

CCMC 2024 Workshop
June 3-7, 2024 (all times Eastern)
Detailed Agenda

<https://bit.ly/ccmcagenda24>

Monday 6/3: CCMC Report, Agencies View, Community Discussion

8:00 am – 9:00 am Continental breakfast

Chair: *Antti Pulkkinen*

9:00 am – 9:05 am Introductory Remarks, Antti Pulkkinen

CCMC Team Report

9:05 am – 10:30 am 01 CCMC Team Report

10:30 am – 11:00 am Coffee Break

Chair: *Genevieve Fisher*

Agencies view of CCMC and open science in modeling

11:00 am - 11:10 am 02 NASA Heliophysics view of CCMC, Joe Westlake^{VIRTUAL}

11:10 am - 11:20 am 03 CCMC role in NASA Space Weather Program, Jamie Favors

11:20 am - 11:30 am 04 NASA Office of Chief Science Data Officer view of CCMC,
Kevin Murphy

11:30 am - 11:40 am 05 Opportunities for CCMC - USSF partnership, Lt Col. Todd
Blum

11:40 am - 11:50 am 06 NSF view on CCMC role in open science in modeling,
Tai-Yin Huang^{VIRTUAL}

11:50 am - 12:00 pm 07 CCMC-SRAG partnership in support of human exploration,
Catherine Mcleod

12:00 pm - 12:10 pm 08 NASA Transition to Open Science (TOPS) view of CCMC and
open science in modeling, Steven Crawford

12:10 pm - 12:20 pm 09 Strengthening SWPC-CCMC partnership. Opportunities and
challenges for open R2O2R, Brent Gordon

12:20 pm - 1:00 pm Panel Discussion (*Moderator: Genevieve Fisher*)

1:00 pm – 2:30 pm Lunch - provided

Lunch is fully provided by the workshop on Monday, Thursday, and Friday.

Lunch is on your own on Tuesday and Wednesday.

Community Representatives/Panelists: *Judy Karpen (Chair), Jon Linker, Nick Arge, Elena Provornikova, Gabor Toth, Mei-Ching Fok*

Establishing a forum for modeling community [discussion [doc](#), [folder](#), [survey](#)]

2:30 pm – 3:15 pm Discussion

Community Representatives/Panelists: *Jon Linker (Chair), Mike Wiltberger (Chair), Gabor Toth, Zhenguang Huang*

Open use of models (cross domain) [discussion [doc](#), [folder](#)]

3:15 pm – 4:00 pm Discussion

4:00 pm – 4:30 pm Coffee Break

Community Representatives/Panelists: *Mike Wiltberger (Chair), Gian Luca Delzanno (Chair), Nick Arge, Christine Verbeke*

Open use of simulation results (cross domain) [discussion [doc](#), [folder](#)]

4:30 pm – 5:15 pm Discussion

Community Representatives/Panelists: *Claudio Corti (Chair), Gian Luca Delzanno, Michael Hirsch, Ron Caplan*

Open science Infrastructure in modeling (cross domain) [discussion [doc](#), [folder](#)]

5:15 pm – 6:00 pm Discussion

Tuesday 6/4: *Solar/Helio/SEP models*

8:00 am – 9:00 am Continental breakfast

Chair: Nick Pogorelov

Solar/Helio modeling

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|---------------------|---|
| 09:00 am – 09:15 am | 01 WSA – Nick Arge |
| 09:15 am – 09:30 am | 02 Improving the arrival-time prediction of CMEs by heliospheric imagery and ensemble modeling – Dusan Odstrcil |
| 09:30 am – 09:45 am | 03 GAMERA-Helio inner heliosphere simulations and preparations for runs-on-request – Elena Provornikova |
| 09:45 am – 10:00 am | 04 University of Michigan models at the CCMC for modeling SEP and CME events – Igor Sokolov |
| 10:00 am – 10:15 am | 05 PSI open science products: OFT and CORHEL-CME – Jon Linker |
| 10:15 am – 10:30 am | 06 OSPREI Runs on Request – Christina Kay |
| 10:30 am – 11:00 am | Coffee Break |

Chair: Angelos Vourlidas

SEP modeling

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| 11:00 am – 11:12 am | 07 REleASE and type-III evidence of particle escape from the Sun: HESPERIA REleASE+ – Arik Posner |
| 11:12 am – 11:24 am | 08 Designing a real-time SEP forecast/nowcast pipeline with iPATH under the space weather R2O2R framework – Junxiang Hu |
| 11:24 am – 11:36 am | 09 SEPMOD: Current implementation at CCMC and plans for future improvements – Erika Palmerio |
| 11:36 am – 11:48 am | 10 Opening EPREM: Progress toward an open-source, coupling-agnostic model – Matt Young ^{VIRTUAL} |
| 11:48 am – 12:00 pm | 11 Recent developments in the UMASEP suite – Marlon Núñez ^{VIRTUAL} |
| 12:00 pm – 12:12 pm | 12 Latest advances in the ASPECS tool: the ADVISOR set up and future steps – Athanasios Papaioannou ^{VIRTUAL} |
| 12:12 pm – 12:24 pm | 13 Near-real-time CME alerts from the Mauna Loa K-Coronagraph – Joan Burkepile ^{VIRTUAL} |
| 12:24 pm – 12:30 pm | Q&A |

12:30 pm – 2:30 pm Lunch - on your own

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Chairs: *Michelangelo Romano, Christina Lee, Leila Mays*

CME, Flare and SEP model development for Mars

2:30 pm – 3:00 pm **Discussion**

- Modelers can learn more about Mars data available now to develop/validate their models
- Modelers can communicate their development challenges with Mars data folks, and with each other
- What steps need to be taken to develop models to be ready for Mars?

Chair: *Nishtha Sachdeva*

Open use of models/simulation results: Solar/Heliosphere/SEP [discussion [doc](#), [folder](#)]

SOC organizers: *Nick Arge, Jon Linker, Nishtha Sachdeva, Lan Jian*

3:00 pm – 4:00 pm **Discussion**

4:00 pm – 4:30 pm **Coffee Break**

Chair: *Katherine Garcia-Sage*

Mission Science Support

- 4:30 pm – 4:44 pm **01** Importance of satellite constellation to the study of multi-scale temporal and spatial structures in the ionosphere-thermosphere system, Yue Deng
- 4:44 pm – 4:58 pm **02** Overview of the Electrojet Zeeman Imaging Explorer (EZIE) Mission, Sam Yee^{VIRTUAL}
- 4:58 pm – 5:12 pm **03** Preparing for the SMILE, LEXI, and STORM Soft-X-ray and Other Global Imaging Missions with the Support of the CCMC, David Sibeck

Chair: *Fabrizo Sassi*

Data Assimilation

- 5:12 pm – 5:26 pm **04** DART-OSSE at CCMC - Chih-Ting Hsu (NCAR/HAO)
- 5:26 pm – 5:40 pm **05** JEDI at Goddard GMAO and Heliophysics - Ricardo Todling (GSFC/GMAO)
- 5:40 pm – 6:00 pm **06** Mission Science and Data Assimilation Panel Discussion
- How to facilitate mission support using a centralized model repository (such as the CCMC).
 - How to create an opportunity for a shared environment and a flexible framework for collaborative development of DA and mission analysis capabilities

Wednesday 6/5: Coupled Geospace, beyond MHD, and ITM models

8:00 am – 9:00 am Continental breakfast

Am Chair: *Liutauras Rusaitis*

Coupled Geospace and beyond MHD

- 9:00 am – 9:15 am 01 Updates of the Space Weather Modeling Framework (SWMF): Geospace, Gabor Toth
- 9:15 am – 9:30 am 02 MAGE/Center for Geospace Storms, Slava Merkin
- 9:30 am – 9:45 am 03 OpenGGCM new developments, Doug Cramer
- 9:45 am – 10:00 am 04 MARBLE, John Dorelli
- 10:00 am – 10:15 am 05 HYPERS, Yuri Omelchenko
- 10:15 am – 10:30 am 06 SPS and other beyond MHD model and their use at the CCMC, Gian Luca Delzanno
- 10:30 am – 11:00 am Coffee Break

Chair: *Slava Merkin*

Coupled Geospace and beyond MHD continued

- 11:00 am – 11:15 am 07 VLASATOR, opportunities for open use of run results at CCMC, Minna Palmroth^{VIRTUAL}
- 11:15 am – 11:30 am 08 Tools for open use of EPIC run results, Liutauras Rusaitis
- 11:30 am – 11:45 am 09 Tools for open use of MAGE run results, Michael Wiltberger

Community Representatives/Panelists: Gian Luca Delzanno (Chair), Liutauras Rusaitis, Mike Wiltberger, John Dorelli, Yuri Omelchenko, Minna Palmroth

Open Science in coupled geospace and beyond MHD [discussion [doc](#), [folder](#)]

11:45 am – 12:30 pm Discussion

12:30 pm – 2:30 pm Lunch - on your own

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Chairs: *Charles Lin, Adam Kubaryk*

Global Thermosphere and Ionosphere Modeling

- 2:30 pm – 2:45 pm 01 The Global Ionosphere Thermosphere Model and Beyond, Aaron Ridley
- 2:45 pm – 3:00 pm 02 TIE-GCM v3.0, Wenbin Wang
- 3:00 pm – 3:15 pm 03 AI Foundation Models for Whole Atmosphere Climate: Development and Applications, Wenjun Dong

Chairs: *Yue Deng, Aaron Ridley, Wenbin Wang, Matt Zettergren*

Open Science in the ITM domain [discussion [doc](#), [folder](#)]

3:15 pm – 4:00 pm Discussion

4:00 pm – 4:30 pm Coffee & Snack Break

Chairs: *David Themens, Keith Groves*

Global Thermosphere Modeling

4:30 pm – 4:45 pm 04 Advances, updates, and future developments of the
NRLMSIS® Atmospheric Empirical Model, McArthur Jones Jr.

Ionosphere Modeling

4:45 pm – 5:00 pm 05 Ionosphere modeling at NRL, Sarah McDonald

5:00 pm – 5:15 pm 06 GIS (Global Ionosphere Specification), Charles Lin

5:15 pm – 5:30 pm 07 IRTAM, a Real-Time Assimilative IRI, Ivan Galkin, Bodo
Reinisch, and Dieter Bilitza

5:30 pm – 5:45 pm 08 GEMINI (Geospace Environment Model of Ion-Neutral
Interactions), Matt Zettergren

5:45 pm – 6:00 pm 09 SAMI-3 update, Joe Huba

Thursday 6/6: *Open Validation and R2O2R*

8:00 am – 9:00 am Continental breakfast

Chair: *Esayas Shume*

SWxC and Open R2O2R

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| 9:00 am – 9:10 am | 01 Space Weather Centers of Excellence (SWxC) and Open R2O2R, Genene Fisher |
| 9:10 am – 9:20 am | 02 NOAA/SWPC view on openness in the R2O2R process: opportunities and challenges, Eric Adamson |
| 9:20 am – 9:32 am | 03 SW Operational Readiness Development (SWORD) SWxC, Eric Sutton |
| 9:32 am – 9:44 am | 04 The SPACe weather Research and Technology Applications (SPARTA) SWxC, Keith Groves |
| 9:44 am – 9:56 am | 05 Next-Generation Modeling and Forecasting of Satellite Drag for Operations, Piyush Mehta |
| 9:56 am – 10:08 am | 06 WAM-IPE Availability at CCMC for Runs-on-Request, Adam Kubaryk |
| 10:08 am – 10:20 am | 07 NASA SWxC CLEAR: transition steps to CCMC, Lulu Zhao |
| 10:20 am – 10:30 am | Q&A |
| 10:30 am – 11:00 am | Coffee Break |

Chair: *Martin Reiss*

Community ensembles and open forecast validation

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| 11:00 am – 11:12 am | 08 Scoreboards and R2O, Leila Mays |
| 11:12 am – 11:24 am | 09 The SEP Scoreboard and SWPC's R2O process, Hazel Bain |
| 11:24 am – 11:34 am | 10 SPHINX and SEPVAL, Katie Whitman |
| 11:34 am – 11:44 am | 11 SPHINX VIVID, Philip Quinn |

Chair: *Piyush Mehta*

Discussion: Open R2O2R pipeline [discussion [doc](#), [folder](#)]

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| 11:44 am – 12:30 pm | Scene setting presentation: Lisa Winter ^{VIRTUAL} ; Discussion |
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12:30 pm – 2:30 pm Lunch - provided

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Chair: *Claudio Corti*

Tools for open validation

- 2:30 pm – 2:42 pm 01 CAMEL: Neutral Density, Jack Wang
2:42 pm – 2:54 pm 02 Open Validation of Ambient Solar Wind Models via CAMEL, Martin Reiss [[Demo Video](#)]
2:54 pm – 3:06 pm 03 Versatile Electron Radiation Belt (VERB) code and Flux fly-through tool, Dmitri Kondroshov

Community validation projects

- ~~04 Open and Accessible Science with RAM-SCB-E: Present and Future, Steve Morley~~
3:06 pm – 3:18 pm 05 High latitude ionospheric model validation: Exploring new metrics, observations, and technique, David Themens
3:18 pm – 3:30 pm 06 Validation of probabilistic upper atmosphere models, Sean Elvidge
3:30 pm – 4:00 pm Coffee & Snack Break

Chair: *Jeff Cox (TBC)*

Impact-based Validation and Satellite Drag

- 4:00 pm – 4:15 pm 07 Operational Challenges Using Atmospheric Drag Models, Conrad Schiff
4:15 pm – 4:30 pm 08 Uncertainty specification for thermosphere density observations derived from accelerometer and GNSS tracking data, Christian Siemes^{VIRTUAL}
4:30 pm – 4:45 pm 09 Using GEODYN-based POD to Validate Thermospheric Neutral Density Models, Zach Waldron

HF Communications

- 4:45 pm - 5:00 pm 10 Using Amateur Radio Links to Test Ionospheric Models, Alex Chartier
5:00 pm – 5:15 pm 11 Ionosphere validation with Hamsci data, Kukukai Hozumi

Chair: *Zhenguang Huang*

Discussion: Open validation [[discussion doc](#), [folder](#)]

- 5:15 pm – 6:00 pm Discussion

Friday 6/7: Near-Earth Radiation and Plasma Environment & HBY

8:00 am – 9:00 am Continental breakfast

Chair: *Paul O'Brien*

Near-Earth radiation and plasma environment

- 9:00 am – 9:15 am 01 AMPS (Adaptive Mesh Particle Simulator) and its use, Valeriy Tenishev
- 9:15 am – 9:30 am 02 Simulation of the inner magnetosphere dynamics: the BSPM (Belgian Space Weather Integrated Forecasting Framework (SWIFF) Plasmasphere Model) at CCMC and more, Edith Botek
- 9:30 am – 9:45 am 03 SEAES-FC (Spacecraft Environmental Anomalies Expert System Flow Chart) and its use at NASA, Paul O'Brien
- 9:45 am – 10:00 am 04 The SHELLS electron radiation belt model at CCMC and more, Janet Green
- 10:00 am – 10:15 am 05 The ORIENT (Outer Radiation belt Electron Neural net) model, Donglai Ma
- 10:15 am – 10:30 am 06 The IMPTAM (Inner Magnetosphere Particle Transport and Acceleration Model), Natalia Ganushkina
- 10:30 am – 11:00 am Coffee Break

Chair: *Jeff Cox*

Radiation impacts at aviation altitudes and beyond

- 11:00 am – 11:15 am 07 The Nowcast of Aerospace Ionizing Radiation System (NAIRAS) model at CCMC, Christopher Mertens
- 11:15 am – 11:30 am 08 USSF Radiation Exposure Support for High-Altitude Aircrew, Jeff Cox
- 11:30 am – 11:45 am 09 Discussions on DoD's needs in radiation analysis tools, monitoring, and forecasting (Moderator: Jeff Cox)

Chair: *Janet Green*

Discussion: Open science in inner magnetosphere [[doc](#), [folder](#)]

11:45 am – 12:30 pm Discussion

12:30 pm – 1:30 pm Lunch - provided
OpenSpace movies and presentation, Carter Emmart

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Chair: *Janet Kozyra*

Empowering Community Open Participation in the HBY Campaign

- 1:30 pm – 1:35 pm 01 Introduction: Solar Max HBY Campaign, Janet Kozyra
- 1:35 pm - 1:45 pm 02 Database of storms at CCMC. Using iSWA and DONKI for collaborative analysis of superstorms, Yihua Zheng
- 1:45 pm - 1:55 pm 03 Telling superstorm stories with iSWA to a broader audience, Elana Resnick, Laura Brandt
- 1:55 pm - 2:45 pm 04 Telling superstorm stories with OpenSpace, Elon Olsson, Liz MacDonald, Anders Lundkvist, Carter Emmart
- From Sun to Geospace
 - Aurorasaurus data for 5/10/24
 - Incorporating Aurorasaurus into OpenSpace
- 2:45 pm - 3:00 pm Discussion (Chair: *Janet Kozyra*): HBY as an example of a community wide open science endeavor [[doc](#), [folder](#)]
- Preparation of shared material for upcoming HBY workshops and collaborative research
 - Creating an expanding list of science questions
- 3:00pm Workshop adjourns
- 4:00pm Gathering at Masha's house ([RSVP form](#))
- Please respond by the end of the day on Tuesday (June 4)**