

Space Weather Tools Demonstration

Feedback and feature requests are welcome!

M. Leila Mays (CUA/GSFC)

Software developers:

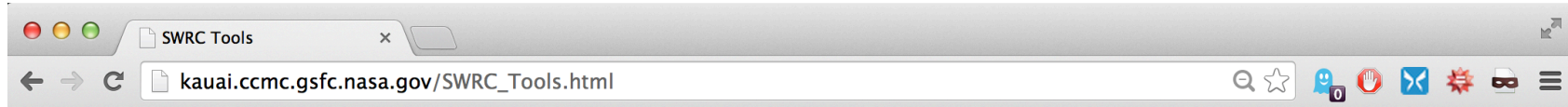
Chiu Wiegand (lead), Rick Mullinix
and the CCMC/SWRC team

September 2014

NASA GSFC Heliophysics Science Division,
Space Weather Laboratory

<http://kauai.ccmc.gsfc.nasa.gov/>

Space Weather Web Tools from CCMC/SWRC:



Space Weather
Scoreboard



Space Weather
DONKI



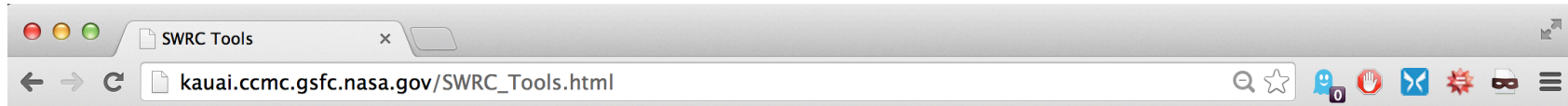
WSA-ENLIL Cone
Fast Track



Stereo CAT

<http://kauai.ccmc.gsfc.nasa.gov/>

Space Weather Web Tools from CCMC/SWRC:



Space Weather
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Space Weather
DONKI

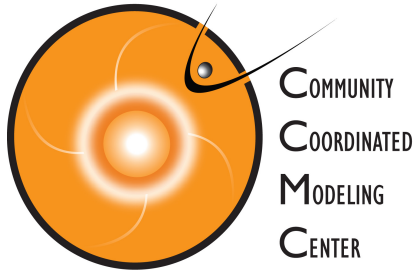


WSA-ENLIL Cone
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Stereo CAT

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CME Arrival Time Scoreboard

developed at the CCMC

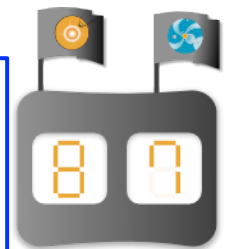


The CME scoreboard is a research-based forecasting methods validation activity which provides a central location for the community to:

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

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

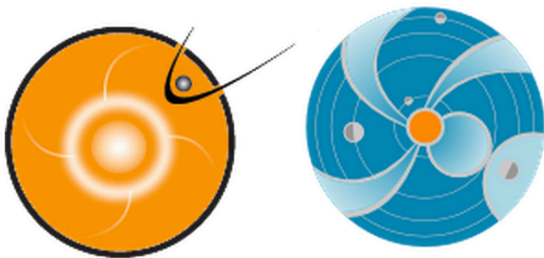
<http://kauai.ccmc.gsfc.nasa.gov/SWScoreBoard>



Please join! All prediction methods are welcome and all are encouraged to participate. Currently registered models include:

Anemomilos, ESA Model, H3DMHD (HAFv.3 +3DMHD), HAFv.3, STOA, WSA-Enlil + Cone Model, BHV Model, DBM, ECA Model, Expansion Speed Prediction Model, HelTomo, HI J-map technique, TH Model, SARM

The scoreboard also includes predictions from the SWRC (Space Weather Research Center) which is a CCMC branch carrying out in-house research-based space weather ops team



Space Weather ScoreBoard



[Login](#)

Space Weather ScoreBoard

CME arrival time predictions from the research community:

The Space Weather ScoreBoard (developed at the Community Coordinated Modeling Center, [CCMC](#)) is a research-based forecasting methods validation activity which provides a central location for the community to:

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

Using this system:

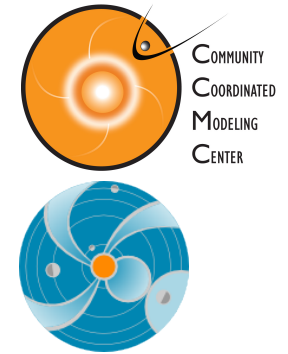
- Anyone can view prediction tables
- Users can enter in your CME shock arrival time forecast after logging in:
 - Registered Users: Begin by finding your CME under the "Active CMEs" section, then click "Add Prediction" and select your forecasting "Method Type" from the list. (Click [here](#) to register for an account.)
 - Power Users: If you do not see your CME listed under the "Active CMEs" section, click "[Add CME](#)" to get started (Click [here](#) to request power user privileges). To enter the actual CME shock arrival time, click "*Edit CME*" after you are done entering your prediction(s).
- [Click here to see a list of registered methods](#). If you would like to register your prediction method, please send an email to [M. Leila Mays](#) or [Yihua Zheng](#) with your model/technique details.

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

Anyone can view predictions, please register to submit predictions.



Community predictions for the January 7, 2014 CME (X1.2 flare):



Columns are sortable!(click column headings)

Average of all predictions
is calculated for the user

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

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

Observed Geomagnetic Storm Parameters:

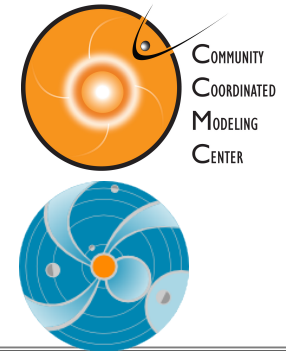
Max Kp: 3.0

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

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



Community predictions for the Recent 9/13 and 9/14 CMEs



CME: 2014-09-10T18:24:00-CME-001

Actual Shock Arrival Time: 2014-09-12T15:26Z

Observed Geomagnetic Storm Parameters:

Max Kp: 7.0

Dst min. in nT: -91

Dst min. time: 2014-09-14T00:00Z

CME Note: Associated with X1.6 flare (2014-09-10T17:21Z)

Columns are sortable!(click column headings)

Predicted Shock Arrival Time	Difference (hrs)	Confidence (%)	Submitted On	Lead Time (hrs)	Predicted Geomagnetic Storm Parameter(s)	Method
2014-09-12T15:00Z (-6.0h, +6.0h)	-0.43	100.0	2014-09-11T20:25Z	19.02	----	SAO Crowdscore
2014-09-12T14:00Z	-1.43	----	2014-09-12T10:58Z	4.47	Max Kp Range: 4.0 - 7.0	WSA-ENLIL + Cone (Met Office)
2014-09-12T13:39Z (-9.4h, +8.0h)	-1.78	100.0	2014-09-11T03:58Z	35.47	Max Kp Range: 6.0 - 8.0	Ensemble WSA-ENLIL + Cone (GSFC SWRC)
2014-09-12T13:00Z	-2.43	----	2014-09-11T03:23Z	36.05	Max Kp Range: -- - 7.0	WSA-ENLIL + Cone (NOAA/SWPC)
2014-09-12T11:47Z (-7.0h, +7.0h)	-3.65	----	2014-09-11T01:21Z	38.08	Max Kp Range: 6.0 - 8.0	WSA-ENLIL + Cone (GSFC SWRC)
2014-09-12T20:15Z	4.82	85.0	---	---	Max Kp Range: 5.5 - 7.66667	Average of all Methods
2014-09-12T21:00Z	5.57	----	2014-09-11T09:40Z	29.77	Max Kp Range: 6.0 - 8.0	Other (SIDC)
2014-09-13T05:00Z	13.57	----	2014-09-11T08:30Z	30.93	----	WSA-ENLIL + Cone (KSWC)
2014-09-13T20:37Z (-13.4h, +1.1h)	29.18	55.0	2014-09-11T01:51Z	37.58	Max Kp Range: -- - 8.0	COMESEP

CME: 2014-09-09T00:16:00-CME-001

Actual Shock Arrival Time: 2014-09-11T22:56Z

Observed Geomagnetic Storm Parameters:

Max Kp: 5.0

Dst min. in nT: -31

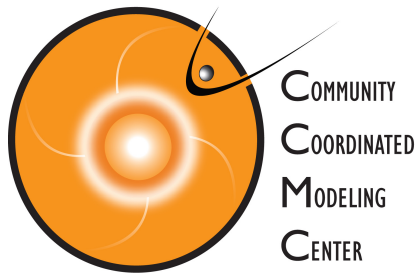
Dst min. time: 2014-09-13T03:00Z

CME Note: Associated with M4.6 flare (2014-09-08T23:12Z).

Average of all predictions is calculated for the user

Predicted Shock Arrival Time	Difference (hrs)	Confidence (%)	Submitted On	Lead Time (hrs)	Predicted Geomagnetic Storm Parameter(s)	Method
2014-09-11T23:00Z	0.07	----	2014-09-09T17:23Z	53.55	Max Kp Range: -- - 6.0	WSA-ENLIL + Cone (NOAA/SWPC)
2014-09-11T21:19Z	-1.62	78.5	---	---	Max Kp Range: 3.66667 - 6.0	Average of all Methods
2014-09-11T20:26Z (-11.7h, +11.7h)	-2.50	57.0	2014-09-09T11:50Z	59.10	----	SAO Crowdscore
2014-09-11T19:29Z (-11.8h, +12.7h)	-3.45	100.0	2014-09-09T18:42Z	52.23	Max Kp Range: 3.0 - 7.0	Ensemble WSA-ENLIL + Cone (GSFC SWRC)
2014-09-12T03:00Z (-12.0h, +12.0h)	4.07	----	2014-09-09T12:35Z	58.35	Max Kp Range: 5.0 - --	Other (SIDC)
2014-09-11T16:42Z (-7.0h, +7.0h)	-6.23	----	2014-09-09T13:01Z	57.92	Max Kp Range: 3.0 - 5.0	WSA-ENLIL + Cone (GSFC SWRC)

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



Begin by clicking **Add Prediction** under the "Active CMEs" section and select your forecasting "Method Type" from the list. While logged in, if you do not see any CMEs listed under the "Active CMEs" section, click **Add CME** to get started.

Using this system:

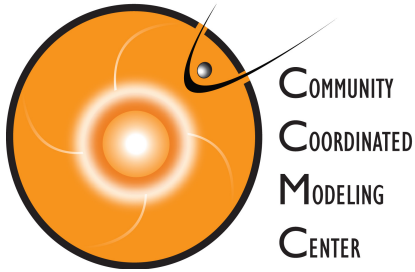
- Anyone can view prediction tables
- Users can enter in your CME shock arrival time forecast after logging in:
 - Registered Users: Begin by finding your CME under the "Active CMEs" section, then click "Add Prediction" and select your forecasting "Method Type" from the list. (Click [here](#) to register for an account.)
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- [Click here to see a list of registered methods](#). If you would like to register your prediction method, please send an email to [M. Leila Mays](#) or [Yihua Zheng](#) with your model/technique details.

Active CMEs:

Note: If you can't find your CME below, please click **"Add CME"** to add your CME. To enter the actual CME shock arrival time, click "*Edit CME*" after you are done entering your prediction(s).

CME: 2015-01-01T00:00:00-CME-001
Edit CME
Delete CME
Add Prediction
No Prediction Entered for this CME yet!

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



COMMUNITY
COORDINATED
MODELING
CENTER

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

Prediction Form for CME (2014-01-01T00:00:00-CME-001)

Enter submission time in format (yyyy-MM-dd'T'HH:mm'Z' i.e. 2012-07-12T16:52Z) :

Method Type ([details](#)):

Prediction notes: (Please include all initial conditions/parameters used in your prediction)

- ✓ --- Select ---
- Anemomilos
- Ballistic projection
- BHV
- DBM
- ECA
- ESA
- H3DMHD (HAFv.3+3DMHD)
- HAFv.3
- HAFv2w
- HI J-map
- Other
- Other (ips.gov.au)
- Other (SIDC)
- STOA
- TH
- WSA-Enlil + Cone
- WSA-Enlil + Cone (GSFC SWRC)
- WSA-Enlil + Cone (NOAA/SWPC)

Enter predicted CME shock arrival time in format (yyyy-MM-dd'T'HH:mm'Z' i.e. 2012-07-12T16:52Z) :

Positive Error Bar in hours (optional):

Negative Error Bar in hours (optional):

Kp Range Lower Limit (optional):

Kp Range Upper Limit (optional):

Dst min. in nT (optional):

Dst min. time in format (yyyy-MM-dd'T'HH:mm'Z' i.e. 2012-07-12T16:52Z) (optional):

submit

cancel

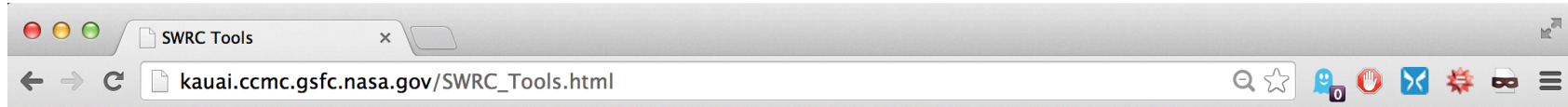
Scoreboard – Future Improvements

- Automatically accepting and parsing predictions (less work for groups who can populate directories with their predictions)
 - Manually created predictions (e.g. from SIDC)
 - Automatically created predictions (e.g. from Anemomilos, SARM).
 - Challenges: filtering out non-CME related predictions, matching predictions with CME start time.
- Showing table data in dynamic plot form, e.g. Prediction Error vs. Time of Prediction, Prediction Error vs Input parameters.
- Your suggestions?

Incorporated suggestions:

- We have added a “note” field to provide a few sentences about the arrival and predictions.
- Users can also now submit their prediction “confidence”.
- Any interest in including STEREO A and B predictions?

Space Weather Web Tools from CCMC/SWRC:



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Scoreboard



Space Weather
DONKI

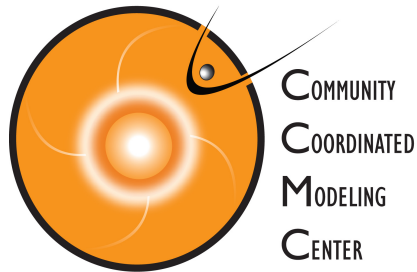


WSA-ENLIL Cone
Fast Track



Stereo CAT

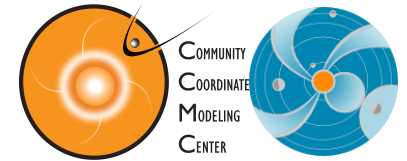
<http://kauai.ccmc.gsfc.nasa.gov/>



Before DONKI



- Blogs for Daily space weather activity
 - Difficult to Search
 - Difficult to describe a chain of events
 - Difficult to disseminate
 - What we want to get away from:
<http://screencast.com/t/750Ci2aKM>
- Static email lists for notifications
 - Manually generated following templates
 - Tedious and Error-prone



Database of Notifications, Knowledge, and Information

- Catalog of space weather phenomena.
- Chronicles the daily interpretations of space weather observations, simulation results, forecasting analysis, and notifications.
- Key component of the forecaster tool suite, developed to address space weather needs of NASA missions.
- Online tool for dissemination of forecasts, notifications, and archiving event-focused information (automatic dissemination coming soon)
- Intelligent linkages, relationships, cause-and-effects between space weather activities
- Comprehensive search functionality to support **anomaly resolution** and **space science research**:
 - Space weather activity archive (flares, CME parameters and simulation results, SEPs, geomagnetic storms, radiation belt enhancements) with links between activities
 - GSFC space weather notification and weekly report archive
- Enables remote participation by students, world-wide partners, model and forecasting technique developers

Demo: <http://kauai.ccmc.gsfc.nasa.gov/DONKI>

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

Choose event type

Go to:

- [DONKI Home](#)
- [Search Space Weather Activity](#)
- [Search Notification Archive](#)
- [Login](#)
- [New User Registration](#)

Search Space Weather Activity Archive

Space Weather Event Type : --- ALL ---

Optional start date in format (e.g. 2013-01-31) :

Optional end date in format (e.g. 2013-06-30) :

--- ALL ---

Solar Flare

Solar Energetic Particle

Coronal Mass Ejection

Interplanetary Shock

Magnetopause Crossing

Geomagnetic Storm

Radiation Belt Enhancement

High Speed Stream

WSA-ENLIL+Cone Model

Select start and end date for search

For example, Solar Energetic Particle (SEP), to see all SEP events above threshold values

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

For example, Solar Energetic Particle (SEP), lists all SEP events above threshold values at **various locations**.

<u>Event Type</u>	<u>Activity ID</u>	<u>SEP Event Time</u>	<u>Associated Instrument</u>
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)*

Go to:

- [DONKI Home](#)
- [Search Space Weather Activity](#)
- [Search Notification Archive](#)
- [Login](#)
- [New User Registration](#)

Search Space Weather Activity Archive

Space Weather Event Type :

--- ALL ---

Optional start date in format (e.g. 2013-01-31) :

Optional end date in format (e.g. 2013-06-30) :

- ALL ---
- Solar Flare
- Solar Energetic Particle
- Coronal Mass Ejection
- Interplanetary Shock
- Magnetopause Crossing
- Geomagnetic Storm
- Radiation Belt Enhancement
- High Speed Stream
- ✓ WSA-ENLIL+Cone Model

For another example, select
“WSA-ENLIL+Cone Model” to see
all CME simulations in a certain
date range.

Search Space Weather Activity Archive

Space Weather Event Type :

WSA-ENLIL+Cone Model

Optional start date in format (e.g. 2013-01-31) : 2013-05-03

Optional end date in format (e.g. 2013-06-30) : 2013-05-31

search

[Generate Report for WSA-ENLIL+Cone Inputs](#)

Selecting “WSA-ENLIL +Cone Model” lists all CME simulations in a certain date range.

All columns are sortable!
(click column headings)

Model Name	Model Completion Time	CME Input(s)	Predicted Earth Impact	Predicted Other Location(s) Impact
WSA-ENLIL+Cone	2013-05-03T09:33Z	<ul style="list-style-type: none"> CME: 2013-05-02T14:36:00-CME-001(CME Analysis) 	No or little impact to Earth.	
WSA-ENLIL+Cone	2013-05-03T18:07Z	<ul style="list-style-type: none"> CME: 2013-05-03T18:00:00-CME-001(CME Analysis) 	No or little impact to Earth.	Spitzer: 2013-05-06T14:32Z
WSA-ENLIL+Cone	2013-05-04T12:48Z	<ul style="list-style-type: none"> CME: 2013-05-03T18:00:00-CME-001(CME Analysis) CME: 2013-05-03T22:36:00-CME-001(CME Analysis) 	No or little impact to Earth.	Spitzer: 2013-05-06T06:39Z STEREO B: 2013-05-06T16:39Z
WSA-ENLIL+Cone	2013-05-04T13:52Z	<ul style="list-style-type: none"> CME: 2013-05-03T18:00:00-CME-001(CME Analysis) CME: 2013-05-03T22:36:00-CME-001(CME Analysis) 	No or little impact to Earth.	Spitzer: 2013-05-06T15:31Z
WSA-ENLIL+Cone	2013-05-05T11:58Z	<ul style="list-style-type: none"> CME: 2011-05-24T11:24:00-CME-001(CME Analysis) 	Earth Shock Arrival Time = 2011-06-01T02:38Z Duration of disturbance (hr) = Minimum magnetopause standoff distance: Rmin(Re) = 6.6 Possible Kp index: (kp)90=1 (kp)135= (kp)180=5	

Search Space Weather Activity Archive

Space Weather Event Type :

WSA-ENLIL+Cone Model


Optional start date in format (e.g. 2013-01-31) : 2013-05-03

Optional end date in format (e.g. 2013-06-30) : 2013-05-31

search

[Generate Report for WSA-ENLIL+Cone Inputs](#)

Shows impact prediction summary for each simulation

Model Name	Model Completion Time	CME Input(s)	Predicted Earth Impact	Predicted Other Location(s) Impact
WSA-ENLIL+Cone	2013-05-03T09:33Z	<ul style="list-style-type: none"> CME: 2013-05-02T14:36:00-CME-001(CME Analysis) 	No or little impact to Earth.	
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WSA-ENLIL+Cone	2013-05-05T11:58Z	<ul style="list-style-type: none"> CME: 2011-05-24T11:24:00-CME-001(CME Analysis) 	Earth Shock Arrival Time = 2011-06-01T02:38Z Duration of disturbance (hr) = Minimum magnetopause standoff distance: Rmin(Re) = 6.6 Possible Kp index: (kp)90=1 (kp)135= (kp)180=5	

Search Space Weather Activity Archive

Space Weather Event Type :

WSA-ENLIL+Cone Model


Optional start date in format (e.g. 2013-01-31) : 2013-05-03

Optional end date in format (e.g. 2013-06-30) : 2013-05-31

search

[Generate Report for WSA-ENLIL+Cone Inputs](#)

Click here to get full simulation results and graphics for a given run.

Model Name	Model Completion Time	CME Input(s)	Predicted Earth Impact	Predicted Other Location(s) Impact
WSA-ENLIL+Cone	2013-05-03T09:33Z	<ul style="list-style-type: none"> CME: 2013-05-02T14:36:00-CME-001(CME Analysis) 	No or little impact to Earth.	
WSA-ENLIL+Cone	2013-05-03T18:07Z	<ul style="list-style-type: none"> CME: 2013-05-03T18:00:00-CME-001(CME Analysis) 	No or little impact to Earth.	Spitzer: 2013-05-06T14:32Z
WSA-ENLIL+Cone	2013-05-04T12:48Z	<ul style="list-style-type: none"> CME: 2013-05-03T18:00:00-CME-001(CME Analysis) CME: 2013-05-03T22:36:00-CME-001(CME Analysis) 	No or little impact to Earth.	Spitzer: 2013-05-06T06:39Z STEREO B: 2013-05-06T16:39Z
WSA-ENLIL+Cone	2013-05-04T13:52Z	<ul style="list-style-type: none"> CME: 2013-05-03T18:00:00-CME-001(CME Analysis) CME: 2013-05-03T22:36:00-CME-001(CME Analysis) 	No or little impact to Earth.	Spitzer: 2013-05-06T15:31Z
WSA-ENLIL+Cone	2013-05-05T11:58Z	<ul style="list-style-type: none"> CME: 2011-05-24T11:24:00-CME-001(CME Analysis) 	Earth Shock Arrival Time = 2011-06-01T02:38Z Duration of disturbance (hr) = Minimum magnetopause standoff distance: Rmin(Re) = 6.6 Possible Kp index: (kp)90=1 (kp)135= (kp)180=5	 DONKI

Full simulation results for the selected run:

WSA-ENLIL+Cone Model with Completion Time: 2013-05-04T12:48Z

Model Inputs:

[2013-05-03T18:00:00-CME-001](#) with [CME Analysis](#): Lon.=-89.0, Lat.=18.0, Speed=760.0, HalfAngle=60.0, Time21.5=2013-05-03T22:30Z
[2013-05-03T22:36:00-CME-001](#) with [CME Analysis](#): Lon.=-86.0, Lat.=-18.0, Speed=520.0, HalfAngle=22.0, Time21.5=2013-05-04T05:37Z

Model Outputs:

Earth Impact:
No or little impact to Earth.

Other Location(s) Impact:
Spitzer with estimated shock arrival time 2013-05-06T06:39Z
STEREO B with estimated shock arrival time 2013-05-06T16:39Z

Inner Planets Link = http://iswa.gsfc.nasa.gov/downloads/20130503_223000_anim.tim-den.gif
Inner Planets Link = http://iswa.gsfc.nasa.gov/downloads/20130503_223000_anim.tim-vel.gif
Inner Planets Link = http://iswa.gsfc.nasa.gov/downloads/20130503_223000_anim.tim-den-Stereo_A.gif
Inner Planets Link = http://iswa.gsfc.nasa.gov/downloads/20130503_223000_anim.tim-den-Stereo_B.gif
Inner Planets Link = http://iswa.gsfc.nasa.gov/downloads/20130503_223000_anim.tim-vel-Stereo_A.gif
Inner Planets Link = http://iswa.gsfc.nasa.gov/downloads/20130503_223000_anim.tim-vel-Stereo_B.gif
Timelines Link = http://iswa.gsfc.nasa.gov/downloads/20130503_223000_ENLIL_CONE_timeline.gif
Timelines Link = http://iswa.gsfc.nasa.gov/downloads/20130503_223000_ENLIL_CONE_Kp_timeline.gif

CME input parameters are listed for each activity ID (click ID for more CME information)

Impact prediction times

Links to simulation movies and plots



DONKI also shows intelligent linkages, relationships, cause-and-effects between space weather activities

Search Space Weather Activity Archive

Space Weather Activity Type :

Optional start date in format (e.g. 2013-01-31) :

Optional end date in format (e.g. 2013-06-30) :

For example, search for solar flares during May 2013, and click [here](#) for more information on the M5.0 flare

Event Type	Activity ID	FLR Start Time	Associated Instrument	FLR Peak Time	FLR End Time	Class	Source Location
Solar Flare	2013-05-03T17:29:00-FLR-001	2013-05-03T17:29Z	GOES15: SEM/XRS 1.0-8.0	2013-05-03T17:32Z		M5.7	N15E85
Solar Flare	2013-05-13T01:53:00-FLR-001	2013-05-13T01:53Z	GOES15: SEM/XRS 1.0-8.0	2013-05-13T02:17Z		X1.6	N10E89
Solar Flare	2013-05-13T15:40:00-FLR-001	2013-05-13T15:40Z	GOES15: SEM/XRS 1.0-8.0	2013-05-13T16:05Z		X2.8	N10E89
Solar Flare	2013-05-14T01:00:00-FLR-001	2013-05-14T01:00Z	GOES15: SEM/XRS 1.0-8.0	2013-05-14T01:11Z		X3.2	N10E89
Solar Flare	2013-05-15T01:10:00-FLR-001	2013-05-15T01:10Z	GOES15: SEM/XRS 1.0-8.0	2013-05-15T01:48Z		X1.2	N11E63
Solar Flare	2013-05-22T12:30:00-FLR-001	2013-05-22T12:30Z	GOES15: SEM/XRS 1.0-8.0	2013-05-22T13:38Z		M5.0	N13W75



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More details and relationships for the M5.0 flare:

Solar Flare

Start Time: 2013-05-22T12:30Z (GOES15: SEM/XRS 1.0-8.0)

Peak Time: 2013-05-22T13:38Z

End Time:

Intensity: M5.0 class

Source region N13W75

Activity ID: 2013-05-22T12:30:00-FLR-001 (version 2)

Note:

Submitted on 2014-02-03T19:49Z by Leila Mays

*Click the notification ID
to see a copy of the flare
notification.*

A Notification with ID [20130522-AL-001](#) was sent on 2013-05-22T15:30Z

All directly linked activities:

[2013-05-22T13:24:00-CME-001](#)

[2013-05-22T15:05:00-SEP-001](#)

GOES13: SEM/EPS >10 MeV

[2013-05-22T15:05:00-SEP-002](#)

GOES13: SEM/EPS >100 MeV

[2013-05-22T15:30:00-SEP-001](#)

SOHO: COSTEP 15.8-39.8 MeV

Related events are listed at the bottom. This flare was associated with a CME and also an SEP event near Earth

*Click on the activity IDs
for information on the
CME or SEPs.*

Alternatively, search the notification database by space weather activity type and date

Choose event type, or weekly report

Go to:

- [DONKI Home](#)
- [Search Space Weather Activity](#)
- [Search Notification Archive](#)
- [Login](#)
- [New User Registration](#)

Search Space Weather Notification Archive

Notification for Space Weather Event Type :

(Optional) Search start date from (e.g. 2013-01-31) :

(Optional) Search end date to (e.g. 2013-06-30) :

--- ALL ---

Select start and end date for search

For example, select ALL to list all notification types and weekly reports.

- ✓ --- ALL ---
- Solar Flare
- Solar Energetic Particle
- Coronal Mass Ejection
- Interplanetary Shock
- Magnetopause Crossing
- Geomagnetic Storm
- Radiation Belt Enhancement
- SW Report



Search Space Weather Notification Archive

Notification for Space Weather Event Type :

(Optional) Search start date from (e.g. 2013-01-31) :

(Optional) Search end date to (e.g. 2013-06-30) :


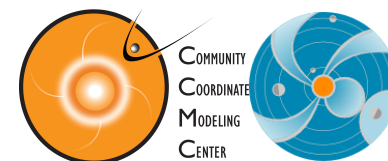
Selecting ALL lists all notification types and weekly reports in a certain date range.

Message ID	Sent Date	For SW Event(s)	Sent By
20130514-AL-003	2013-05-14T04:55Z	CMEAnalysis CME	Dan Comberiate
20130514-AL-002	2013-05-14T03:50Z	CMEAnalysis CME	Dan Comberiate
20130514-AL-001	2013-05-14T01:45Z	FLR	Dan Comberiate
20130513-AL-008	2013-05-13T19:15Z	CMEAnalysis CME	Dan Comberiate
20130513-AL-007	2013-05-13T18:35Z	SEP	Dan Comberiate
20130513-AL-006	2013-05-13T18:20Z	CMEAnalysis CME	Dan Comberiate
20130513-AL-005	2013-05-13T16:25Z	FLR	Dan Comberiate
20130513-AL-004	2013-05-13T06:00Z	CMEAnalysis CME	Dan Comberiate
20130513-AL-003	2013-05-13T05:20Z	CMEAnalysis CME	Dan Comberiate
20130513-AL-002	2013-05-13T04:55Z	SEP	Dan Comberiate
20130513-AL-001	2013-05-13T02:52Z	FLR	Dan Comberiate
20130508-7D-001	2013-05-08T16:06Z	Report	chiu wiegand
20130503-AL-001	2013-05-03T18:20Z	FLR	Dan Comberiate
20130501-7D-001	2013-05-01T22:15Z	Report	chiu wiegand

Click on the message ID to see a copy the notification.

All columns are sortable!
(click column headings)





Demo: DONKI

Database of Notifications, Knowledge, and Information

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

*Example: [2013-05-22 M5.0 flare](#) and related activity,
[2012-03-07 X5.4 flare](#).*

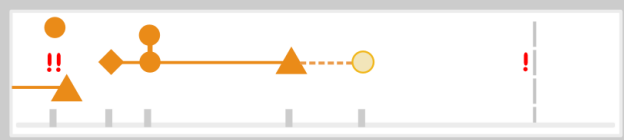
DONKI - Caveats

- Data entry for past events (using logs and alert archives) was performed by students:
 - Summer 2014 student corrected most errors/typos
 - We are adding data quality flags to indicate whether entries have been “checked”
 - Entries from Aug 2013 onwards is mostly verified.
- Search filters combinations will be added in the near future
- More data export options coming (suggestions?)

- CME measurements are made in real-time, with limited data (*see Barbara’s presentation later this morning “Innovations in CME triangulation in the era of limited STEREO data”*)

- Stream**
- Add Event Chain
- Add Flare
- Add CME
- Add SEP
- Add GST
- Add RBE
- Add MPC
- Add IPS
- Add ENLIL
- Add Generic Entry
- Add Weekly Report
- Add Daily Report
- Merge Nuggets
- Email Settings

iSWA
 CME TOOL
 Enlil 1-Click Submission



Reports Weekly Daily Swx Activity Flares CMEs Alerts Event Chains

Alert Nugget ID
 Submitted automatically by Computer A
 Date/Time of submission

Information here
 Parameters here
 More parameters here
[View Data](#)

Comments-0 Add Comment Edit

Weekly Report Nugget ID
 Submitted manually by Leila
 Date/Time of submission

Information here
 Parameters here

Apart of **Event Chain 124**:

Comments-0 Add Comment Edit

Event Chain Nugget ID
 Created manually by Leila
 Date/Time of submission

Date/Time, Duration of Event Chain

- M Class Flare: 11-1-12 20:00:00
- CME: 11-1-12 24:00:00
- CME: 11-1-12 24:00:00
- Prediced Impact: 11-4-12

Comments-0 Add Comment Edit

CME Nugget ID
 Submitted automatically by Enlil Cone Model Run
 Date/Time of submission

Information here
 Parameters here
[View Data](#)

Apart of **Event Chain 124**:

Comments-1 Add Comment Edit

Leila - We might need to re-run this model.

Flare Nugget ID
 Submitted manually by Leila
 Date/Time of submission

Information here
 Parameters here
[View Data](#)

Apart of **Event Chain 124**:

Comments-1 Add Comment Edit





DONKI

Future Directions

- Search with filters will be added in the near future
- More data export options
- Clear flags indicating data quality

 Stream

 Add Event Chain

 Add Flare

 Add CME

 Add SEP

 Add GST

 Add RBE

 Add MPC

 Add IPS

 Add ENLIL

 Add Generic Entry

 Add Weekly Report

 Add Daily Report

 Merge Nuggets

 **Email Settings**

Change Settings

Reset





















 Email Settings

Email Address:

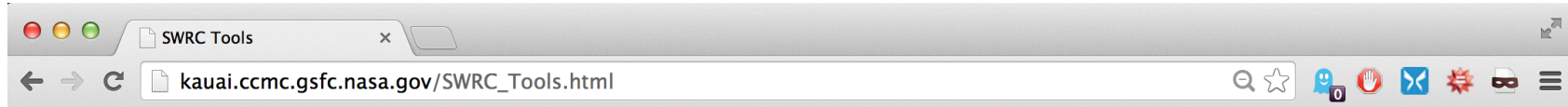


Richard.E.Mullinix@nasa.gov

edit

	Flare Alerts	<input type="range"/>	
	SEPs Alerts	<input type="range"/>	
	Weekly Reports		
	Daily Logs		
	Flare Nugget	<input type="range"/>	
	CME Nugget	<input type="range"/>	
	Event Chain Creation		
	Event Chain Edit/Addition		
	Generic Nugget		
	Nugget Merging		

Space Weather Web Tools from CCMC/SWRC:



Space Weather
Scoreboard



Space Weather
DONKI



WSA-ENLIL Cone
Fast Track



Stereo CAT

<http://kauai.ccmc.gsfc.nasa.gov/>