

Corona and Solar Wind Sessions Report

Operational Metrics – list remains same

- Wind speed and CIR timing at L1
- IMF Polarity and sector boundary crossings at L1

- Science Assessment Goals

- Develop white papers to review progress and anticipate developments
- Identify specific validation studies to supplement white papers

- Validation Metrics

- Re-energize SHINE Scientific validation framework
 - Major development – Accommodate transition from time independent to time dependent coronal field models which impacts everything!

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- Possible Scientific Validation Metric Targets
 - CH detection algorithms compared to open flux regions from magnetogram based models
 - CH Relevant Models
 - Magnetogram based – open field regions
 - WSA, NLFF, CORHEL
 - EUV observation based
 - CHIMERA(Garton), CHARM (Krista, Gallagher), Reiss, R.o.B, SPOCA, NOAA SWPC(?), SolarMonitor(?), ASSA
 - Solar Wind MHD – examine any aspects for which a diagnostic graphic can be crafted
 - Both comparison between models and to data when appropriate
 - Essentially an upgrade activity
 - Coronal Structure
 - Automated loop detection algorithms and how these might be used to condition NLFF and MHD solutions

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- Science Progress – questions addressed
 - How CHs form
 - How they disperse
 - Do CMEs contribute to opening flux?
 - Alfvén wave heating differences in open and closed field regions
 - Correlations between CH properties and associated solar wind
 - Includes MHD solutions and plasma composition
 - Physics and location of CIRs

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- Science Progress – questions addressed
 - Source of solar wind turbulence
 - Physics of the open/closed field boundaries and properties of the slow solar wind
 - How much of the ambient B_z can be explained by Russell-McPherron and simple source surface field models?
 - Can hourly B_z excursions be related to slow solar wind blobs released from the HCS?
 - Kinetic models and how they can support MHD models with realistic reconnection rates
 - Progress of multi-species, multi-fluid algorithms from 1D test codes to 3D models
 - Impact of boundary condition design on solution quality
 - Impact of model spatial resolution on solution quality (algorithm order and/or AMR)
 - Global solution structure
 - Resolution of ICME sheath

Flare Prediction Team

Leads

Shaun Bloomfield

Manolis Georgoulis

KD Leka

Leila Mays (Flare Scoreboard)

Sophie Murray (Flare Scoreboard)

Goals

- Evaluate where we stand with solar flare prediction; define specific questions.
- Agree on different metrics that address the specific questions chosen.
- Provide a benchmark against which future models can be assessed.

Complimentary Activities

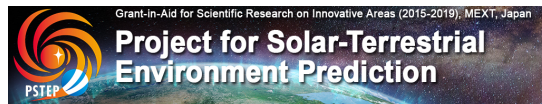
'All Clear' Workshops

A COMPARISON OF FLARE FORECASTING METHODS. I. RESULTS FROM THE "ALL-CLEAR" WORKSHOP

G. Barnes¹, K. D. Leka¹, C. J. Schrijver², T. Colak³, R. Qahwaji³, O. W. Ashamari³, Y. Yuan⁴, J. Zhang⁵,
R. T. J. McAteer⁶, D. S. Bloomfield^{7,14}, P. A. Higgins⁷, P. T. Gallagher⁷, D. A. Falconer^{8,9,10},
M. K. Georgoulis¹¹, M. S. Wheatland¹², C. Balch¹³, T. Dunn¹, and E. L. Wagner¹ [Hide full author list](#)

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Flare Scoreboard



COMMUNITY COORDINATED MODELING CENTER

Related Links | Frequently Asked Questions | Community Feedback | Downloads | Sitemap

About | Models at CCMC | Request A Run | View Results | Instant Run | Metrics and Validation | Education | R2O Support | Mission Support | Community Support | Tools

Real-time Forecasting Methods Validation: Flare Scoreboard

CCMC is in the implementation phase of the "Flare Scoreboard" together with Sophie Murray of the UK Met Office and the international research community. The flare scoreboard is an automated system such that model/method developers upload their predictions automatically uploaded to an anonymous tip which will be parsed by the system. The forecasts are shown on an interactive display of SDO/AIA or HMI images, and will also be displayed together on a graph of probability vs. time.

Please email [Sophie Murray](#), [Masha Kuznetsova](#), and [Lella Mays](#) with your feedback which will be shared with the flare scoreboard planning group.

Latest News:

- The flare scoreboard is part of the the Solar Flare Working Team in the Community-wide International Forum for Space Weather Modeling Capabilities Assessment.
- See the agenda of ESWW13 working meeting: Community-wide space weather Scoreboards: Research assessment of real-time forecasting models and techniques.

Flare scoreboard planning group:
Leads: Sophie Murray (TCD), Jesse Adries, Veronique Delouille (SIDC)

Mike Terkildsen, Graham Steward (Australia Bureau of Meteorology, Space Weather Services), K.D. Leka (NWRA), Jordan Guerra, Shaun Bloomfield (Northumbria University), Masha Kuznetsova, M. Lella Mays (CUA/GSFC)

Participating partners:

1st CCMC-International Meeting: International CCMC-LWS Working Meeting 3-7 April 2017

Session Discussion Highlights

Session 1: Flare prediction methods and user needs

Meteorological forecasting

- Short-fuse warnings

Flare precursors

- Lack of simulations compared to other fields

Importance for SEP and CME forecasting

- Links with other teams, even substorms!

Session Discussion Highlights

Session 2: Validation metrics for flare prediction

Metrics quite well-established!

User needs

- False alarms vs misses
- Levels of threat subjective
- Case studies to justify funding

Session Discussion Highlights

Session 3: Fusion of flare prediction and validation methods toward the next generation of flare prediction capabilities

Climatology

- Flare productivity at different times of solar cycle

Data

- Vector vs line-of-sight magnetograms

Future steps

- Use what we have already?
- Linking into next steps for the Flare Scoreboard
- XML, metadata, database formats

Issues or Problems Impeding Progress

- Time and Resources!

Team plans for the rest of the week

- Open Session today @ 2pm, Salons II and III