

RWC USA – 2014 Annual Report

- Recent Accomplishments
- High Priority Product Goals
- High Priority Data Needs
- User Impact Summary
- Forecast Verification



Recent Accomplishments

- Evaluation of Geospace Models
 - MHD Magnetosphere model selected University of Michigan
 - Will be implement into operations
- L1 Requirements Workshop (DSCOVR Follow-on)
 - Workshop report will be released
- Discussion on Ionospheric Scales
 - Regional participation recommended to develop measures of gradients, TEC departures from climatology, rapid temporal changes
- Solar energetic particle intercalibration workshop
- New Aurora forecast product
- New spacecraft anomalies product



High Priority Product Goals

- Regional Geomagnetic Disturbance Products
 - Regional K and dB/dt from MHD Geospace model





High Priority Product Goals

- Ionospheric Disturbance Products
 - Rate of Change of TEC Index (ROTI)
 - Spatial gradients
 - Temporal gradients
 - TEC deviations from climatology
 - Solar radio burst interference
 - Development underway to couple operational numerical weather prediction model to ionosphere model



High Priority Data Needs

- Solar Wind Measurements at L1
 - DSCOVR (2015)
 - DSCOVR follow-on (2020?)
- Coronagraph
 - L1 coronagraph planned for DSCOVR follow-on
 - L5 coronagraph needed
- Ionospheric GNSS Radio Occultation
 - COSMIC-2 planned
 - Data assimilation under development for COSMIC-2



User Impact Summary – Electric Power

NERC

National Imperative --Power Grid Modeling



FERC ruling driving innovative solutions

NERC prepares draft geomagnetic disturbance benchmark description for rare event

Benchmark Geomagnetic Disturbance Event Description

Project 2013-03 GMD Mitigation Standard Drafting Team Draft: April 21, 2014

Innovative tools needed for analyzing the potential impact of geomagnetic disturbances

Power grid engineers to assess GMD risk posed to their systems.





User Impact Summary – Aerospace and Aviation

NBCnews.com

Huge solar flare delays private rocket launch to Space Station

Tariq Malik, Space.com

35 minutes ago



Orbital Sciences cargo delivery to ISS

Polar Airline Flights Re-routed





Energetic Proton Flux Geostationary Orbit



User Impact Summary – GNSS Wide Area **Augmentation System**

Total Electron Content Units x 10¹⁶ m⁻²



Message from Federal Aviation Administration to SWPC about loss of Wide Area Augmentation System Service:

"An Ionospheric Storm began on 2/27/14. The Satellite Operations Specialists were alerted at the WAAS O&M by a Significant Event 757 at 2120 Zulu. So far, LPV and LPV200 service has not been available in Eastern Alaska and Northeastern CONUS. At times, North Central CONUS and all of Alaska have lost LPV and LPV200 Service."







Forecast Verification Example



Verification results available at: http://www.swpc.noaa.gov/forecast_verification/