

9th CCMC Community Workshop  
The Hotel at UMD, College Park, Maryland (Terrapin Ballroom)  
April 23—April 27, 2018  
Agenda

Monday, April 23

MONDAY AM

8:00 am – 9:00 am           Registration, Continental breakfast

*Session: Introduction, Reports, and Perspectives on CCMC*

*Chair: Robert Robinson*

9:00 am – 9:05 am           Introductory remarks, *Holly Gilbert*

9:05 am – 9:25 am           NASA Heliophysics view of CCMC, *Terry Onsager*

9:25 am – 9:45 am           NSF view of CCMC, *Michael Wiltberger*

9:45 am – 10:45 am         Director's report, *Masha Kuznetsova*

Questions for the Director

Discussion

10:45 am – 11:00 am       Coffee Break

*Chair: Tamas Gombosi*

11:00 am – 11:15 am       NASA Technical Fellow for Space Environments view of CCMC, *Joe Minow*

11:15 am – 11:30 am                 USAF view of CCMC, *Col. Mike Gremillion*

11:30 am – 11:45 am                 NOAA SWPC / NASA CCMC Partnership, *Howard Singer*

11:45 am – 12:00 pm       Opportunities for CCMC to support space environment modeling needs for human exploration, *John Allen*

12:00 pm – 12:15 pm       AFIT view of CCMC, *Dan Emmons*

12:15 pm – 12:30 pm       LWS Program view of CCMC, *Jeff Morrill*

12:30 pm – 12:45 pm       New Friends/Partners of CCMC, *CCMC staff*

12:45 pm – 2:00 pm       Lunch on own

For Wi-Fi enter the complimentary code:  
**southerndifference**

## MONDAY PM

Session: CCMC Strategic Planning Discussion

Session organizers: Ray Walker (rwalker@igpp.ucla.edu), Jon Linker ([linkerj@predsci.com](mailto:linkerj@predsci.com))

2:00 pm – 4:00 pm

Each discussion topic listed below will start with short viewpoint presentations (1-3 slides).

Please contact the organizers if you would like to present your viewpoint or you have suggestions for additional topics.

- ❑ Models/tools selection and priorities for on-boarding. Approach to retiring of models and/or simulation results.  
CCMC view (*Masha Kuznetsova*). Model developers' perspective. User perspective.
- ❑ Best practices for models/tools onboarding. Dos and Don'ts.  
CCMC view (*Lutz Rastaetter, Rick Mullinix*). Model developers' experience/perspective.
- ❑ CCMC infrastructure and computational resources.  
CCMC view (*Tina Tsui*). Model developers perspective: computational/storage requirements for upcoming deliverables (*Jon Linker, TBD*)  
Opportunities for supplementing CCMC computational resources (*Piyush Mehrotra, Chief of NASA Advanced Supercomputing Division*).
- ❑ CCMC archives of models, simulation results and products: databases, metadata, interactive archives, interfacing with VOs.  
Decadal Survey recommendations (*Aaron Roberts*). CCMC view (*Chiu Wiegand*).
- ❑ CCMC tools for visualization and analysis. Opportunities for CCMC to store/visualize results of simulations performed outside of CCMC. Opportunities to address reproducibility requirements.  
CCMC view (*Lutz Rastaetter*). Model developers' perspective. User's perspective.
- ❑ Opportunities for faster implementation of science users ideas into space weather models and applications hosted at the CCMC.

4:00 pm – 4:30 pm            Coffee Break

4:30 pm – 6:00 pm

Panel discussion: CCMC Advisory Group outlook

Moderators: Ray Walker, Jon Linker

Panelists: Joe Minow, Howard Singer, Alexei Pevtsov, Angelos Vourlidas, Kent Tobiska, Alex Glocer, Nick Arge, Robert Robinson, Tamas Gombosi, Mike Gremillion

Tuesday, April 24

*Models at CCMC & Collaborations with Model Developers I*

*3D Visualization Demos*

TUESDAY AM

8:00 am – 9:00 am Continental breakfast

*Session: Models at CCMC & Collaborations with Model Developers I*

*Chair: Angelos Vourlidas*

9:00 am – 9:20 am NASA Heliophysics Chief Scientist outlook on space environment modeling, Q&A, *Jim Spann*

9:20 am – 9:35 am LWS STRATEGIC CAPABILITIES: Flux Emergence Prediction Tool (FEPT), *Nagi Mansour*

9:35 am – 9:50 am ADAPT, *Carl Henney*

9:50 am – 10:05 am WSA, *C. Nick Arge*

10:05 am – 10:20 am New synoptic map data products for space weather modeling, *Alex Pevtsov*

10:20 am – 10:35 am Subsurface Flow Maps for Modeling Magnetic Flux Transport and Evolution of Active Regions, *Alexander Kosovichev (NJIT) and Junwei Zhao (Stanford)*

10:35 am – 10:45 am LWS STRATEGIC CAPABILITIES: The Coronal Global Evolutionary Model (CGEM), *Leila Mays on behalf of George Fisher*

10:45 am – 11:00 am Coffee Break

*Chair: Judy Karpen*

11:00 am – 11:15 am LWS STRATEGIC CAPABILITIES: Integrated Real-Time Modeling System for Heliospheric Space Weather Forecasting, *Dusan Odstrcil*

11:15 am – 11:30 am EUHFORIA at CCMC, *Christine Verbeke*

11:30 am – 11:45 am LFM/GAMERA/Solar-Heliosphere, *Slava Merkin*

11:45 am – 12:00 pm MS-FLUKSS Coronal and Heliospheric Model Development, *Nikolai Pogorelov*

12:00 pm – 12:15 pm Heliospheric Tomography, *Bernie Jackson*

12:15 pm – 12:30 pm Solar scientist feedback: Validation for solar wind prediction from models installed at the CCMC, *Lan Jian*

12:30 pm – 12:45 pm Opportunities for ARMS and LARE at the CCMC, *Rick DeVore*

12:45 pm – 2:00 pm Lunch on own

## TUESDAY PM

### *Session: Models at CCMC & Collaborations with Model Developers I*

*Chair: Nick Arge*

2:00 pm – 2:15 pm

How CCMC can support solar missions? *Angelos Vourlidas*

2:15 pm – 2:30 pm

LWS STRATEGIC CAPABILITIES: Transitioning AMPS to the CCMC, *Valeriy*

*Tenishev*

2:30 pm – 2:45 pm

LWS STRATEGIC CAPABILITIES: Transitioning AWSOM-R, EEGGL and FLAMPA

to the CCMC, *Igor Sokolov*

2:45 pm – 3:00 pm

TDM Explorer: an Interface for Modeling Stable and Unstable Flux Ropes in Realistic Solar Magnetic Fields, *Cooper Downs*

3:00 pm – 3:15 pm

LWS STRATEGIC CAPABILITIES: From the Photosphere to the CCMC: Modeling Particle Acceleration with Coupled MHD and Focused Transport Simulations, *Matt Gorby*

3:15 pm – 3:30 pm

NASA STTR: Solar Particle Event (SPE) Threat Assessment Tool: Modeling SPEs with Coupled CME-Energetic Particle Simulations, *Jon Linker*

3:30 pm – 4:00 pm

Coffee Break

*Chair: Neel Savani*

4:00 pm – 4:20 pm

Status of SEP models at CCMC: *Leila Mays on behalf of Janet*

*Luhmann and Gang Li*

SEPMOD, *Janet Luhmann*

iPATH, *Gang Li*

4:20 pm – 4:35 pm

Models coming soon to the SEP Scoreboard, *Leila Mays, Ian*

*Richardson*

4:35 pm – 4:40 pm

Remarks on human exploration mission needs for space weather operational tools, *Eddie Simones (NASA JSC)*

4:40 pm – 5:00 pm

Discussion (Moderator: *Leila Mays*): Challenges and opportunities for using coupled heliospheric and SEP models for operational forecasting

### *Session: 3D Visualization Demos, Education and outreach*

5:00 pm – 5:15 pm

SEA5, *Justin Boblitt*

5:15 pm – 5:30 pm

Kameleon Live, *Asher Pembroke*

5:30 pm – 5:45 pm

Using CCMC simulations in Summer Schools, *Nick Gross*

5:45 pm – 6:00 pm

OpenSpace, *Jonathan Grangien, Matthias Berg, Asher Pembroke*

6:00 pm – 6:15 pm

Discussion

Wednesday, April 25

*Sessions: Models at CCMC & Collaborations with Model Developers II*

*International Forum for Space Weather Capabilities Assessment I*

*Education and outreach*

WEDNESDAY AM

8:00 am – 9:00 am Continental breakfast

*Session: Models at CCMC & Collaborations with Model Developers II*

*Chair: Alex Glocer*

9:00 am – 9:15 am Parker Solar Probe, *Nicola Fox*

9:15 am – 9:20 am Discussion

9:20 am – 9:35 am SWMF new developments, *Gabor Toth*

9:35 am – 9:50 am LWS STRATEGIC CAPABILITIES: OpenGGCM new developments, *Jimmy Raeder*

9:50 am – 10:05 am LFM/GAMERA/Geospace, *Kareem Sorathia*

10:05 am – 10:20 am PAMHD, *Ilja Honkonen*

10:20 am – 10:35 am Magnetosphere scientist feedback, *Katariina Nykyri*

10:35 am – 10:45 am Discussion

10:45 am – 11:00 am Coffee Break

*Chair: Jimmy Raeder*

11:00 am – 11:15 am LWS STRATEGIC CAPABILITIES: Adding Kinetic Ions and Wave-Particle

Interactions to the Polar Wind Outflow Model, *Alex Glocer*

11:15 am – 11:30 am CIMI, *Mei-Ching Fok*

11:30 am – 11:45 am SHIELDS-RAM-SCB and opportunities for partnership with CCMC,

*Vania Jordanova*

11:45 am – 12:00 pm SAMI3, *Joe Huba*

12:00 pm – 12:15 pm GITM and particle precipitation, *Aaron Ridley*

12:15 pm – 12:30 pm Solar input for ionosphere/thermosphere modeling, *Carl Henney*

12:30 pm – 12:45 pm Discussion (Moderators: *Jimmy Raeder, Carl Henney*): What solar input is needed for ionosphere/thermosphere modeling? What quantity? Flare duration, rise time, or integrated flux? What time cadence? (e.g., 1-min vs 5-min cadence for GOES X-ray for D region absorption). Uncertainty estimates?

12:45 pm – 2:00 pm Lunch on own

## WEDNESDAY PM

### *Session: International Forum for Space Weather Capabilities Assessment I*

*Chair: Aaron Ridley*

- 2:00 pm – 2:15 pm           CTIPe, *Naomi Maruyama*  
2:15 pm – 2:30 pm           SWx-TREC Satellite Drag project and opportunities for partnership  
with CCMC, *Marcin Pilinski*  
2:30 pm – 2:45 pm           Connecting atmospheric density models at CCMC with operational  
flight dynamics systems, *Steve Cooley*  
2:45 pm – 3:05 pm           Discussion (Moderators: *Aaron Ridley, Eric Sutton*): Evaluation of  
atmospheric neutral density modeling capability and uncertainty assessment in orbit propagation.

3:05 pm – 3:20 pm           LWS STRATEGIC CAPABILITIES: Medium Range Thermosphere Ionosphere Storm  
Forecasts, *Tony Mannucci*

3:20 pm – 3:35 pm           Preparing vertical TEC data for model validation, *Anthea Coster*.

3:35 pm – 3:50 pm           Opportunities to use MIDAS for community-wide metrics and  
validation projects, *Cathryn Mitchell*

3:50 pm – 4:10 pm           Discussion (Moderator: *Anthea Coster*): Preparation of vertical TEC  
data for model evaluations. Uncertainty assessment.

4:10 pm – 4:30 pm           Coffee Break

*Chair: Tony Mannucci*

4:30 pm – 4:45 pm           Defining metrics and tracking progress for ionosphere disturbances  
modeling: Highlights from the International Forum on Space Weather Capabilities Assessment,  
*Ja Soon Shim*

4:45 pm – 5:00 pm           International Space Weather Actions Teams for the coordinated  
assessment and improvement of ionosphere variability predictions, *Anna Belehaki*

5:00 pm – 5:15 pm           Discussion: Opportunities for global initiatives for advancing of  
ionosphere variability modeling capabilities.

*Chair: Katariina Nykyri*

### *Session: Education and outreach*

5:15 pm – 5:30 pm           CCMC as a resource for education, *Alex Young*

5:30 pm – 5:45 pm           CCMC as a resource for space weather program at CUNY/QCC, *M.  
Chantale Damas*

5:45 pm – 6:00 pm           CCMC Education Activities: Update and Outlook, *Anna Chulaki*

6:00 pm – 6:15 pm           Discussion

Thursday, April 26

*Metrics and Validation; International Forum for Space Weather Capabilities Assessment II*

THURSDAY AM

8:00 am – 9:00 am Continental breakfast

*Session: International Forum for Space Weather Capabilities Assessment II*

*Chair: David Barnes*

9:00 am – 9:15 am Coordinated Validation Activities within the ESA SSA SWE Service Network and Opportunities for Collaboration, *Alexi Glover*

9:15 am – 9:30 am CCMC and ROB partnership outlook, *Matthew West*

9:30 am – 9:45 am Modelling and data analysis tool for solar orbiter, *Alexis Rouillard*

9:45 am – 10:00 am Discussion (Moderators: *Alexi Glover, Terry Onsager*):

Opportunities and challenges of global coordination in space weather capabilities assessment.

10:00 am – 10:15 am An approach to comprehensive and sustainable community solar wind model validation, *Sandro Taktakishvili on behalf of Peter MacNeice*

10:15 am – 10:30 am Terrestrial weather forecast verification and Model Evaluation Tools (MET) at NCAR, *Tara Jensen*

10:30 am – 10:45 am Tracking progress and understanding, *Alexa Halford*

10:45 am – 11:00 am Discussion (Moderators: *Barbara Thompson, Tara Jensen*):

- Opportunities for using terrestrial weather tools for space weather capabilities assessment
- How to define metrics to assess the current state of space weather modeling capabilities from the perspective of science for space weather

11:00 am – 11:30 am Coffee Break

*Session: Geomagnetic Environment Model Validation*

*Chair: Slava Merkin*

11:30 am – 11:45 am Plans for implementation and evaluation of KSEM L2 products at CCMC, *J. Woo*

11:45 am – 12:00 pm Defining metrics and tracking progress for geomagnetic environment modeling: Highlights from the International Forum on Space Weather Capabilities Assessment, *Dan Welling*

12:00 pm – 12:15 pm A Comparison of models that predict magnetopause location changes, *Shreeya Khurana*

12:15 pm – 12:30 pm Auroral precipitation and high latitude ionosphere electrodynamic (AuroralPHILE) Working Team Status Report, *Robert Robinson*

12:30 pm – 12:45 pm Discussion: Geospace model validation

12:45 pm – 2:00 pm Lunch on own

## THURSDAY PM

### *Session: Solar and Heliospheric Model Validation*

*Chair: Howard Singer*

2:00 pm – 2:15 pm NOAA SWPC / NASA CCMC Space Weather Modeling Assessment Project: Toward the Validation of Advancements in Heliospheric Space Weather Prediction

Within WSA-Enlil, *Eric Adamson*

2:15 pm – 2:30 pm CME Arrival Time & Impact Working Team and Scoreboard Status Report, *Christine Verbeke, Leila Mays*

2:30 pm – 2:40 pm DBEM, *Leila Mays on behalf of J. Calogovic*

2:40 pm – 2:55 pm IMF Bz at L1 Working Team Status Report, *Neel Savani*

2:55 pm – 3:10 pm Discussion (Moderator: *Christine Verbeke*): CME Arrival time and solar wind parameters at L1

3:10 pm – 3:25 pm SEP Working Team and Scoreboard Status Report, *Ian Richardson*

3:25 pm – 3:35 pm Discussion (Moderators: *Ian Richardson, Leila Mays*): Scoreboards – Community-wide real-time forecast validation

3:35 pm – 3:50 pm Coffee Break

### *Session: Radiation Metrics and Validation*

*Chairs: Paul O'Brien/Yihua Zheng*

3:50 pm – 4:00 pm Highlights from the International Forum on Space Weather Capabilities Assessment: Near-Earth radiation and plasma effects, *Yihua Zheng*

4:00 pm – 4:15 pm Characterizing the Global Aviation Radiation Environment based on Model and Measurement Databases, *Kent Tobiska*

4:15 pm – 4:30 pm Space Radiation Impacts on Aviation, FAA needs, *Karen Shelton-Mur*

4:30 pm – 4:50 pm Surface Charging Validation Challenges and Suggestions

- *Vania Jordanova, Joe Minow (10 min)*
- Discussion (10 min)

4:50 pm – 5:05 pm Using spacecraft anomalies to evaluate space environment models, *Paul O'Brien*

5:05 pm – 5:30 pm Short viewpoint presentations (1-2 slides) and discussion:

- Internal charging event selection and validation, *Paul O'Brien*
- Rigidity cutoff calculation and validation for SEPs and GCRs under different geomagnetic and radiation conditions, *Paul O'Brien and Kent Tobiska*

5:30 pm – 6:15 pm Discussion (Moderators: *Leila Mays, Alexa Halford*): *International Forum on Space Weather Capabilities Assessment: Status and outlook.*

- Proposed metrics to aid in tracking progress in LWS Strategic Science Areas
- Space Weather Journal special issue status
- Action plans
- Next working meeting



Friday, April 27

*Metadata standards, Data Access, Interconnected Databases. Organizer: Chiu Wiegand*

FRIDAY AM

8:00 am – 9:00 am Continental breakfast

*Session: Metadata standards: Their use case as well as interoperability and compatibility*

*Chair: Shing Fung*

9:00 am – 9:15 am HPDE progress, *Aaron Roberts*

9:15 am – 9:30 am SPASE, *Todd King*

9:30 am – 9:45 am Using SPASE for models at CCMC, *Chiu Wiegand*

9:45 am – 10:00 am CAMEL framework presentation/demo, *Lutz Rastaetter, Rick Mullinix*

10:00 am – 10:15 am ISO Standards, *Kent Tobiska on behalf of V. Kalegaev*

10:15 am – 10:30 am Discussion (Moderators: *Shing Fung, Kent Tobiska*): How to interconnect different metadata standards? How do they compare?

10:30 am – 11:00 am Coffee Break

*Session: Connecting Different Data Centers and Modeling Centers, Data Access, Data Distribution*

*Chair: Todd King*

11:00 am – 11:15 am VMR migrated to CCMC, *Darren De Zeeuw*

11:15 am – 11:30 am HAPI, *Jon Vandegriff*

11:30 am – 11:45 am iSWA HAPI implementation, *Rick Mullinix*

11:45 am – 12:00 pm SPENVIS, *Stijn Calders*

12:00 pm – 12:15 pm CCMC collaboration with SPENVIS, *Yihua Zheng on behalf of Justin Boblitt*

12:15 pm – 12:30 pm ESPAS, *Anna Belehaki*

12:30 pm – 12:45 pm Discussion (Moderators: *Todd King, Jon Vandegriff*): How to build a distributed network of models for the community using standards and APIs?

12:45 pm – 2:00 pm Special lunch presentation & discussion (lunch provided):  
Applied Artificial Intelligence for Space Weather Research, *Lika Guhathakurta*

FRIDAY PM

*Session: Global network of Interconnected Databases.*

*Chair: Barbara Thompson*

2:00 pm – 2:15 pm An Interactive Multi-Instrument Database of Solar Flares, *Viacheslav Sadykov*

2:15 pm – 2:30 pm DONKI, *Chiu Wiegand*

2:30 pm – 3:00 pm The Heliophysics Event Knowledgebase and VOEvent, *Neal Hurlburt*

3:00 pm – 4:30 pm Discussion (Moderators: *Barbara Thompson, Neal Hurlburt*):

Interconnecting space weather databases: what metadata standard is currently being used to describe space weather events? What are the community needs to be able to describe the metadata for a space weather event?

4:30 pm – 6:00 pm Opportunity for informal discussions and planning meetings