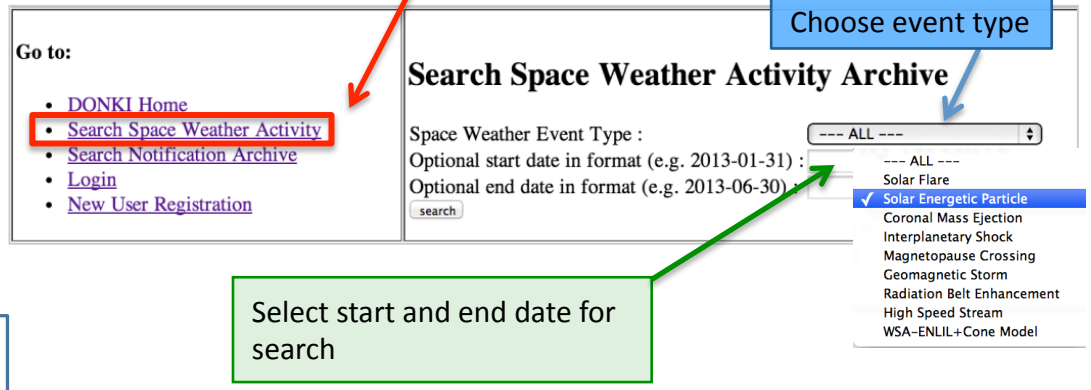
Space Weather DONKI

Database **O**f **N**otifications, **K**nowledge, **I**nformation

http://kauai.ccmc.gsfc.nasa.gov/DONKI/

- Catalog of space weather phenomena.
- Knowledgebase of interpretations, simulation results, and forecasting analysis.
- Online tool for dissemination of forecasts, notifications, and archiving event-focused information.
- SW DONKI is a key component of the forecaster tool suite, developed to address space weather needs of NASA missions.

Click here to get started searching the database by space weather activity type and date



Choose event type

Select start and end date for search

DONKI Features

- Chronicles the daily interpretations of space weather observations, analysis, model results, and forecasts provided by the CCMC/Space Weather Research Center (SWRC) team.
- Comprehensive search functionality to support anomaly analysis and space weather research.
- Space weather activity archive (flares, CMEs and simulation results, SEPs, geomagnetic storms, radiation belt enhancements).
- Intelligent linkages, relationships, cause-and-effects between space weather activities.
- Automatic dissemination of forecasts and notifications (coming soon).
- Enable remote participation by students, world-wide partners, model and forecasting technique developers.

Search Space Weather Activity Archive

Space Weather Event Type : Solar Energetic Particle
Optional start date in format (e.g. 2013-01-31) : 2013-05-01
Optional end date in format (e.g. 2013-06-30) : 2013-05-31
search

Event Type	Activity ID	SEP Event Time	Associated Instrument
Solar Energetic Particle	2013-05-13T04:12:00-SEP-001	2013-05-13T04:12Z	STEREO B: IMPACT 13-100 MeV
Solar Energetic Particle	2013-05-13T18:02:00-SEP-001	2013-05-13T18:02Z	STEREO B: IMPACT 13-100 MeV
Solar Energetic Particle	2013-05-15T13:25:00-SEP-001	2013-05-15T13:25Z	GOES13: SEM/EPS >10 MeV
Solar Energetic Particle	2013-05-22T15:05:00-SEP-001	2013-05-22T15:05Z	GOES13: SEM/EPS >10 MeV
Solar Energetic Particle	2013-05-22T15:05:00-SEP-002	2013-05-22T15:05Z	GOES13: SEM/EPS >100 MeV
Solar Energetic Particle	2013-05-22T15:30:00-SEP-001	2013-05-22T15:30Z	SOHO: COSTEP 15.8-39.8 MeV

All columns are sortable! (click column headings)

For More Information contact chiu.wiegand@nasa.gov or m.leila.mays@nasa.gov

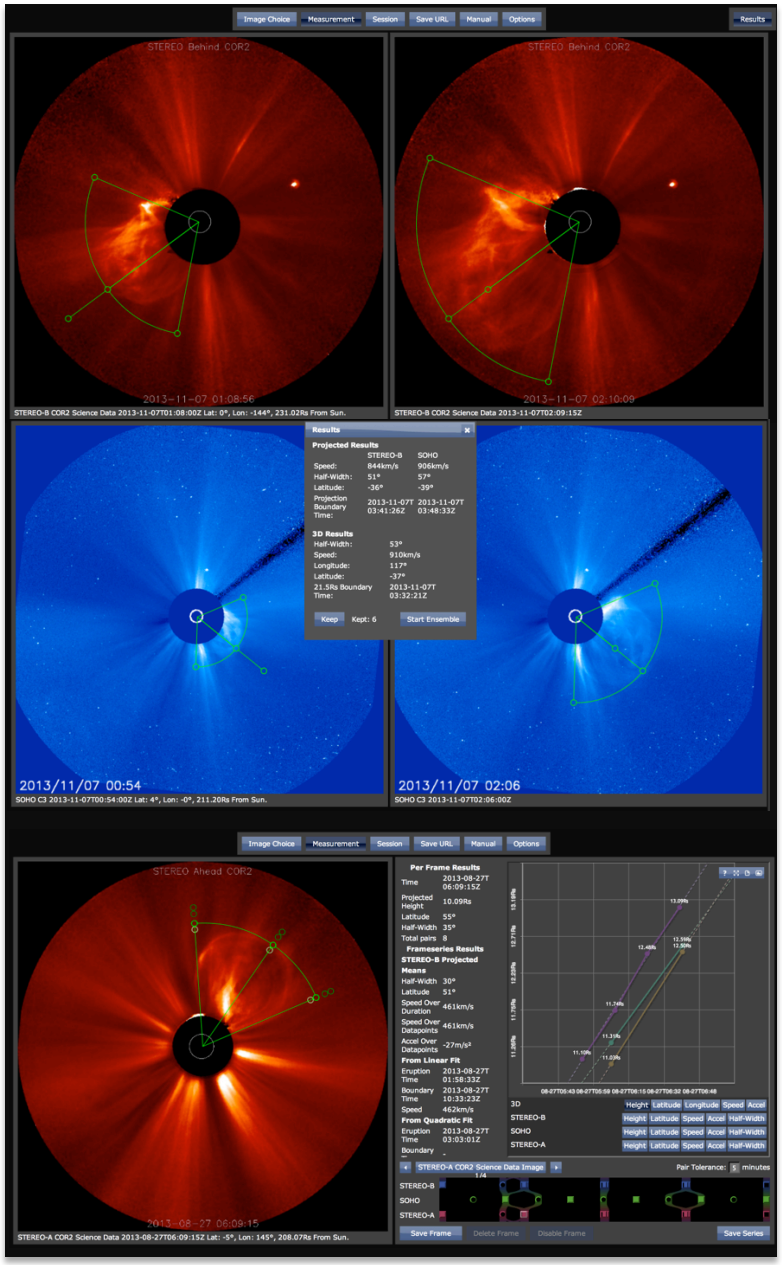
StereoCAT

Stereo **C**ME **A**nalysis **T**ool

http://ccmc.gsfc.nasa.gov/analysis/stereo/

The Stereo CME Analysis Tool (StereoCAT) is an online tool available worldwide that enables space weather forecasters and researchers to quickly calculate CME kinematic properties. With a few mouse clicks, StereoCAT uses triangulation of spacecraft data to determine the 3D kinematic properties of CMEs.

The derived CME parameters can be utilized as input for a broad range of CME propagation models. For example, CCMC Runs-on-Request users can use StereoCAT to generate input parameters for WSA-ENLIL+Cone model. This model now has a new Fast Track Submission option which enables real-time CME arrival predictions. Together, StereoCAT and WSA-ENLIL Cone Fast Track is an innovative solution to engage the world-wide community in real-time forecasting methods validation.



StereoCAT Highlights

- Determine CME speed, and direction by triangulation using multiple spacecraft (STEREO A, B, and SOHO)
- Create CME height-time measurements ("frameseries range")
- Create an ensemble of CME measurements
- Save your entire measurement session and easily share with others

Quick start instructions:

Select the date/time of interest, click on the spacecraft name you would like to use (up to two), then click the measurement tab to measure the CME using the handles, then click results. For more instructions click the "Manual" tab.

For more information contact antti.a.pulkkinen@nasa.gov or m.leila.mays@nasa.gov

Runs on Request - Next Gen

• Efficient • Automated • Flexible • On Demand

Runs on Request - Next Gen (RoR-NG) is the next generation of model runs on request at CCMC. RoR-NG is a complete redesign of RoR with a focus on efficiency, automation, and flexibility. RoR-NG is a central hub dedicated to queuing model requests and automatically handing them off to the available computational resource at CCMC. The nodes running the model will keep RoR-NG and users informed of their progress. Outputs are automatically returned the CCMC data warehouse. In addition to the normal data cubes and output files, RoR-NG will insert meta data into a searchable database for future research.

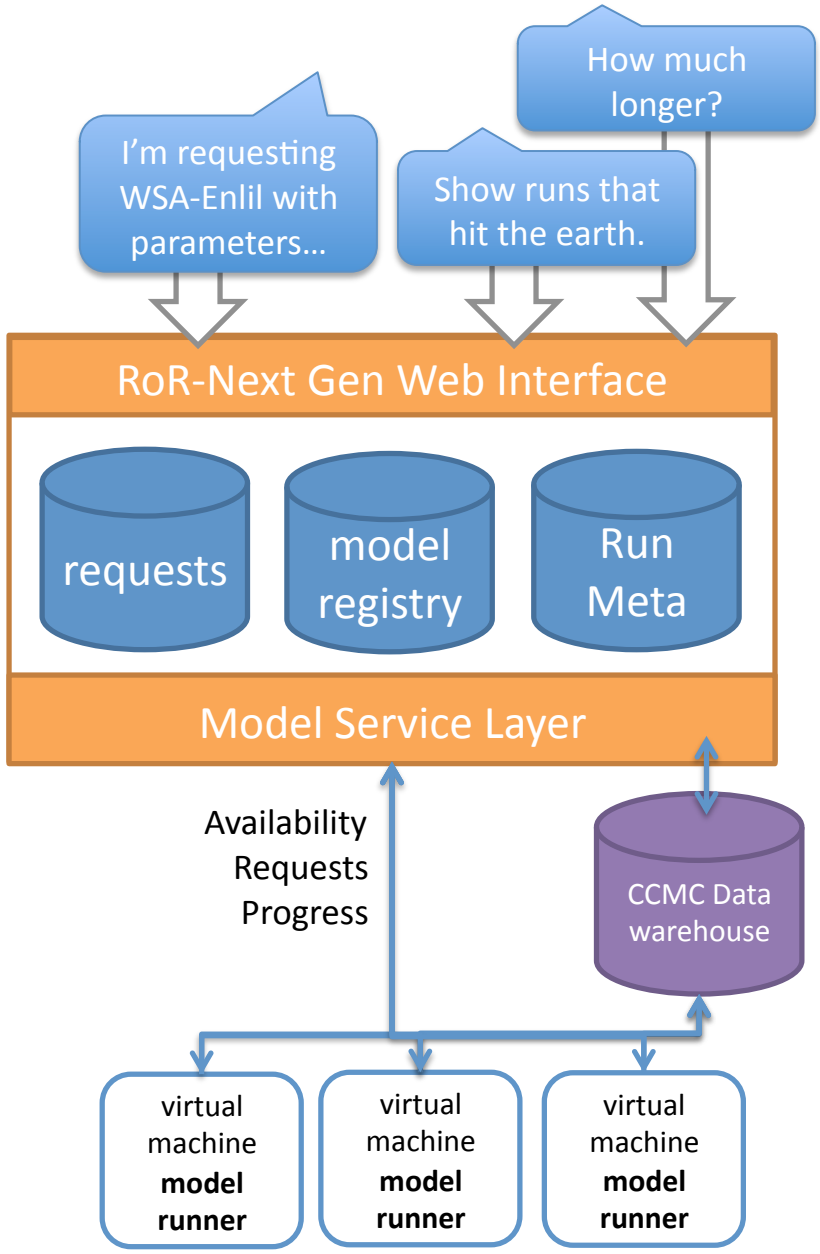
RoR-Next Gen Highlights

•Central hub for run request, queue management, and results
•Efficient: Designed to take full advantage of CCMC computational resources. With multiple virtual machines available for each model RoR-NG delivers the request to next available resource.
•Automated: Provides tracking information to user: status, wait time, progress
•Flexible: add new computational resources and models as needed.
•Research: Provides better searching tools for historical runs. More output will be cataloged as meta data and placed into database.

What's already implemented?

WSA-Enlil+Cone is the first model running on RoR-Next Gen. A simple user interface has been designed specifically for WSA-Enlil+Cone. As we improve the framework we will add more models and improve the user experience.

For More Information contact Richard.E.Mullinix@nasa.gov



Runs on Request – Next Gen

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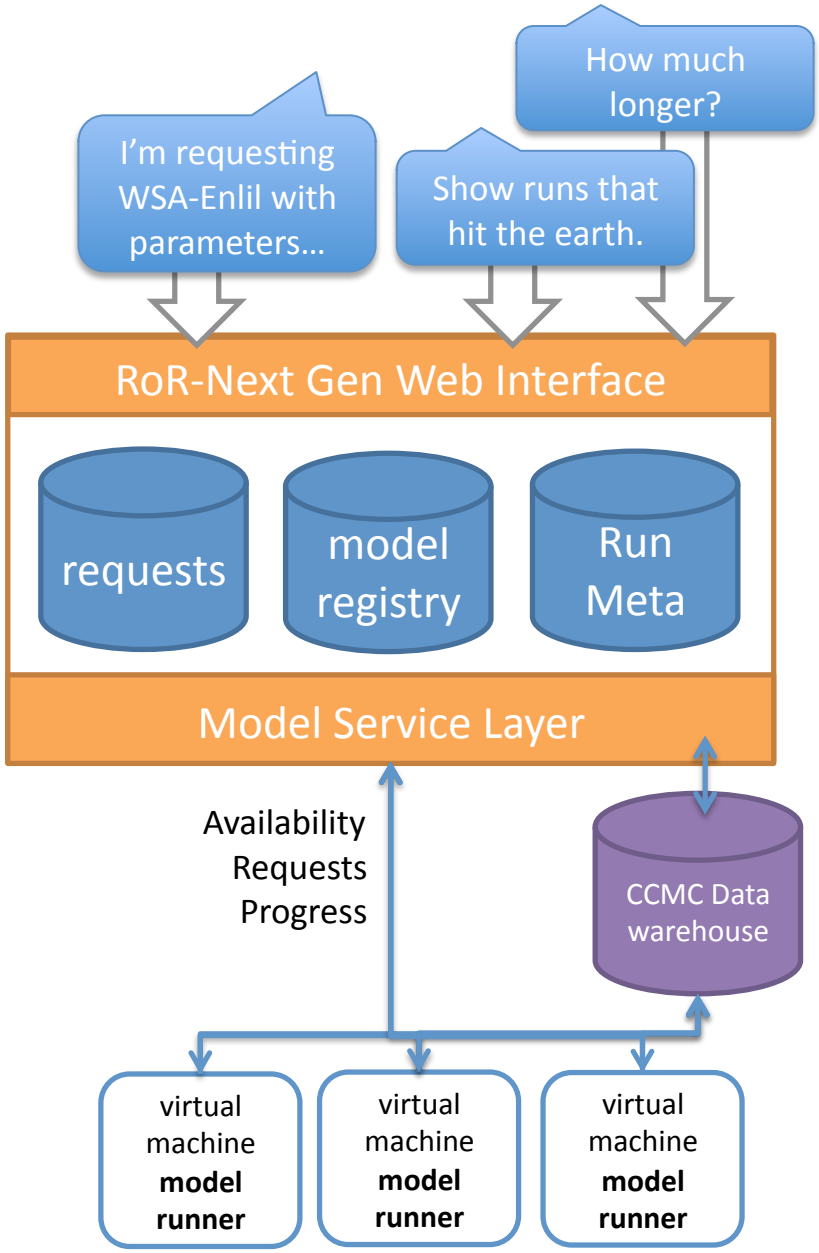
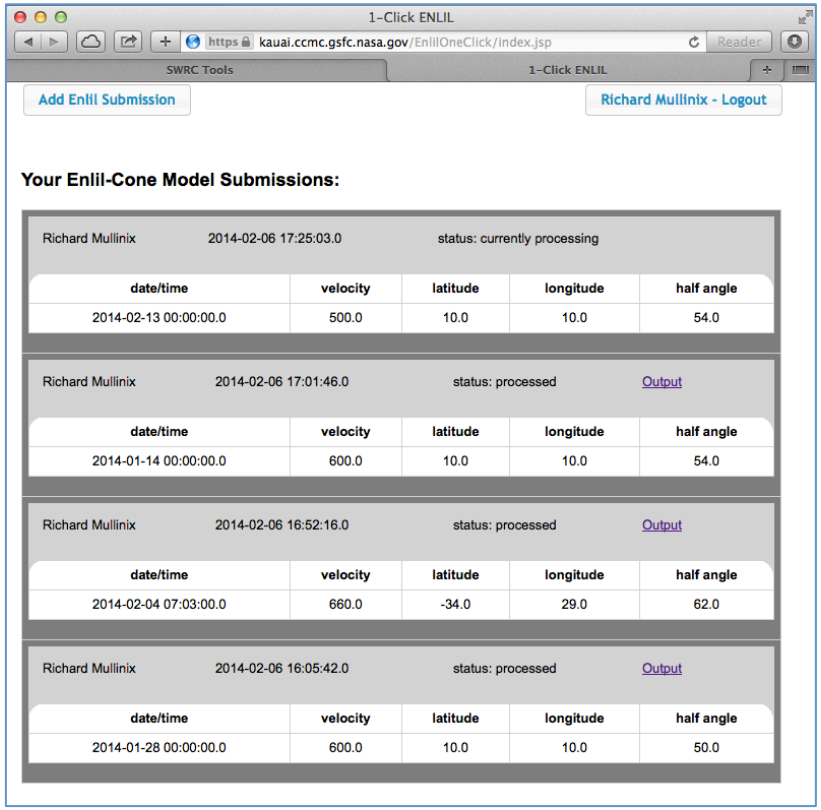
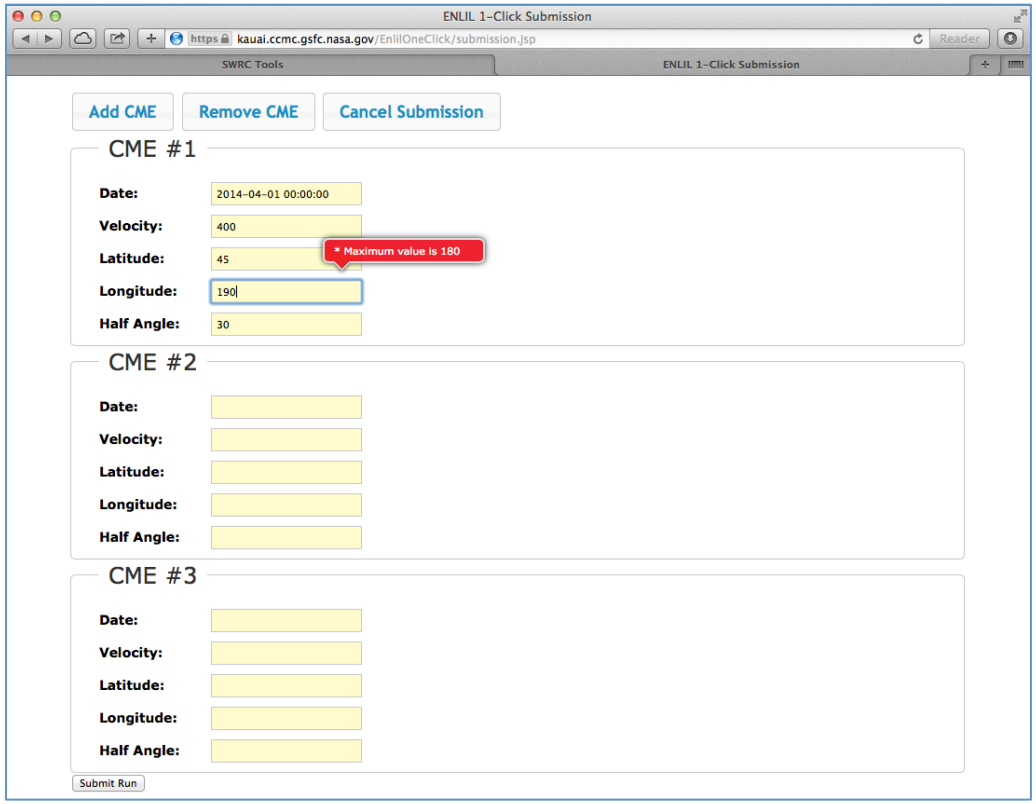

How much longer?
I'm requesting WSA-Enlil with parameters…
Show runs that hit the earth.
RoR-Next Gen Web Interface
requests
model registry
Run Meta
Model Service Layer
Availability
Requests
Progress
CCMC Data warehouse
virtual machine **model runner**
virtual machine **model runner**
virtual machine **model runner**

Example Front End





Space Weather ScoreBoard

http://kauai.ccmc.gsfc.nasa.gov/SWScoreBoard/

The space weather scoreboard is a research-based forecasting methods validation activity for CME arrival time predictions which provides a central location for the community to:

- submit their forecast in real-time
- quickly view all forecasts at once in real-time, and
- compare forecasting methods when the event has arrived.

All types of prediction models and methods are welcome from the world-wide research community for inclusion. There are currently 17 registered CME arrival time prediction methods, including entries from the Space Weather Research Center.

Current Registered Models

- Anemomilos
- ESA Model
- H3DMHD (HAFv.3 +3DMHD)
- HAFv.3
- SARM
- STOA
- WSA-ENLIL + Cone Model
- *Ballistic projection*
- BHV Model
- DBM
- COMESEP automated system
- ECA Model
- Expansion Speed Prediction Model
- HelTomo
- HI J-map technique
- TH (*Tappin-Howard*) Model

http://swrc.gsfc.nasa.gov/main/cmemodels

CME: 2014-01-07T18:24:00-CME-001

Actual Shock Arrival Time: 2014-01-09T19:32Z

Observed Geomagnetic Storm Parameters:
Max Kp: 3.0

Columns are sortable!(click column headings)

Average of all predictions is calculated for the user

Predicted Shock Arrival Time	Difference (hrs)	Submitted On	Lead Time (hrs)	Predicted Geomagnetic Storm Parameter(s)	Method	Submitted By	
2014-01-10T04:04Z (-16.0h, +36.0h)	8.53	2014-01-08T14:56Z	28.60	Max Kp Range: 8.0 - 8.0 Dst min. in nT: -300	COMESEP	Andy Devos (SIDC)	Detail
2014-01-09T19:26Z (-10.0h, +10.0h)	-0.10	2014-01-07T21:00Z	46.53	----	STOA	Leila Mays (GSFC)	Detail
2014-01-09T13:00Z (-7.0h, +7.0h)	-6.53	2014-01-08T23:17Z	20.25	Max Kp Range: 6.0 - 8.0	WSA-ENLIL + Cone	Duty Forecaster (ASFC)	Detail
2014-01-09T12:00Z (-7.0h, +7.0h)	-7.53	2014-01-08T06:32Z	37.00	----	WSA-ENLIL + Cone	RWC Jeju (KSWC)	Detail
2014-01-09T11:22Z (-11.7h, +9.1h)	-8.17	2014-01-09T18:57Z	0.58	Max Kp Range: 3.0 - 5.0	Ensemble WSA-ENLIL + Cone (GSFC SWRC)	Leila Mays (GSFC)	Detail
2014-01-09T08:02Z	-11.50	2014-01-08T16:37Z	26.92	----	Expansion Speed Prediction Model	Alisson Dallago (INPE)	Detail
2014-01-09T08:00Z	-11.53	2014-01-08T01:31Z	42.02	Max Kp Range: 6.0 - 7.0	WSA-ENLIL + Cone (NOAA/SWPC)	Leila Mays (GSFC)	Detail
2014-01-09T06:35Z	-12.95	---	---	Max Kp Range: 6.0 - 7.625	Average of all Methods	Auto Generated (CCMC)	Detail
2014-01-09T04:30Z (-2.5h, +2.5h)	-15.03	2014-01-08T05:02Z	38.50	Max Kp Range: 5.0 - 8.0	Other (SIDC)	Leila Mays (GSFC)	Detail
2014-01-09T04:00Z (-6.0h, +6.0h)	-15.53	2014-01-08T09:42Z	33.83	----	DBM	Manuela Temmer (UNIGRAZ)	Detail
2014-01-09T02:00Z	-17.53	2014-01-08T17:53Z	25.65	Max Kp Range: 8.0 - 9.0	BHV	Volker Bothmer (UGOE)	Detail
2014-01-09T01:00Z	-18.53	2014-01-08T23:00Z	20.53	Dst min. in nT: -142 Dst min. time: 2014-01-09T12:00Z	Anemomilos	WKent Tobiska (SET SWD)	Detail
2014-01-09T00:38Z (-7.0h, +7.0h)	-18.90	2014-01-08T00:41Z	42.85	Max Kp Range: 6.0 - 8.0	WSA-ENLIL + Cone (GSFC SWRC)	Leila Mays (GSFC)	Detail
2014-01-09T00:17Z (-6.9h, +9.2h)	-19.25	2014-01-08T04:11Z	39.35	Max Kp Range: 6.0 - 8.0	Ensemble WSA-ENLIL + Cone (GSFC SWRC)	Leila Mays (GSFC)	Detail
2014-01-08T22:00Z	-21.53	2014-01-08T03:17Z	40.25	Dst min. in nT: -146 Dst min. time: 2014-01-09T11:00Z	Anemomilos	WKent Tobiska (SET SWD)	Detail
2014-01-08T12:30Z	-31.03	2014-01-08T05:58Z	37.57	----	ESA	Leila Mays (GSFC)	Detail

For More Information contact chiu.wiegand@nasa.gov or m.leila.mays@nasa.gov