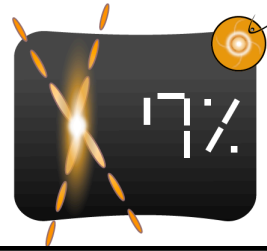


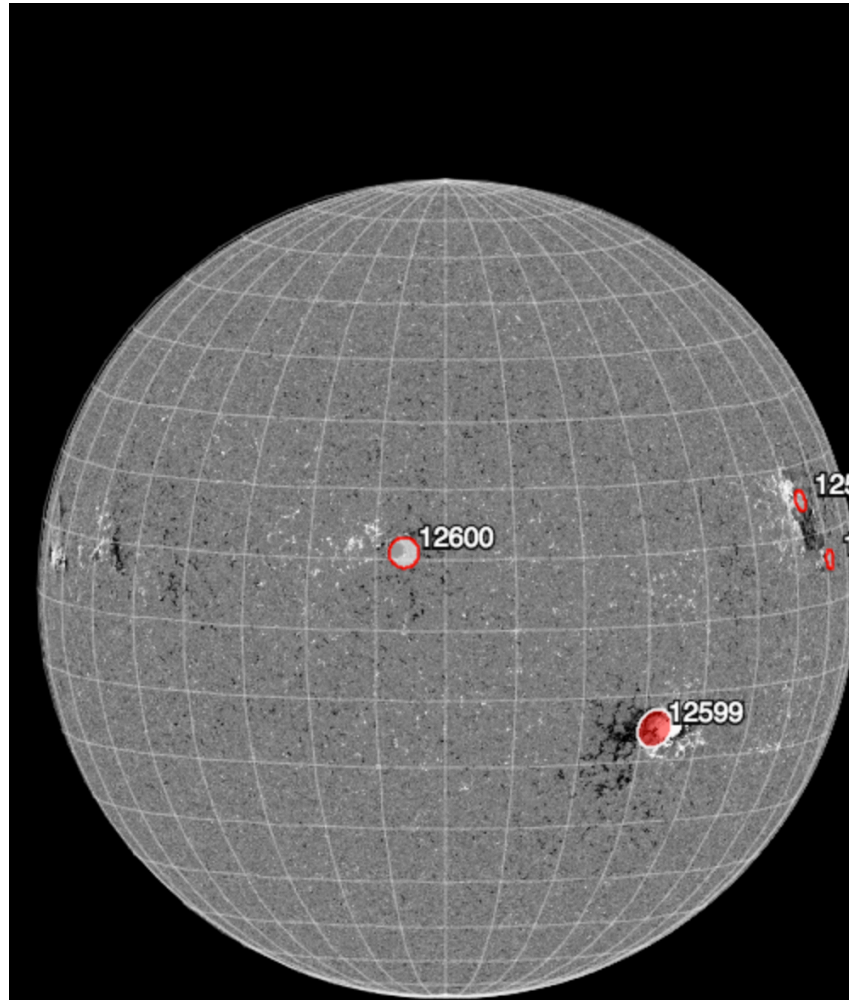


# Flare Scoreboard



<https://ccmc.gsfc.nasa.gov/challenges/flare.php>

- Allows a consistent real-time comparison of various operational and research flare forecasts.
- Automated system; model developers can routinely upload their predictions to an anonymous ftp
- Forecast data is parsed and stored in a database which accessible to anyone via an API
- This project is led by Sophie Murray (TCD) and the planning group includes expert scientists as well as operational space weather prediction centers.



10/11/16 10:00:00 AM 2016-10-12 10:00:00 AM

○ NOAA Active Regions  
○ Other Active Regions

**S15W32 Region Flare Predictions (24 hour)**

BoM_flare1		M+: 1%	X : 1%
AMOS_v1	C+: 27%	M+: 5%	X : 0%
NOAA_1	C : 20%	M : 1%	X : 1%
<b>Averages</b>	<b>C : 20%</b>	<b>M : 1%</b>	
	<b>C+: 27%</b>	<b>M+: 3%</b>	<b>X : 1%</b>

**Region Location Details**

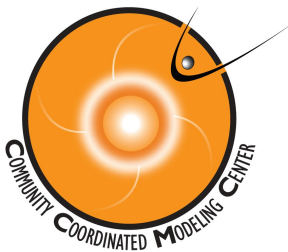
**BoM\_flare1**  
NOAA AR#: 12599 (S15W32), R: 1.88, Beta

**AMOS\_v1**  
NOAA AR#: 12599 (S15W32), R: 1.88, Beta  
AMOS\_v1 AR#: 1 (S15W32, 2016-10-12 00:00:00.0)

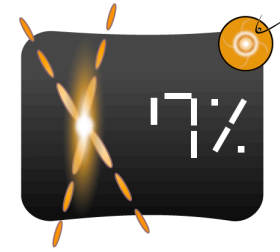
**NOAA\_1**  
NOAA AR#: 12599 (S15W32), R: 1.88, Beta

**Full Disk Predictions (24 hour)**

BoM_flare1		M+: 1%	X : 1%
ASSA_24H_1	C : 84%	M : 31%	X : 6%
AMOS_v1	C+: 36%	M+: 6%	X : 0%
NOAA_1		M : 1%	X : 1%
UFCORIN_1	C+: 0%	M+: 0%	X : 0%
MO_TOT1		M : 5%	X : 1%
<b>Averages</b>	<b>C : 84%</b>	<b>M : 12%</b>	
	<b>C+: 18%</b>	<b>M+: 2%</b>	<b>X : 1%</b>



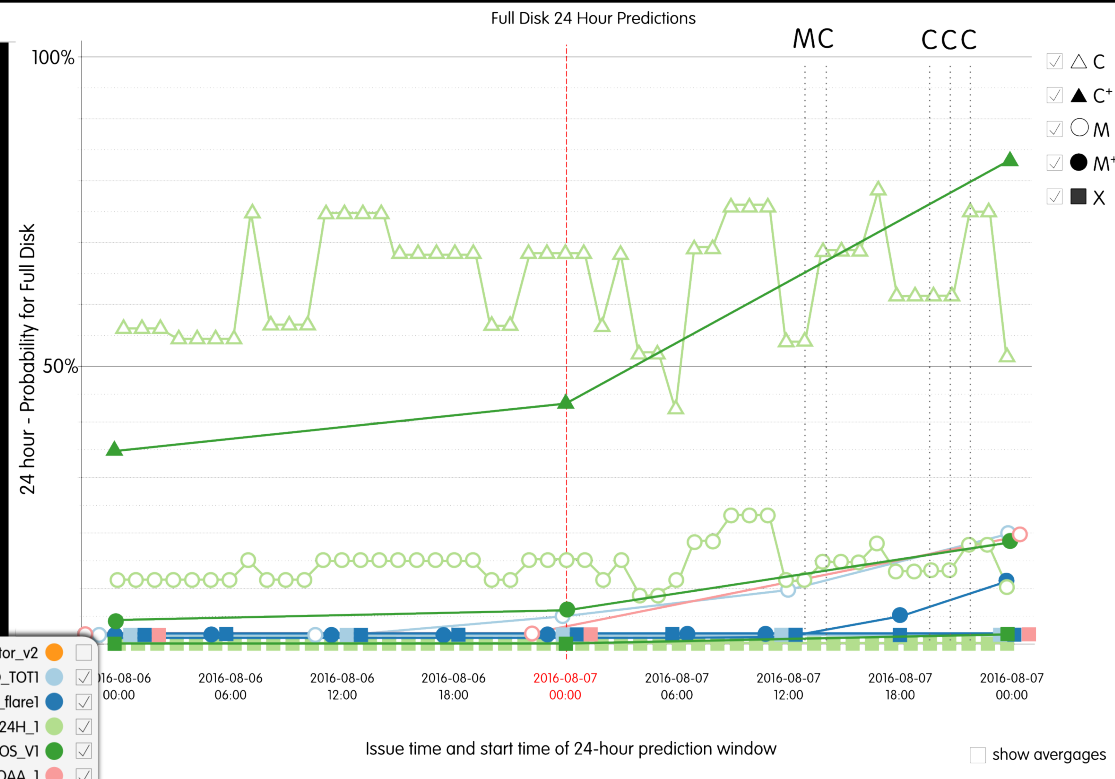
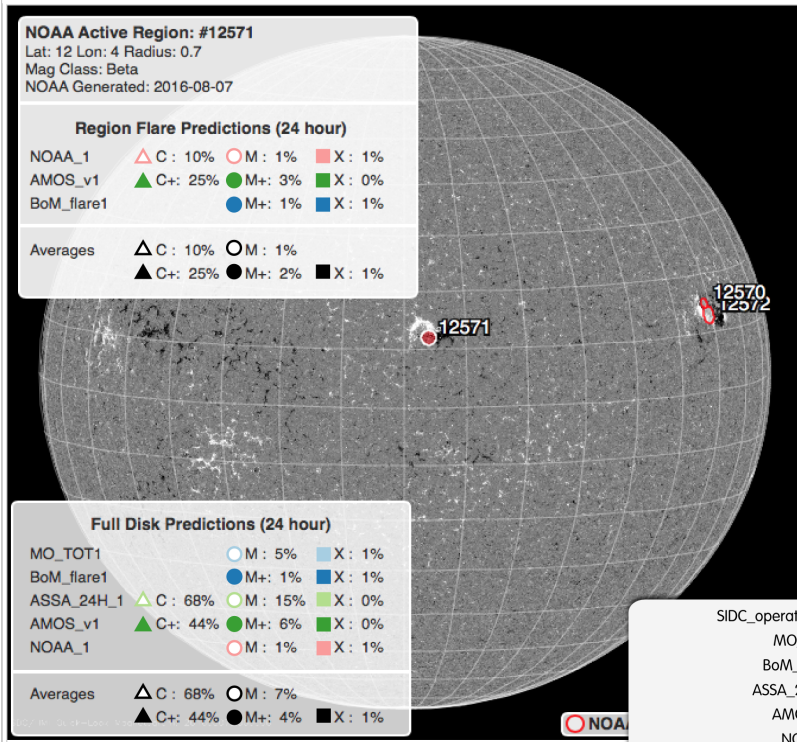
# Flare Scoreboard: Future



<https://ccmc.gsfc.nasa.gov/challenges/flare.php>

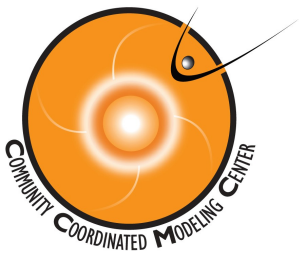
## Solar Flare Scoreboard

Snapshot for prediction window: 2016-08-07 00:00 - 2016-08-07 00:00 from issue time: 2016-08-07 00:00

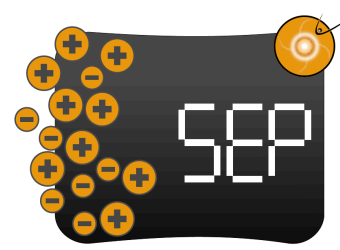


issue time: 2016-08-07 00:00 | prediction window: 2016-08-07 00:00+ 24 hours | models | settings | Download Data

The full disk and active region flare forecasts can currently be viewed on an interactive display overlaid on an SDO/AIA or HMI image of the Sun and will be dynamically paired with a graph of flare probability vs. time (coming soon)



# SEP Scoreboard

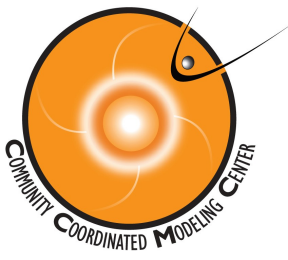


<https://ccmc.gsfc.nasa.gov/challenges/sep.php>

- Planning for the SEP Scoreboard has started (led by BIRA-IASB and the UK Met Office)
- Builds upon the flare scoreboard and CME arrival time scoreboard
- Automated system; model developers can routinely upload their predictions to an anonymous ftp. Forecast data will be parsed and stored in a database which accessible to anyone via an API
- SEP forecasts can be roughly divided into three categories:



- The SEP scoreboard will focus on real-time forecasts (first and second categories) and will collect: proton flux profile, threshold crossing probability, onset time, and duration.
- The SEP scoreboard team will also coordinate with the SEP Working Team for historical comparisons, particularly for those physics-based models in the third category that are not ready or relevant for real-time modeling.

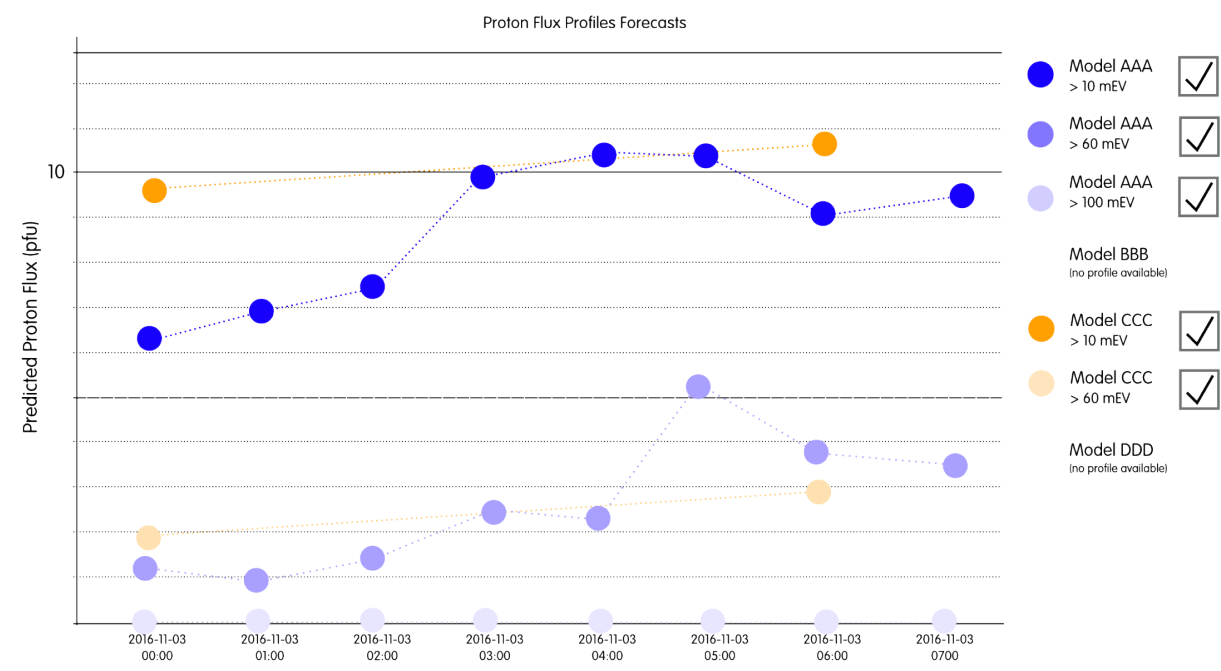
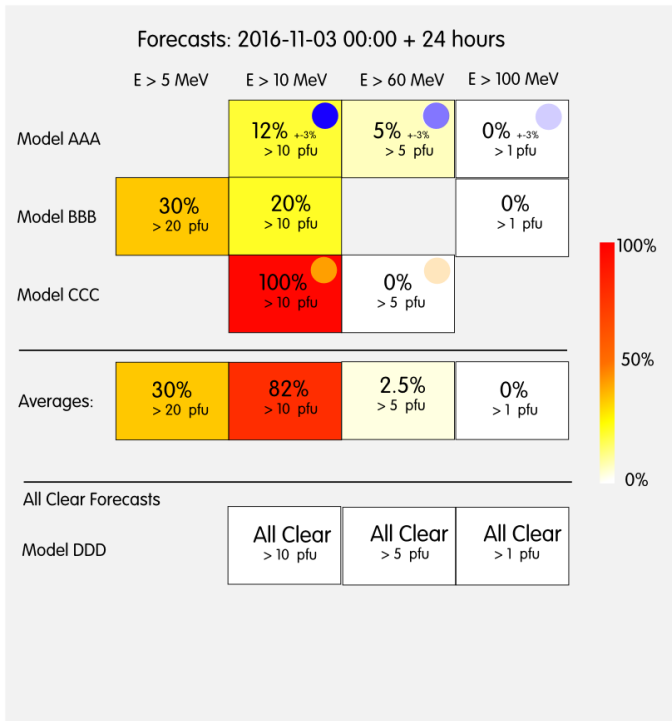


# SEP Scoreboard Planning

## Display ideas



SEP Scoreboard

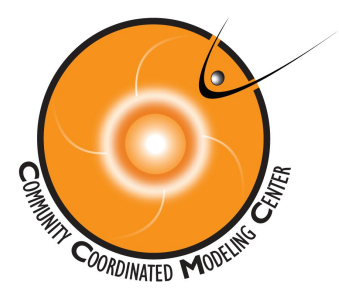


issue time: 2016-11-03 00:00 settings models Download Data ↓

*Probability heat map at a single time*

*Predicted proton flux time-series*

<https://ccmc.gsfc.nasa.gov/challenges/sep.php>



# CME Arrival Time Scoreboard



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

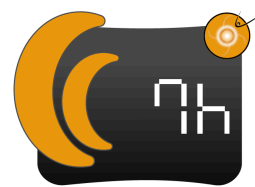
- submit their forecast in real-time
- quickly view all forecasts at once in real-time
- compare forecasting methods when the event has arrived
- view the average of all forecasts for each event (ensemble).



<https://kauai.ccmc.gsfc.nasa.gov/CMEscoreboard>

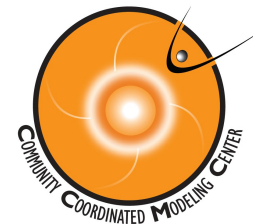
Participation from the community:

- **All prediction models and methods are welcome** from the world-wide research **community** (currently 20 methods are registered)
- **Users** submit their predictions for ongoing CME events, listing their method assumptions and input parameters
- **Researchers** can then view all of the predictions, modeling details, and the ensemble average of all predicted arrival times submitted by participants



# CME Arrival Time Scoreboard

## Community predictions for the 5 Nov 2016 CME



**CME: 2016-11-05T04:48:00-CME-001**

Actual Shock Arrival Time: 2016-11-09T05:28Z

Observed Geomagnetic Storm Parameters:  
----

CME Note: Filament Eruption off the northern Hemisphere giving a very wide-angle partial halo. Another CME came off the farside and eastern limb at a similar time. Evident in SOHO and STEREO imagery after 05/0200UTC.

Predicted Shock Arrival Time	Difference (hrs)	Confidence (%)	Submitted On	Lead Time (hrs)	Predicted Geomagnetic Storm Parameter(s)	Method	Submitted By	
2016-11-08T19:00Z (-12.0h, +12.0h)	-10.47	75.0	2016-11-06T11:10Z	66.30	Max Kp Range: 4.0 - 6.0	<a href="#">Other (SIDC)</a>	Leila Mays (GSFC)	<a href="#">Detail</a>
2016-11-08T16:00Z (-7.0h, +7.0h)	-13.47	----	2016-11-05T17:52Z	83.60	----	<a href="#">WSA-ENLIL + Cone (GSFC SWRC)</a>	Karin Muglach (GSFC)	<a href="#">Detail</a>
2016-11-08T11:15Z	-18.22	57.5	---	---	Max Kp Range: 3.5 - 5.33333	Average of all Methods	Auto Generated (CCMC)	<a href="#">Detail</a>
2016-11-08T10:00Z	-19.47	----	2016-11-06T00:30Z	76.97	Max Kp Range: -- - 5.0	<a href="#">WSA-ENLIL + Cone (NOAA/SWPC)</a>	Barbara Thompson (GSFC)	<a href="#">Detail</a>
2016-11-08T00:00Z (-9.0h, +6.0h)	-29.47	40.0	2016-11-06T01:00Z	76.47	Max Kp Range: 3.0 - 5.0	<a href="#">WSA-ENLIL + Cone (Met Office)</a>	Met Office (Met Office)	<a href="#">Detail</a>

**CME: 2016-11-05T04:48:00-CME-001**

Actual Shock Arrival Time: 2016-11-09T05:28Z

Observed Geomagnetic Storm Parameters:  
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CME Note: Filament Eruption off the northern Hemisphere giving a very wide-angle partial halo. Another CME came off the farside and eastern limb at a similar time. Evident in SOHO and STEREO

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2016-11-08T10:00Z	-19.47	----	2016-11-06T00:30Z	76.97	Max Kp Range: -- - 5.0	<a href="#">WSA-ENLIL + Cone (NOAA/SWPC)</a>
2016-11-08T00:00Z (-9.0h, +6.0h)	-29.47	40.0	2016-11-06T01:00Z	76.47	Max Kp Range: 3.0 - 5.0	<a href="#">WSA-ENLIL + Cone (Met Office)</a>

<https://kauai.ccmc.gsfc.nasa.gov/CMEscoreboard>

All prediction methods are welcome and all are encouraged to participate.