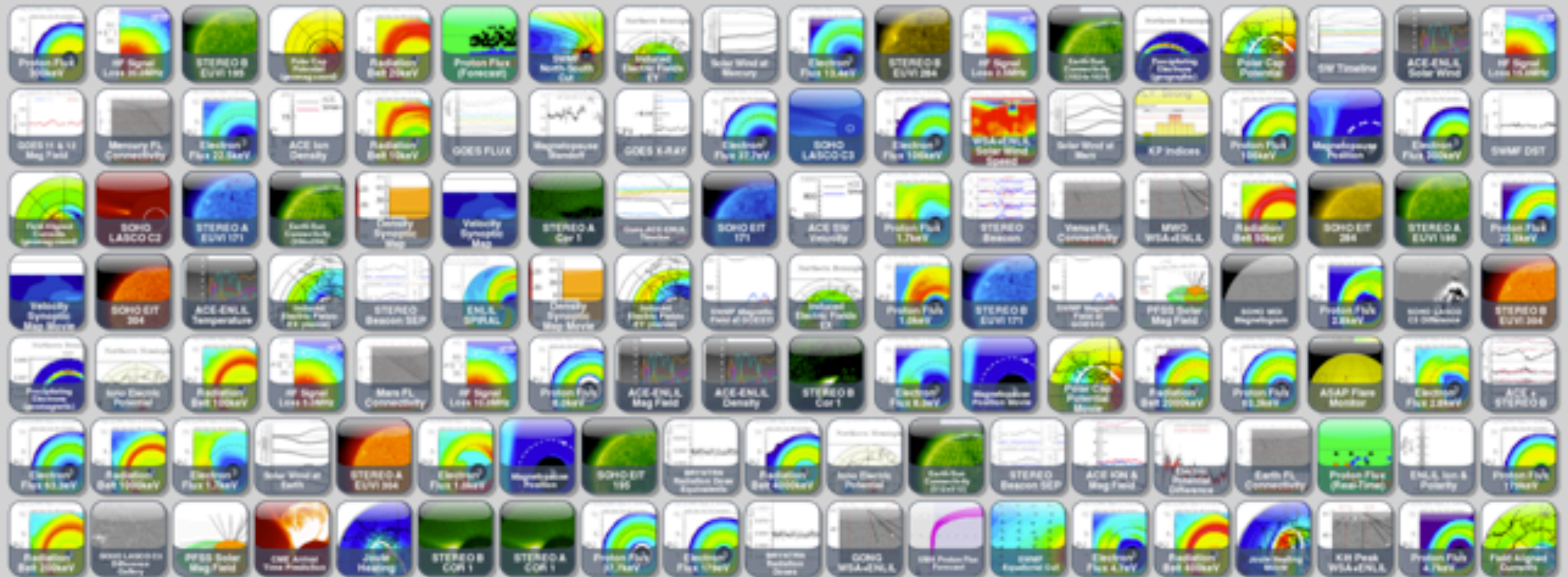
[Permanent link](#)



# ISWA Catalog

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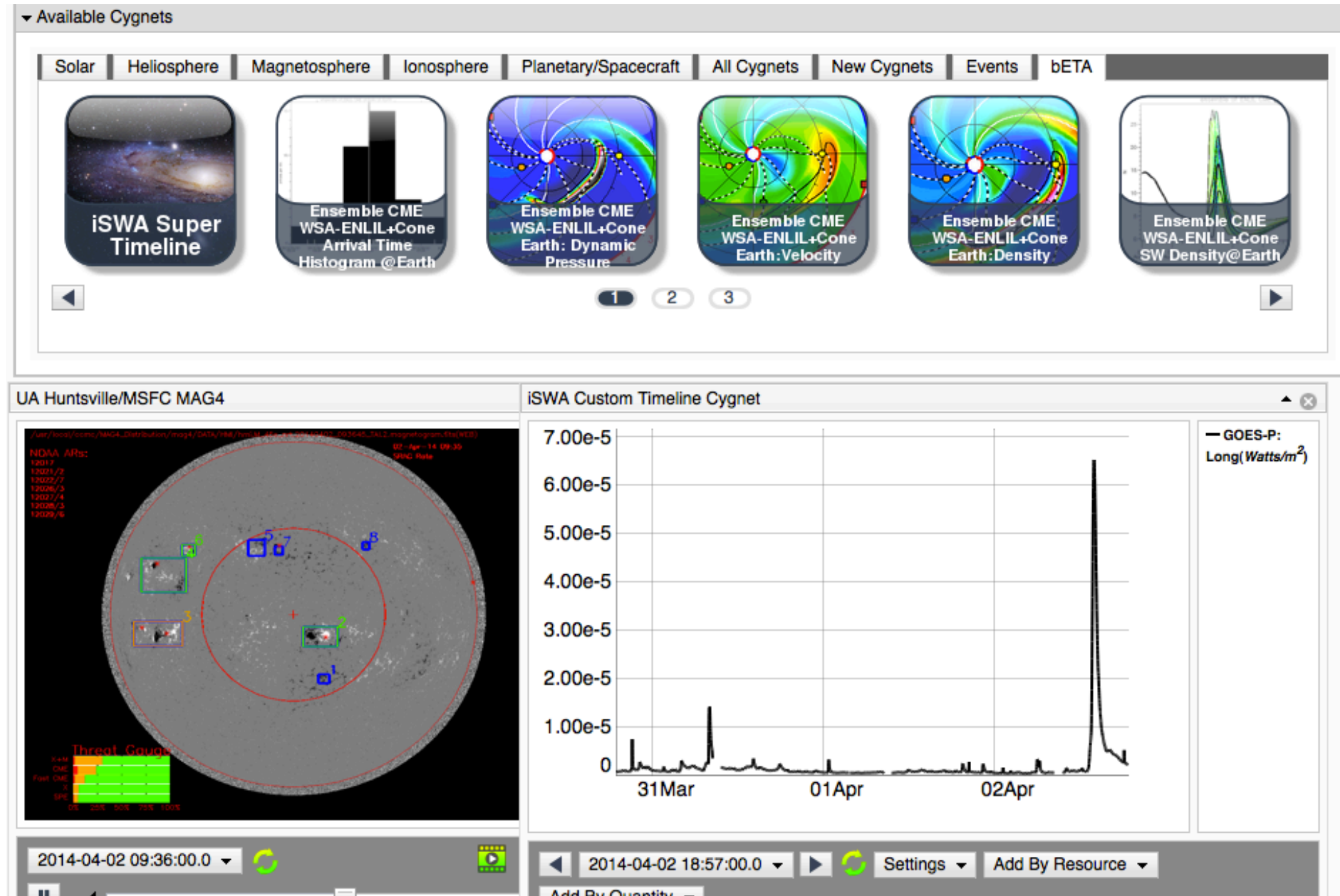
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Cygnet= small unit of information including visuals, movies, and short explanations

<http://iswa.ccmc.gsfc.nasa.gov/IswaSystemWebApp/index.jsp?clear=1>





# Solar Domain

Help Save Layout Global Date/Time Clear Layout

Available Cygnets

Solar Heliosphere Magnetosphere Ionosphere Planetary/Spacecraft All Cygnets New Cygnets Events bETA

SOHO EIT 284 SOHO EIT 284 (NRL) SOHO EIT 304 SOHO EIT 304 (NRL) STEREO A EUVI 171 STEREO B EUVI 171

SOHO - EIT 304

SOHO - EIT 304

Full-disk image of the Sun at 304 Å (30.4 nm) wavelength from the Extreme ultraviolet Imaging Telescope (EIT) on the SOHO spacecraft. The 304 Å line indicates He II and shows the transition layer of the Sun at about 60000 - 80000 K temperature.

18 pages of solar cygnets!  
Most with pop-up explanations  
~ 2 sentences  
Some with a paragraph

net(7)

Jan 4, 2011 1:09 PM 6.8 MB Adobe .ument

# Ionosphere Domain

Help Save Layout Global Date/Time Clear Layout

Available Cygnets

Solar Heliosphere Magnetosphere Ionosphere Planetary/Spacecraft All Cygnets New Cygnets Events bETA

Induced Electric Fields EX (movie) Induced Electric Fields EX Induced Electric Fields EY Induced Electric Fields EY (movie) Weimer Polar Cap Potential (geographic) Joule Heating Movie

9 10 11-14

**GIC - EX**  
 Geomagnetically Induced Electric Fields - EX  
 03/31/2014 Time = 19:28:48  
 Northern Hemisphere

Model at CCMC: GIC midnight

**GIC - EX**  
 04/01/2014 Time = 13:56:48  
 Northern Hemisphere

Model at CCMC: GIC midnight

14 pages of ionosphere cygnets!  
 Many with titles only



# ISWA Cygnet Catalog List

<http://tinyurl.com/Full-ISWA-Cygnet-List>:



Examples

[SOHO EIT 17.1 nm](#)

Basic Entry

[GOES Primary Proton flux Interactive  
Timeline](#)

Functional Entry

[SDO AIA 17.1 nm](#)

Full Wiki Entry

[SDO EVE MEGS-SAM](#)

Needs Work Entry

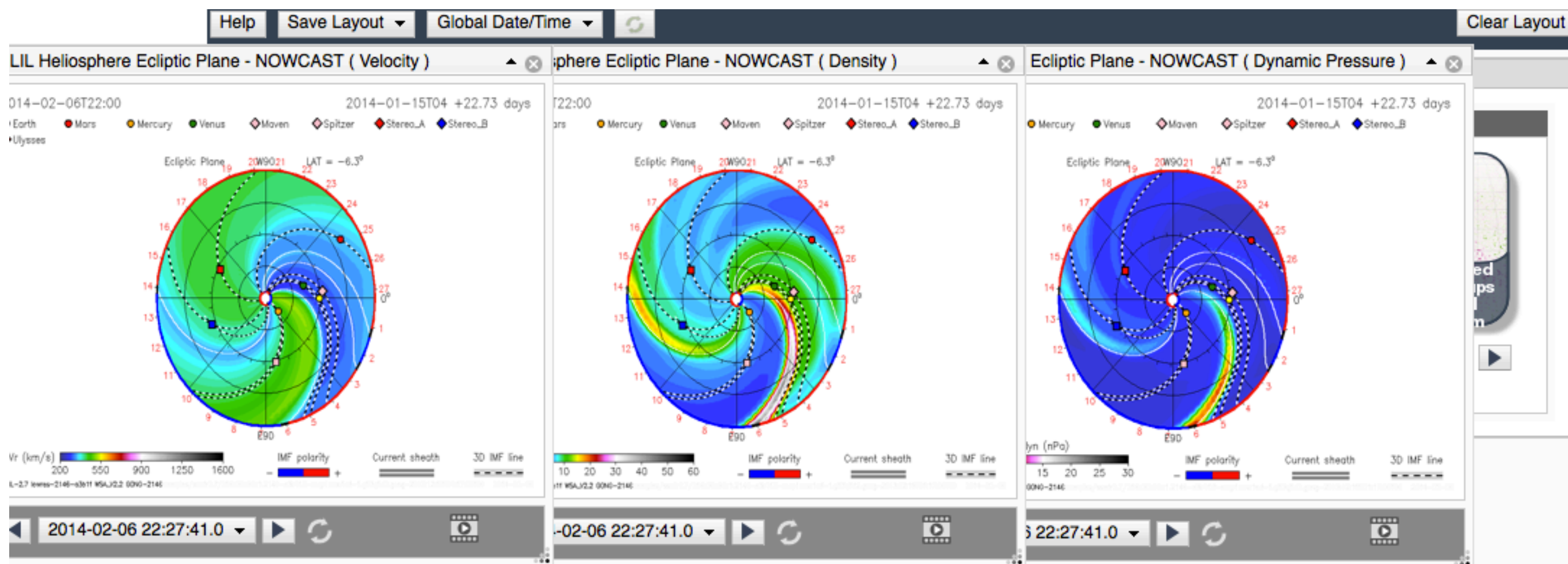
[http://iswa.ccmc.gsfc.nasa.gov/IswaSystemWebApp/index.jsp?](http://iswa.ccmc.gsfc.nasa.gov/IswaSystemWebApp/index.jsp?i_1=427&l_1=597&t_1=26&w_1=415&h_1=362&s_1=2014-02-0622:27:41.0_0_10_3&i_2=425&l_2=303&t_2=26&w_2=399&h_2=361&s_2=2014-02-0622:27:41.0_0_10_3&i_3=423&l_3=-22&t_3=26&w_3=397&h_3=360&s_3=2014-02-0622:27:41.0_0_10_3)

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[22:27:41.0\\_0\\_10\\_3&i\\_2=425&l\\_2=303&t\\_2=26&w\\_2=399&h\\_2=361&s\\_2=2014-02-06](http://iswa.ccmc.gsfc.nasa.gov/IswaSystemWebApp/index.jsp?i_1=427&l_1=597&t_1=26&w_1=415&h_1=362&s_1=2014-02-0622:27:41.0_0_10_3&i_2=425&l_2=303&t_2=26&w_2=399&h_2=361&s_2=2014-02-0622:27:41.0_0_10_3&i_3=423&l_3=-22&t_3=26&w_3=397&h_3=360&s_3=2014-02-0622:27:41.0_0_10_3)

[22:27:41.0\\_0\\_10\\_3&i\\_3=423&l\\_3=-22&t\\_3=26&w\\_3=397&h\\_3=360&s\\_3=2014-02-06](http://iswa.ccmc.gsfc.nasa.gov/IswaSystemWebApp/index.jsp?i_1=427&l_1=597&t_1=26&w_1=415&h_1=362&s_1=2014-02-0622:27:41.0_0_10_3&i_2=425&l_2=303&t_2=26&w_2=399&h_2=361&s_2=2014-02-0622:27:41.0_0_10_3&i_3=423&l_3=-22&t_3=26&w_3=397&h_3=360&s_3=2014-02-0622:27:41.0_0_10_3)

[22:27:41.0\\_0\\_10\\_3](http://iswa.ccmc.gsfc.nasa.gov/IswaSystemWebApp/index.jsp?i_1=427&l_1=597&t_1=26&w_1=415&h_1=362&s_1=2014-02-0622:27:41.0_0_10_3&i_2=425&l_2=303&t_2=26&w_2=399&h_2=361&s_2=2014-02-0622:27:41.0_0_10_3&i_3=423&l_3=-22&t_3=26&w_3=397&h_3=360&s_3=2014-02-0622:27:41.0_0_10_3)



## ENLIL Dynamic Pressure (Inner Planets)

There is currently no text in this page. You can [search for this page title](#) in other pages, or [search the related logs](#), but you do not have permission to create this page.

[ENLIL Explanation](#)



# Front End Improvement for ISWA Catalog

- Interactive interface (rollover) and
- Organized and searchable by category on front page

## Basic Categories:

Space Weather Domain,

Type (Model/Obs/Fcst),

Cause/Effect

Searchable Keyword

Most Accessed

Tree/branch Layout

- Are all of these Cygnets Useful?

# Layout/Cygnets Improvement for ISWA Catalog and Wiki

Provide a “explanation/glossary” option for every cygnet

“Rollover” short explanation for all cygnets

Determine glossary content/Finish ISWA glossary

Provide wiki content for every cygnet

Provide wiki content for key concepts related to cygnets

Standardize the links

Develop tool to shorten URLs

Include cross links to related material/cygnets

Basic vs Advanced Explanation option

Tree/Branch Knowledge Layout



# Crowd Supported Data Access

## Solar Ham

You need the **LFA Yagi** from **InnoVAntennas**  
Performance through Innovation

Off the Map Northern Lights Holidays  
Travel

UTC Time **16:06:47 Wed**

[SolarHam Main](#)
[SolarHam Ticker](#)
[Just Data](#)
[Gallery](#)
[Ham Radio](#)

Regions

2029

2028

2027

2026

2022

2021

[Details]

[MAP]

Events

(<24h)

**M6.5**

(<72h)

**M1.4**

[Details]

[SolarSoft]

PayPal

Donate

SC24

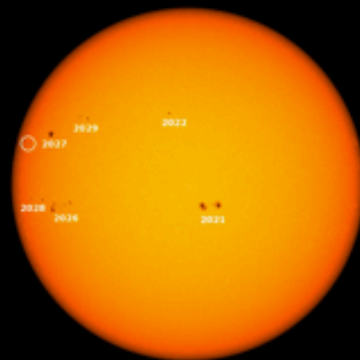
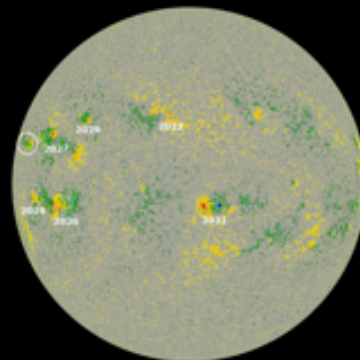
Top 10

Flares

01. X6.9

02. X5.4

The Sun Today : Updated April 2, 2014

[\[Sunspots\]](#) [\[Rot-M\]](#) [Magnetogram](#)

SOLAR FLUX | SOLAR REPORTS | ALERTS

Stay Tuned for Updates.

**Solar-Terrestrial Data**  
02 Apr 2014 1552 GMT  
SFI: 153 SN: 124  
304A: 141.0 @ EVE  
A 6 K 2  
X-Ray: C6.4  
Aurora: 2 /n=1.23  
Mag (Bz): -0.6  
Solar Wind: 413.1  
MUF Boulder 29.17  
Data provided by NONBH

**Solar Flare Risk**

M-Class: **40%**

X-Class: **05%**

---

**Active Watches**

Geomag. Storm **YES**

Radiation Storm **NO**

Past 24 Hrs **Solar X-Rays: M CLASS FLARE** **Geomagnetic Field: QUIET**




AVERAGES | MAR. Solar Flux 149.9 ▼ | Sunspots ---.- ▼ | Flare Max X1.0

# SolarHam

by Amateur Radio Station VE3EN

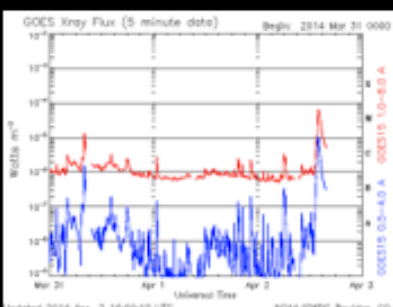
Welcome to SolarHam.com All of your solar and aurora needs in one place!

Social:






Monitor: **SUNSPOT SUMMARY** | **FARSIDE WATCH**

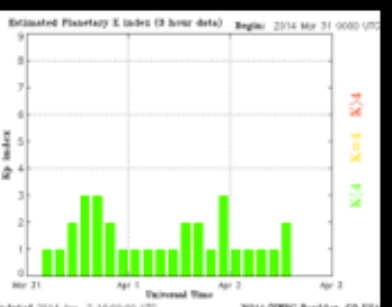
SPACE WEATHER DATA - [MORE] [ACE](#) | [SDO](#) | [SOHO](#) | [STEREO](#) | [SXI](#)



[X-Rays] [1 min. data]

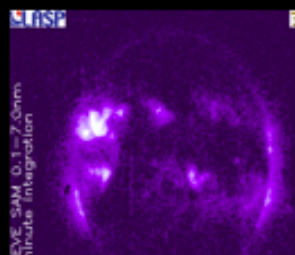
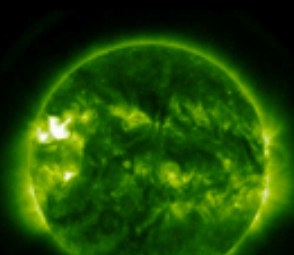

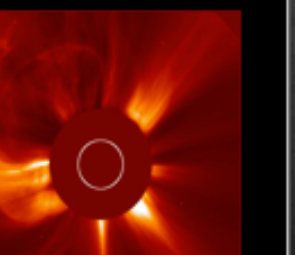


[Protons] [EPAM]



[K-Index] [Wing Kp]

IMAGERY - [MORE] [Helloviewer](#) | [SDO-Mov](#) | [SOHO-M](#) | [STEREO-M](#)

# Integrated Space Weather Analysis

Vast amount of SW information  
in central location

The screenshot shows the iSWA web application interface. At the top, there are logos for NASA, Space Weather Lab, and other related organizations. Below the logos are navigation buttons for 'Main', 'Resources', and 'Tutorials'. The main heading is 'INTEGRATED SPACE WEATHER ANALYSIS SYSTEM'. There are social media icons for Twitter, Google+, and Facebook. A prominent button says 'Click Here To Access The iSWA System Web Application'. Below this is a section titled 'About iSWA' with a description: '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.' To the left of the 'About iSWA' text is a vertical stack of colored buttons labeled 'solar', 'heliosphere', 'magnetosphere', 'ionosphere', and 'planetary'. Below the 'About iSWA' text is a text box: 'The iSWA cygnet 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](#)'. At the bottom of the screenshot is a large grid of many small thumbnail images representing different space weather analysis products.

**Data and Product Push:**

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**Additional levels/categories of organization would be helpful**

**Access to more background information would be helpful**

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