

SWPC – CCMC Collaborations

Rodney Viereck

Director, Space Weather Prediction Testbed

Howard Singer

SWPC Chief Scientist

Outline:

**SWPC Needs and Requests from
CCMC and the Research Community**

R20 and O2R

SWPC Activities: Modeling and Data for Space Weather Forecasting

(Partnering with the World)

Sun:

ADAPT (USAF)
WSA (USAF)
GONG Solar Magnetograms (National Sol. Obs.)
Flare Prediction (NWRA)
Fareside Solar Imaging (NWRA)
EUV Irradiance (SWPC)

Solar Wind:

Enlil (G. Mason U.)
DSCOVR (NASA DOD)
L1-Earth Transit (SWPC)

Magnetosphere:

GOESPACE (U. Mich.)
GOES Magnetopause Model (SWPC)

Ionosphere:

IPE (SWPC)
CTIPe (SWPC)
US-TEC/NA-TEC (SWPC)
Global TEC (SWPC)
COSMIC II (NESDIS)
Ground GPS Data (USGS)
GOLD (NASA)
ROTI (PRA/JPL)
Ionospheric Scintillation (SWPC)

Aurora:

30 Minute Forecast (JHU-APL)
3 Day Forecast (SWPC)

Thermosphere

WAM (SWPC EMC)
CTIPe (SWPC)

Ground:

E-Field (SWPC, USGS)

R2O: Possibilities for Near-term CCMC-SWPC Collaboration

- Model Evaluation and Validation
 - Aviation Radiation Model
 - Model assessment and selection
 - ADAPT-WSA-Enlil
 - Evaluation of updated versions
 - Geospace Model Evaluation
 - Beyond the current operational model
 - Electric Field Model
- Developing new capabilities
 - Data assimilation
 - Ensemble modeling

O2R: Providing the Research Community with High Priority Goals for Space Weather Research

- Forecast Bz within a CME when it arrives at Earth
- Forecast solar flares (timing and magnitude)
- Forecast Solar Energetic Proton events
- Specify and forecast the radiation levels at LEO and aircraft altitudes
- Forecast ionospheric TEC gradients and scintillation
- Data assimilation
- Ensemble modeling

SORM and SWAP

Improving R2O and O2R

5.6 Improve the effectiveness and timeliness of the process that transitions research to operations

5.6.1 Establish an R2O Center: NASA and NSF with participation from NOAA and DOD.

- Assess and select new data and models for transition to operations
- Compare new models and capabilities with current operational models

5.6.2 Establish an O2R capability: DOC and DOD with participation from NASA and DOD.

- Improve and upgrade existing operational models

Summary

- R2O: SWPC and CCMC Collaborate in the testing , assessment, validation, and selection of models for transition
- O2R: CCMC is part of the conduit from operations to research, translating the operational needs for new research.
- SWAP: SWPC and CCMC (NOAA and NASA) will work together to define the future of R2O and O2R