Space Weather Products at the Community Coordinated Modeling Center

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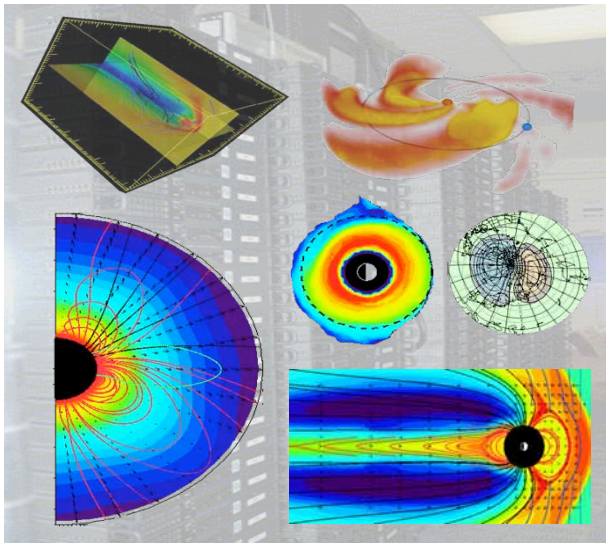
CCMC and SWL

NASA Goddard Space Flight Center

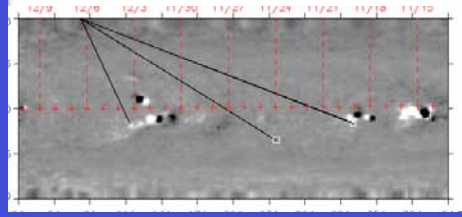


Opportunities: Model Development

- 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

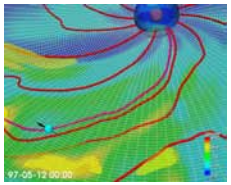
Forecasting Agency Support

Model run at CCMC



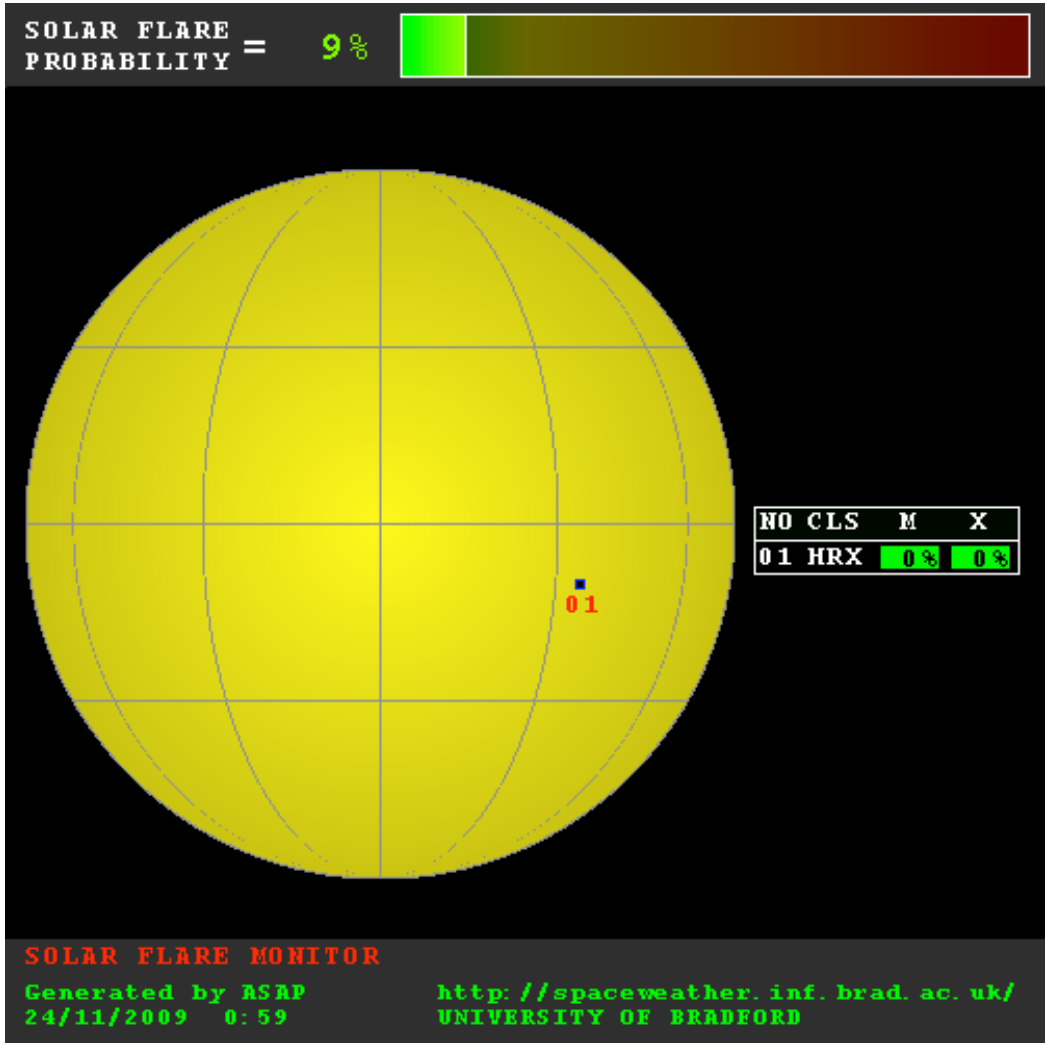
Tool used at AFWA, SWPC, …
Customer feedback

Model run at forecasting centers

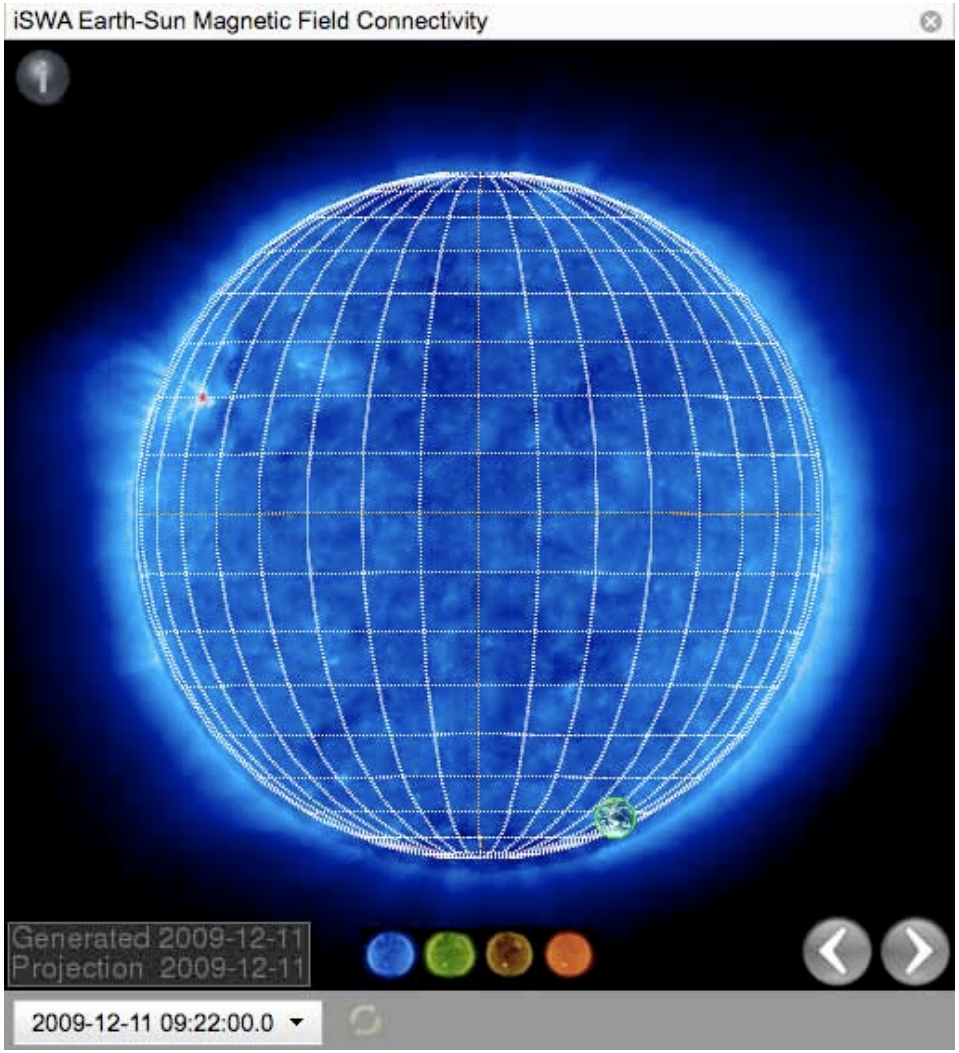


folds tool development and operator education into process

Flare Monitoring Product (U. Bradford, UK)

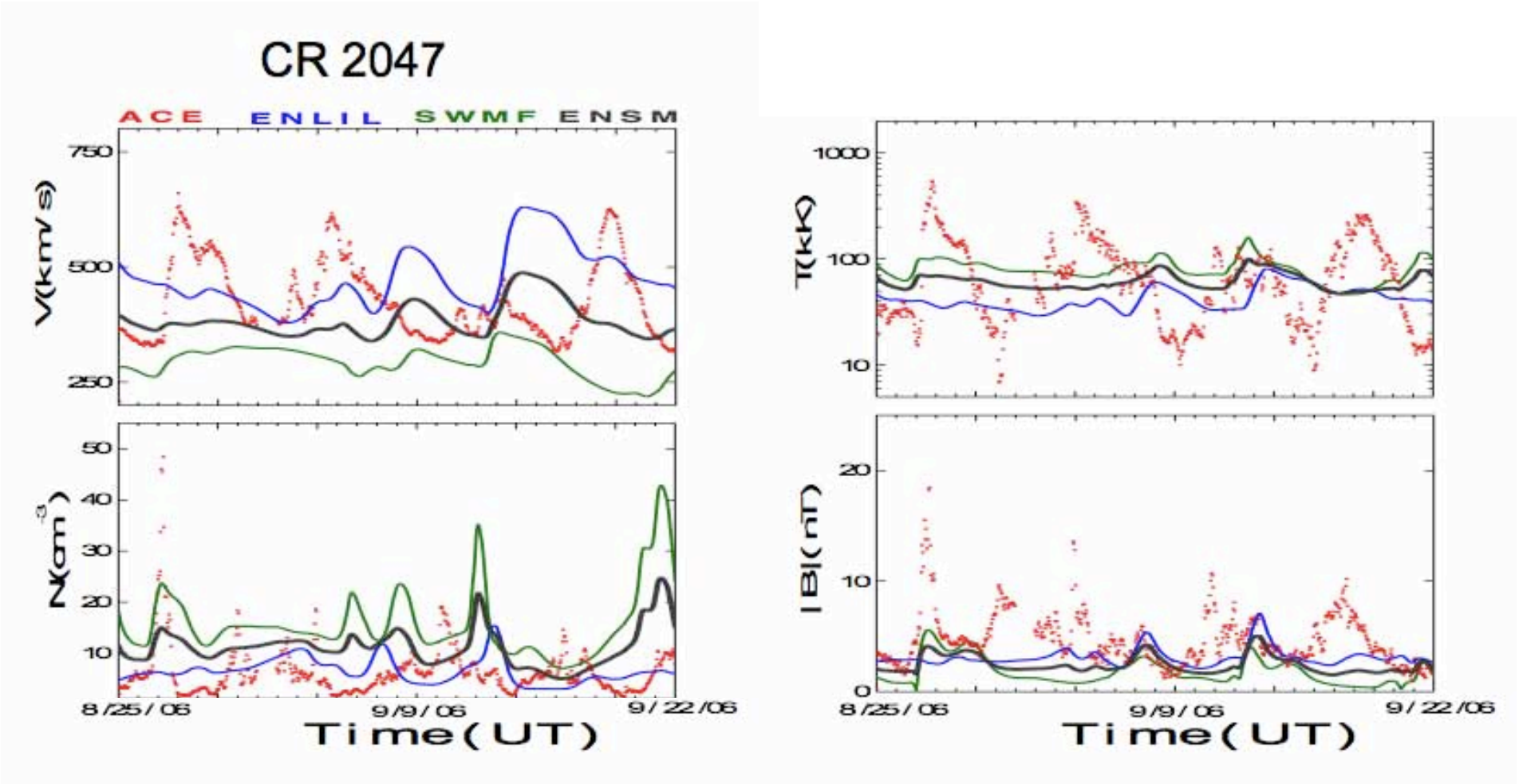


Magnetic Connectivity Product



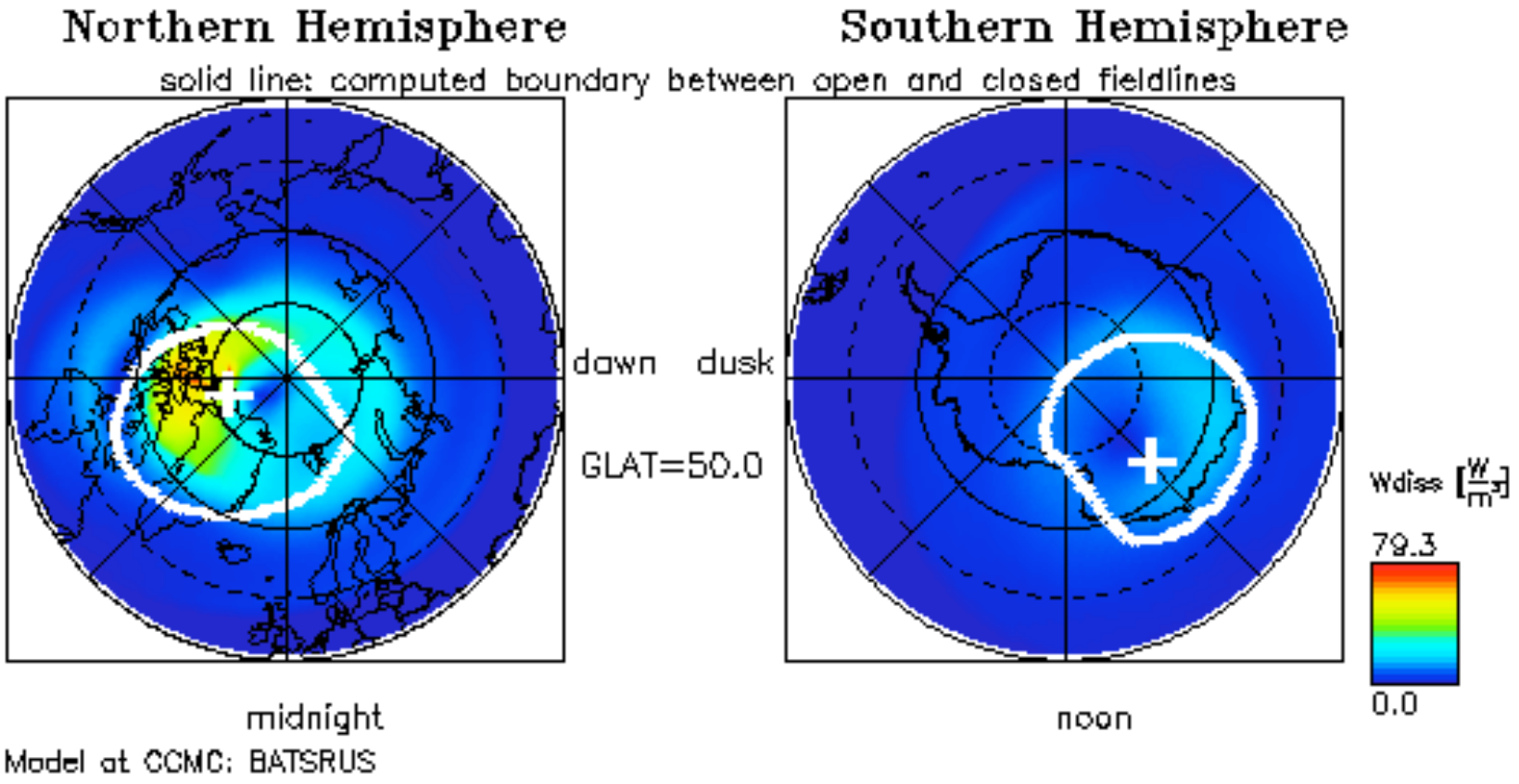
input from AFWA

Example: Solar Wind Forecasts

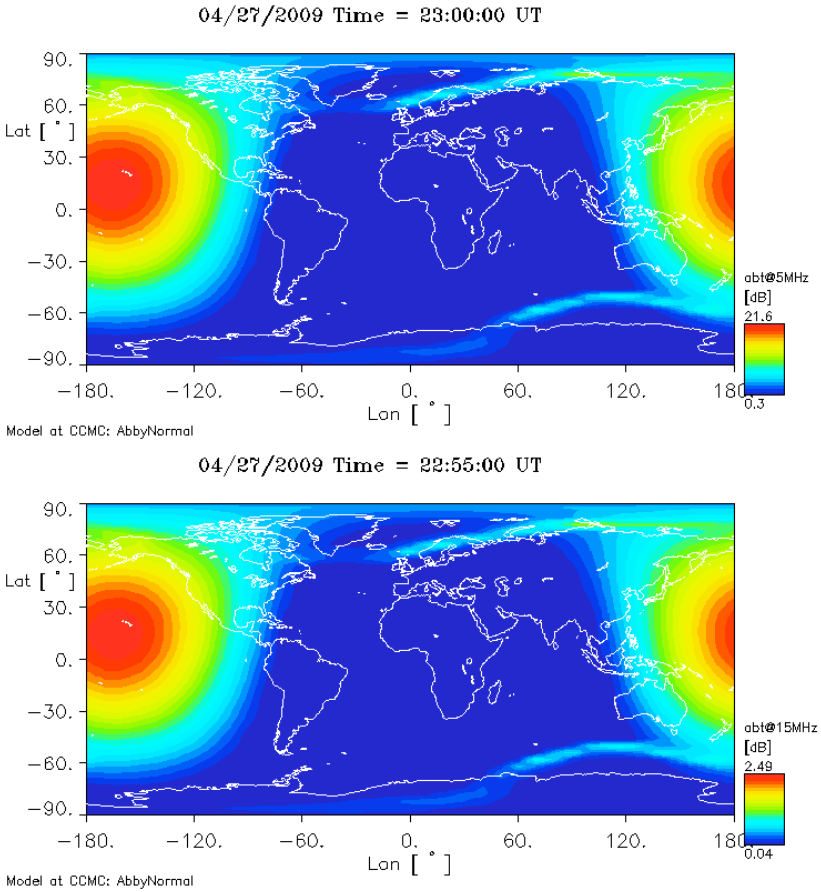


Model: WSA/ENLIL (CISM), SWMF (CSEM)

New Product: Hemispheric Heating

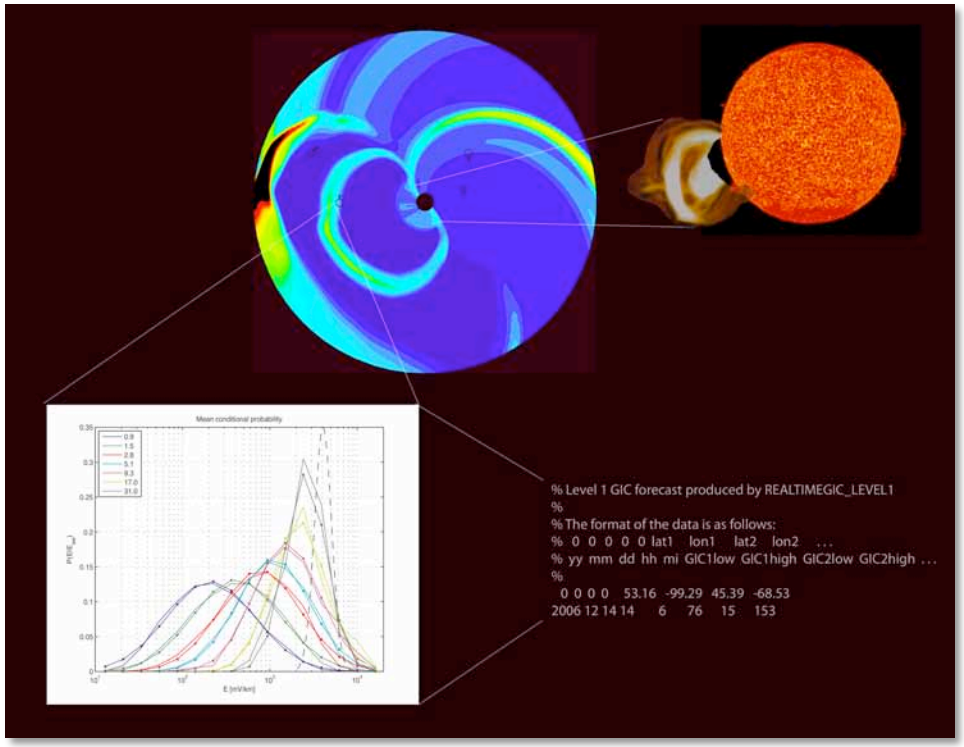


ITM and Ground



HF absorption:
Executing in real-time

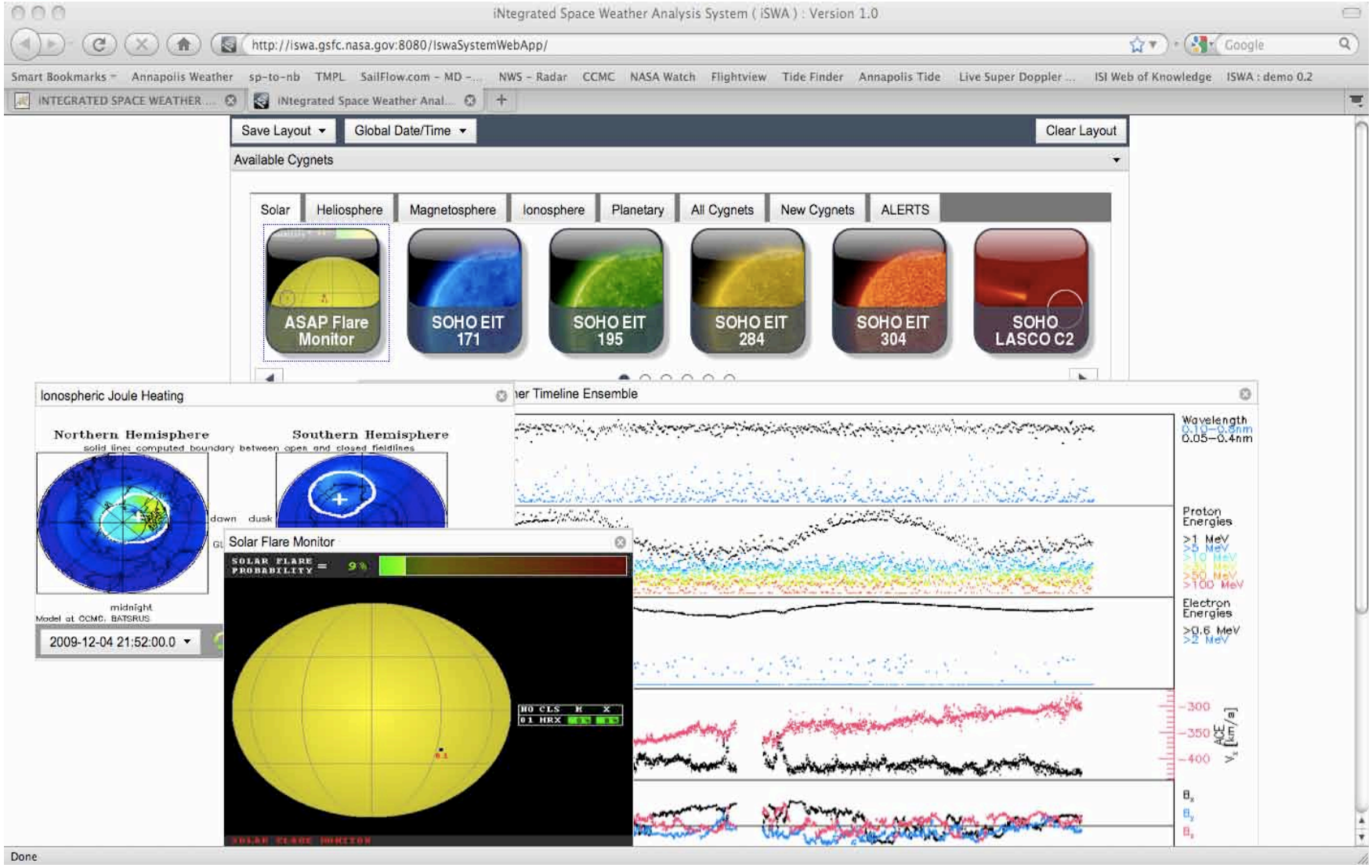
Model: AbbyNormal V. Eccles (USU)



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

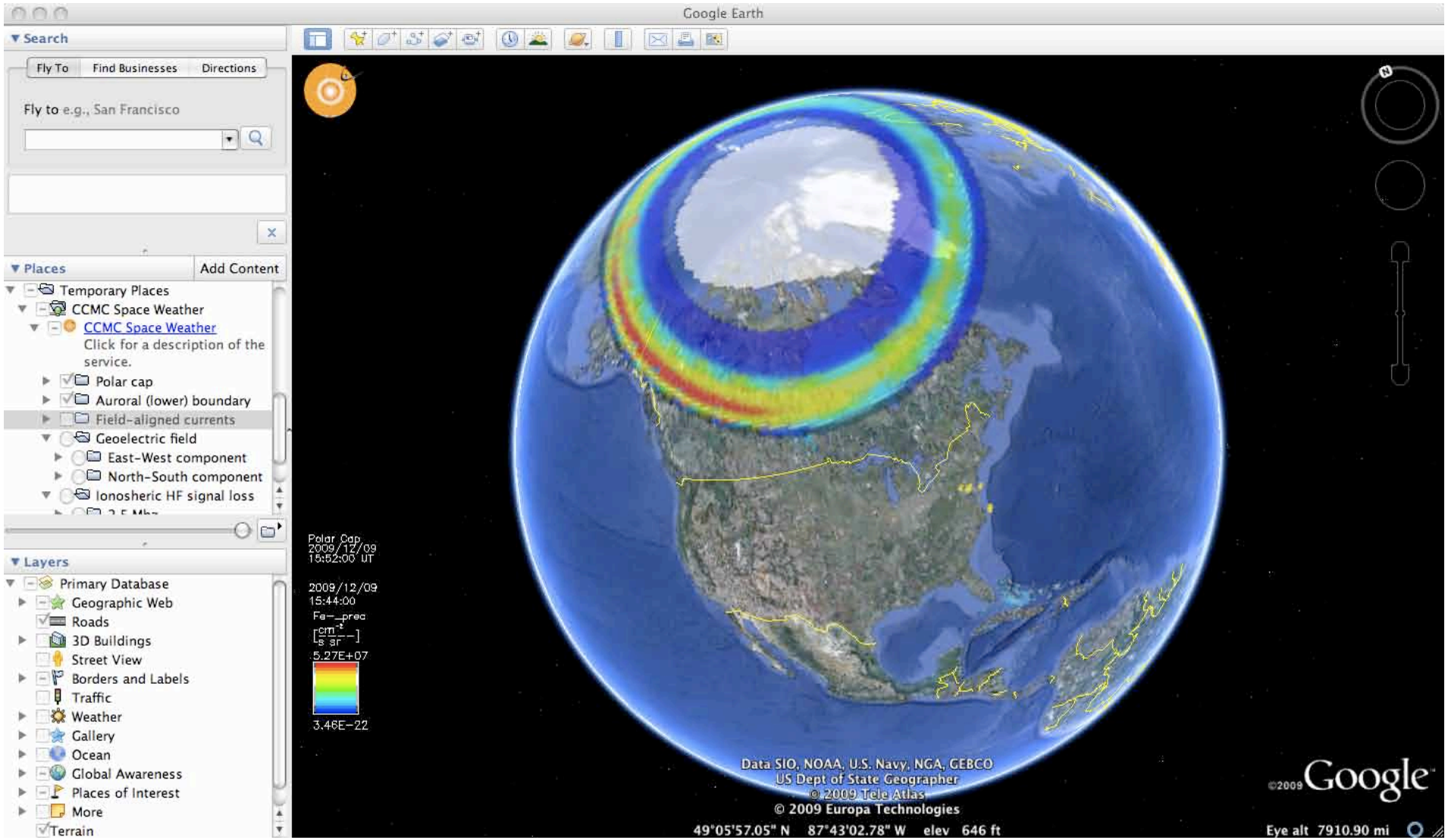
Model: WSA/ENLIL, SWMF, A. Pulkkinen

iSWA



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