

CCMC 2026 Workshop

June 1-5, 2026 (*all times Eastern*)

Detailed Agenda

Monday 6/1:

07:30 am – 08:30 am Continental breakfast - available for registered participants in the break area by the Auditorium, hot breakfast available in the [Chesapeake Dining Room](#) for guests staying at the Maritime

Chair: *Gina DiBraccio*

08:30 am – 08:40 am Introductory Remarks, Stephanie Getty

CCMC Team Report

08:40 am – 09:15 am 01 CCMC Team Report Highlights, Masha Kuznetsova

09:15 am – 10:00 am 02 Demos by CCMC team, 02a Jack Topper, 02b Maksym Petrenko, 02c Darren De Zeeuw - Runs-on-Request (RoR) and Instant Runs (IR) [[details](#)]

10:00 am – 10:30 am Coffee Break

Chair: *Jeffrey Hayes*

Agencies's Views

10:30 am – 10:45 am 03 NASA Heliophysics view of CCMC, Joe Westlake

10:45 am – 11:00 am 04 CCMC Role in the NASA Space Weather Program, Jamie Favors

11:00 am – 11:10 am 05 CCMC support of NSF science and space weather program, Mangala Sharma^{VIRTUAL}

11:10 am – 11:20 am 06 SRAG-CCMC partnership, Ricky Egeland

11:20 am – 11:30 am 07 Outlook on Expanding SWPC-CCMC partnership, Hazel Bain

11:30 am – 11:40 am 08 Vigilance by Design, Lt Col Lauren "Q" McQuone, USSPACECOM Senior METOC Officer

11:40 am – 11:50 am 09 CCMC support of the LWS program, Kelly Korreck^{VIRTUAL}

11:50 am – 12:00 pm 10 CCMC support of the Solar Max Campaign, Janet Kozyra

12:00 pm – 01:30 pm Lunch provided ([Chesapeake Dining Room](#))

Chair: *Joe Minow*

Demos by CCMC team

01:30 pm – 02:00 pm 01 ISWA updates, Rick Mullinix

02:00 pm – 02:15 pm 02 DONKI Dash, Tyler Schiewe

Highlights of Moon and Mars products

02:15 pm – 02:20 pm 03 Moon and Mars ISWA Dashboards, Claudio Corti

02:20 pm – 02:25 pm 04 Mars CME and SEP Scoreboards, Leila Mays

02:25 pm – 02:35 pm 05 LRO CRaTER Data on ISWA, Tim Stubbs

02:35 pm – 02:45 pm 06 Using observations and simulations to specify the lunar environment, David Sibeck

02:45 pm – 03:00 pm 07 Moon and Mars OpenSpace live demo, Anders Lundkvist

03:00 pm – 03:30 pm Coffee Break

03:30 pm – 04:30 pm

Chair: *Spiro Antiochos*

Optimizing the Role of the CCMC in Future Modeling (discussion panel)

Moderator: Spiro Antiochos

Panelists: Tamas Gombosi, Jon Linker, Gian Luca Delzanno, Slava Merkin, Joe Huba

08 [[details](#)]

04:30 pm – 05:15 pm

Chair: *Yuri Shprits*

AI's impact on Research, CCMC Services, and the Modeling Community

(discussion panel)

Discussion Moderators: Jack Topper, Yuri Shprits

Panelists: Paul O'Brien, Lika Guhathakurta

09 Scene setting presentations: 09a Jack Topper [5 min], 09b Paul O'Brien [5 min], 09c Lika Guhathakurta [5 min]

Discussion [30 min]

[[details](#)]

Tuesday 6/2:

07:30 am – 08:30 am Continental breakfast

Chair: *Erika Palmerio*

Solar/Heliosphere Models

- 08:30 am – 08:45 am 01 CORHEL and OFT, Jon Linker
08:45 am – 09:00 am 02 AWSoM + EEG Model at CCMC: Recent Updates and New Capabilities for CME Modeling, Nishtha Sachdeva
09:00 am – 09:15 am 03 GAMERA-Helio, Elena Provornikova
09:15 am – 09:30 am 04 WSA, Nick Arge, Daniel da Silva
09:30 am – 09:45 am 05 Enlil, Dusan Odstrcil
09:45 am – 10:00 am 06 OSPREI Runs on Request and Real Time Usage, Christina Kay

10:00 am – 10:30 am Coffee Break

Chair: *David Lario*

Solar/Heliosphere/SEP Models and Tools

- 10:30 am – 10:45 am 07 EPREM: Recent results, current status, and the path to version 1.0, Matt Young
10:45 am – 11:00 am 08 ARTICEPT: An Automated Solar Active Region Identification and Characterization Module for the SEPCaster Model, Sailee Sawant
11:00 am – 11:15 am 09 REleASE update and new products, Arik Posner
11:15 am – 11:30 am 10 Update on the SEPSTER Solar Energetic Particle Prediction Model, Ian Richardson
11:30 am – 11:45 am 11 SEPForecast, Siemen Burssens^{VIRTUAL}
11:45 am – 12:00 pm 12 SEP Knowledgebase, Ricky Egeland

12:00 pm – 01:30 pm Lunch provided ([Chesapeake Dining Room](#))

Chair: *Delores Knipp*

Coupled Geospace and Beyond MHD

- 01:30 pm – 01:45 pm 01 Conductance in SWMF Geospace: Impacts and Availability, Dan Welling
01:45 pm – 02:00 pm 02 Recent developments and status of the Multiscale Atmosphere-Geospace Environment (MAGE), Slava Merkin
02:00 pm – 02:15 pm 03 MARBLE, John Dorelli^{VIRTUAL}
02:15 pm – 02:30 pm 04 OpenGGCM at AFRL, Bashi Ferdousi
02:30 pm – 02:45 pm 05 Beyond MHD: HYPERS, Yuri Omelchenko
02:45 pm – 03:00 pm 06 Beyond MHD: SPS, Gian Luca Delzanno
03:00 pm – 03:30 pm Coffee Break

Chair: *Marcin Pilinski*

ITM and Whole Atmosphere Models

- | | |
|---------------------|---|
| 03:30 pm – 03:45 pm | 07 WACCM-X/CESM3, Nick Pedatella ^{VIRTUAL} |
| 03:45 pm – 04:00 pm | 08 CAM-NET: An AI-Based Whole Atmosphere Model with
Thermosphere–Ionosphere Extension for Potential Deployment at
CCMC, Jiahui Hu |
| 04:00 pm – 04:15 pm | 09 HIAMCM, Erich Becker ^{VIRTUAL} |
| 04:15 pm – 04:30 pm | 10 GITM, Aaron Ridley |
| 04:30 pm – 04:45 pm | 11 TIE-GCM v3.0, Wenbin Wang |
| 04:45 pm – 05:00 pm | 12 GEOS/MLT, Andrew Lee |

Wednesday 6/3:

07:30 am – 08:30 am Continental breakfast

Chair: *Wenbin Wang*

Ionosphere/Thermosphere Space Weather Impacts (neutral density, plasma bubbles, ionospheric irregularities)

08:30 am – 08:45 am 01 MSIS 3.0, John Emmert

08:45 am – 09:00 am 02 Neutral Density Equivalent Power: Interpreting and Communicating Data Assimilative Drivers of Thermospheric Models, Marcin Pilinski

09:00 am – 09:15 am 03 Real-time DTM, Sean Bruinsma^{VIRTUAL}

09:15 am – 09:30 am 04 Centers of Excellence-SWORD, Aaron Ridley

09:30 am – 09:45 am 05 Centers of Excellence-SPARTA, John Retterer

09:45 am – 10:00 am 06 SAMI-3, Joe Huba

10:00 am – 10:30 am Coffee Break

Chair: *Yuri Shprits*

Near Earth Radiation and Plasma Environment

10:30 am – 10:44 am 07 Arase & future research direction, Yoshi Miyoshi^{VIRTUAL}

10:44 am – 10:58 am 08 Recent inner mag model development, Weichao Tu

11:58 am – 11:12 am 09 VERB updates, Yuri Shprits

11:12 am – 11:26 am 10 Geosynchronous Electron Flux Forecaster, Geoff Reeves

11:26 am – 11:40 am 11 IMPTAM, Natalia Ganushkina

11:40 am – 11:54 am 12 NAIRAS for Earth's vicinities, Chris Mertens

11:54 am – 12:00 pm 13 Python tools: Rbamlib and MTH5, Alexander Drozdov^{VIRTUAL}

12:00 pm – 01:30 pm Lunch provided ([Chesapeake Dining Room](#))

Chair: *Gabor Toth*

Moon and Mars natural environments

01:30 pm – 01:45 pm 01 Artemis/Moon Base Program Natural Environments, Emily Willis

Mars Modeling

01:45 pm – 02:00 pm 02 Space Environment Modeling at Mars: Using the SWMF to Couple the Upper Atmosphere with the Magnetosphere, Steve Bougher

02:00 pm – 02:15 pm 03 Mars GITM, Dave Pawlowski

Mars Space Weather Products

02:15 pm – 02:25 pm 04 Mars Space Weather Products Project, Gina DiBraccio

02:25 pm – 02:37 pm 05 Mars Products: Mars Odyssey HEND, Andrew Gardner

02:37 pm – 02:49 pm 06 The Martian sunspot record from the Curiosity and Perseverance rover cameras, Mark Lemmon

02:49 pm – 03:00 pm 07 MSL/RAD, Bent Ehresmann

03:00 pm – 03:30 pm Coffee Break

Chairs: *Weichao Tu, Geoff Reeves*

Near Earth Radiation and Plasma Environment

03:30 pm – 03:45 pm 08 Lunar charging, Tim Stubbs
03:45 pm – 04:00 pm 09 CIMI updates, Mei-Ching Fok
04:00 pm – 04:15 pm 10 BSPM and ERB.AI, Edith Botek
04:15 pm – 04:30 pm 11 ORIENT updates, Donglai Ma^{VIRTUAL}
04:30 pm – 04:45 pm 12 The SEP rigidity cutoff model, Janet Green^{VIRTUAL}
04:45 pm – 05:00 pm 13 SEP modeling in the magnetosphere, Valeriy Tenishev^{VIRTUAL}
05:00 pm – 05:15 pm 14 RAM-SCB updates, Steve Morley^{VIRTUAL}

Thursday 6/4:

07:30 am – 08:30 am Continental breakfast

Space weather capabilities assessment at different stages of the R2O2R process

Presentations in this session are telling the story of moving through the R2O2R pipeline: development partners - CCMC - operational partners

Chair: *Lulu Zhao*

08:30 am – 08:35 am 01 Introduction: Moving through the R2O2R pipeline: development partners - CCMC - operational partners, Masha Kuznetsova

Validation for historic time periods, Assessment Scorecards

Structured collections of validation test cases (validation suites): ESEQs (simulated and observed) and metrics used to measure, benchmark, and validate the performance, robustness and costs. Each presentation should include assessment scorecards at least for a subset of models

08:35 am – 08:50 am 02 CAMEL Ambient Solar Wind, Martin Reiss
08:50 am – 09:05 am 03 SEPVAL, Katie Whitman
09:05 am – 09:20 am 04 Designing a GEM GMD/GIC Modelling Challenge 15 Years On: Insights, Capabilities, and Priorities, Doga Ozturk
09:20 am – 09:32 am 05 Spacecraft charging, Sandeep Kumar, Yihua Zheng
09:32 am – 09:46 am 06 Ionosphere variability and HF signal propagation, Min-Yang Chou
09:46 am - 10:00 am 07 Atmosphere density and satellite drag, Jack Wang
10:00 am – 10:30 am Coffee Break

Chair: *Ricky Egeland*

Real-time Runs, Scoreboards, and Space Weather Products

10:30 am – 10:55 am 08 Software frameworks for real-time runs and Scoreboards, Chinwe Inko-Tariah, Joycelyn Jones
CCMC tools for ingestion and dissemination of space weather products,
- ISWA Ingest, Richard Mullinix
- Products tailored for user needs
10:55 am – 11:10 am 09 Advancing RLs for SEP real-time runs, Claudio Corti
11:10 am – 11:25 am 10 Solar wind real-time runs and Scoreboard planning, Leila Mays, Martin Reiss
11:25 am – 11:35 am 11 Icarus: time-dependent solar wind and CME modelling, Tinatin Baratashvili ^{VIRTUAL}
11:35 am – 11:50 am 12 Advancing RLs for SWxCOE CLEAR center real-time models, Lulu Zhao

11:50 am – 12:00 pm 13 Implementation of real-time TIE-GCM runs at CCMC, Nikhil Rao

12:00 pm – 01:30 pm Lunch provided ([Chesapeake Dining Room](#))

Chair: *Jeff Cox*

Forecast validation

01:30 pm – 01:45 pm 01 Space Weather Program annual assessment reports, Jamie Favors

01:45 pm – 02:00 pm 02 Roadmap to Solar Flare Forecast Validation, KD Leka

02:00 pm – 02:20 pm 03 CME Scoreboard and IMF Bz Forecast Validation, Christina Kay

02:20 pm – 02:35 pm 04 SPHINX+VIVID real-time validation platform for SEPs, Katie Whitman, Phil Quinn

02:35 pm – 02:50 pm 05 Validating the Solar Indices Forecasting Tool (SIFT), Sam Schonfeld^{VIRTUAL}

02:50 pm – 03:20 pm Coffee break

Chair: *Xia Cai*

Product evaluations by operational partners

03:20 pm – 03:30 pm 06 Accelerating SWx Readiness Levels with Co-Development, SWxP-IO, Emily Berndt^{VIRTUAL}

03:30 pm – 03:45 pm 07 SSC and SWAFS space weather efforts and use of the CCMC products, Jeff Cox

03:45 pm – 04:00 pm 08 Space Weather Prediction Testbed Partnership with CCMC, Hazel Bain

04:00 pm – 04:15 pm 09 Real-time prototyping of products at CCMC by M2M/SWAO analysts, Michelangelo Romano

04:15 pm – 04:25 pm 10 NASA Space Weather Program – Implementation Office (SWxP-IO) Transition Considerations, Shawn Britton

04:25 pm – 05:15 pm

CCMC role in R2O2R and advancing RLs [discussion panel]

Moderator: [Paul O'Brien](#) (Aerospace Corporation)

Panelists: [Jamie Favors](#) (NASA Space Weather Program, Director), [Xia Cai](#) (Space Weather Program Implementation Office, Chief Scientist), [Shawn Britton](#) (Space Weather Program Implementation Office, Program Manager), [Hazel Bain](#) (NOAA SWPC Testbed), [Ale Pacini](#) (NOAA SWPC Operations), [Jeff Cox](#) (USAF/USSF, Aerospace Corporation), [Katie Whitman](#) (NASA JSC/SRAG), [Lulu Zhao](#) (SWxCoE CLEAR), [Matthew Proctor](#) (SWxCoE SPARTA)

Questions:

- What are recent major improvements in the R2O2R and what are major challenges that slow down the R2O2R process?

- How do we leverage the CCMC to accelerate the R2O2R cycle?
- How do we feed R2O lessons learned back to the research community?
- Other questions from the audience?

[\[details\]](#)

Friday 6/5:

07:30 am – 08:30 am Continental breakfast

Chair: *Arik Posner*

Moon and Mars Space Weather: Requirements, Data, and Models

08:30 am – 08:50 am 01 Mars Space Weather and Mars Space Weather Requirements
ISWAT team, Beatriz Sanchez-Cano

08:50 am – 09:00 am 02 Moon and Mars NAIRAS, Chris Mertens

09:00 am – 09:15 am 03 SEPSTER3D: Extending Empirical SEP Predictions from Earth
to Mars, Alessandro Bruno

09:15 am – 09:30 am 04 MarsGRAM, Hilary Justh

09:30 am – 09:45 am 05 MGCM, Melinda Kahre / Amanda Brecht^{VIRTUAL}

09:45 am – 10:00 am 06 Mars BATSRUS, Yingjuan Ma^{VIRTUAL}

10:00 am – 10:30 am Coffee Break

Chair: *Todd Blum*

ML/AI Transformation of Modeling and Forecasting

10:30 am – 10:45 am 07 Faster R2O with Reanalysis and AI/ML Paul O'Brien

10:45 am – 10:55 am 08 AI/ML products and partnership with CCMC,
Madhulika Guhathakurta

10:55 am – 11:05 am 09 Science of Space Weather Forecasting: ML assisted
Physics-based Simulations, Talwinder Singh/Nick Pogorelov

11:05 am – 11:15 am 10 Storm-time Dst Forecast Using Physics Constrained Pattern
Recognition Method, Yongliang Zhang/Larry Paxton

11:15 am – 11:25 am 11 AI-driven Models of Solar Wind - Upper Atmosphere
Interactions and their Applications to Space Weather
Forecasting, Hyunju K. Connor

Space Weather Training Network (mini-ISWAT@CCMC: O4-02)

11:25 am – 11:40 am 12 User focused training: Aviation, Rondeau Flynn

11:40 am – 11:55 am 13 CCMC-ESWAN School Collaboration, Petra Vanlommel^{VIRTUAL}

11:55 am – 12:00 pm Discussion

12:00 pm – 01:00 pm Lunch provided ([Chesapeake Dining Room](#))

Chair: *Adam Szabo*

CCMC interfaces with observational data centers

01:00 pm – 01:15 pm 01 HQ view on CCMC interfaces with NASA Heliophysics data centers: SDAC, SPDF, and DISH, Jared Bell

Enhanced usability via effective service interfaces: Ongoing projects and future plans

01:15 pm – 01:25 pm 02 CCMC, SPDF, SDAC, DISH APIs
Rick Mullinix (CCMC), Lan Jian (SPDF), Jack Ireland (SDAC),
Brian Thomas (DISH)

01:25 pm – 01:40 pm 03 Low latency data at CCMC/ISWA, SPDF, SDAC
Rick Mullinix (CCMC), Lan Jian (SPDF), Jack Ireland (SDAC)

01:40 pm – 02:00 pm 04 Interfaces between CCMC and SDAC:
*CCMC/DONKI, Flare Scoreboard, OpenSpace and
SDAC/Helioviewer interlinks*
Leila Mays, Anders Lundkvist (CCMC), Daniel Garcia Briseno,
Kasim Necdet Percinel (SDAC)

02:00 pm – 02:20 pm 05 Interfaces between CCMC and SPDF:
CCMC simulated products and SPDF data, tools interlinks
Darren De Zeeuw (CCMC), Fernando Carcaboso Morales (SPDF)

02:20 pm – 02:40 pm 06 Interfaces between CCMC and DISH: *HelioData*
Maksym Petrenko, Leila Mays (CCMC), Brian Thomas (DISH)

02:40 pm – 03:00 pm Discussion

03:00 pm – 03:15 pm Coffee break

Chair: *Jared Bell*

Improving search and discovery

03:15 pm – 03:30 pm 07 Phenomena ontology resources, Ryan McGranaghan^{VIRTUAL}

03:30 pm – 03:40 pm 08 Paper metadata enrichment with AI, Anthony Buonomo

03:40 pm – 04:30 pm

Facilitating community studies of significant events

Contributors: Janet Kozyra (NASA HQ, organiser), Delores Knipp (CU Boulder), Masha Kuznetsova (CCMC facilitator), Lan Jian (SPDF), Jack Ireland (SDAC), Brian Thomas (DISH), Tyler Schiewe (CCMC)

Goals:

- Define attributes/characteristics of significant space weather events (impacts and geospace 'effects'). Go beyond NOAA scales and Kp/Dst.
- Define types of impacts and geospace effects associated with storms. Quantify thresholds / magnitudes of impacts and effects.
- Contribute to Heliophysics Solar Max Campaign. Interconnect phenomena and trace flows of processes from impacts/effects to origins.

- Define significant events of interest to the community (storms, observed events, crossings/flybys, ..).
- Outline actions for CCMC and HDRL in support of significant event studies.

3:40 - 3:43 pm 09 Janet Kozyra: Introduction, Goals

3:43 - 3:55 pm 10 Delores Knipp:

- What constitutes an 'impact'?
 - **Reported** failures, interruptions or hardware/signals whose behavior significantly deviated from expectations
 - **Consequences** of above that alter decisions/actions
 - **Suspected or anticipated** realizations 'of the above' based on operations and/or science measurements or anecdotal reports
- What constitutes a geospace 'effect'?
 - **Indices and Proxies?**
 - **Phenomena:** equatorward aurora, penetration electric field, ring current etc?
 - **Phenomena that deeply engage** citizens or 'citizen scientists'?
 - Anything else?
- Event comparisons/contrast
 - For 'educational' purposes
 - Actual vs counter-factual events

3:55 - 4:05 pm 11 Janet Kozyra

- How can we contribute to the Heliophysics Solar Max Campaign?
- What observations are available to quantify geospace effects and interconnect phenomena associated with storms?
- How to interconnect phenomena and trace flows of processes from impacts/effects to origins.
-

4:05 - 4:20 pm 12 Brian Thomas, Jack Ireland, Lan Jian

- HDRL approach to facilitating studies of significant events

4:20 - 4:30 pm 13 Masha Kuznetsova

- CCMC efforts to facilitate studies of significant events
- Action plan

[\[details\]](#)

[\[community inputs\]](#)

