Space Weather Products at the Community Coordinated Modeling Center

M Hesse, M. Kuznetsova, A. Pulkkinen, M. Maddox, L. Rastaetter, D. Berrios, and P. MacNeice

CCMC and SWL

NASA Goddard Space Flight Center
Opportunities: Model Development

• Rapid model development schedule continually produces new capabilities

• Real-time calculations produce valuable space weather information

• SWx information and tools can be made available on-line

• New, innovative dissemination technologies, e.g., Google-Earth-based
Forecasting Agency Support

Model run at CCMC

Tool used at AFWA, SWPC, …
Customer feedback

Model run at forecasting centers

*folds tool development and operator education into process*
Flare Monitoring Product (U. Bradford, UK)
Magnetic Connectivity Product

input from AFWA
Example: Solar Wind Forecasts

Model: WSA/ENLIL (CISM), SWMF (CSEM)
New Product: Hemispheric Heating
ITM and Ground

GIC Warning:
Electric power grid safety
Updated every 4mins
~45min forecast
Different mode for CME events

Model: WSA/ENLIL, SWMF, A. Pulkkinen

HF absorption:
Executing in real-time

Model: AbbyNormal V. Eccles (USU)
iswa.gsfc.nasa.gov, >120 products!
Innovative dissemination: Google Earth
Summary

- CCMC developed a set of (>120) on-line SWx tools
- Tools have been refined through input from AFWA and NASA Mission Operators
- Providing SWx information for NASA’s robotic mission operators, and working with NASA’s SRAG
- CCMC established close working relation with AFWA
- CCMC providing transition to operation support to NOAA’S SWPC for the WSA/ENLIL (CISM) model combination
- CCMC is leading a geospace model evaluation effort for NOAA/SWPC
- CCMC supporting commercial SWx interests
  - Electric power research institute
  - Space Environment Technologies
- Looking forward to new opportunities for collaborations, including internationally