Agenda

- GGCM Metrics Challenge Status (10 min)
- Dst Challenge Results (40 min)
  - Dan Welling
  - Lutz Rastaetter
  - Discussion
- Auroral oval metrics study planning (30 min)
  - Yihua Zheng
  - Discussion
- Preparation to Summer Workshop. Ideas for joint GEM-CEDAR M&V session (20 min)
- Future plans

Metrics and Validation FG Status

- Current term (2005-2010) expires.
- New proposal fro 2010-2015 submitted. Five year term include 2 years leadership transition period.
  - Current Co-Chairs (during the transition period): Masha Kuznetsova (NASA GSFC/CCMC), Aaron Ridley (University of Michigan).
  - New Co-Chairs (after the transition period): Tim Guild (Aerospace Corporation)
- At the end of the two-year transition period we plan to
  - finish a first round of on-going metrics studies
  - present a report on the current state of GGCM modeling.
  - built the base for further model validation projects
- Facilitate modeling challenges for other FG.

Metrics Studies/Physical Parameters

Metric Study 1: Magnetic field at geosynchronous orbit
Metric Study 2: Magnetopause crossings by geosynch. satellite
Metric Study 3: Plasma density/temperature at geosynch. orbit
Metric Study 4: Ground magnetic perturbations
Metrics Study 5: Dst (added in 2009)
Metric Study 6: Heat flux into ionosphere (added in 2010)
Metrics Study 7: Auroral oval position (study of interest to US AF)

Events

Event 1: Oct 29, 2003 06:00 UT - Oct 30, 06:00 UT
Event 2: Dec 14, 2006 12:00 UT - Dec 16, 00:00 UT
Event 3: Aug 31, 2001 00:00 UT - Sep 01, 00:00 UT
Event 4: Aug 31, 2005 10:00 UT - Sep 01, 12:00 UT

Two more events were added in summer 2010 for metrics study 6 on request of Dayside FAC and Energy Deposition focus group:

Event 5: May 15, 2005 00:00 UT - May 16, 2005, 00:00 UT
Event 6: July 9, 2005 00:00 UT - July 12, 2005, 00:00 UT

Challenge Status Summary

- Study 1: Magnetic field at geosynchronous orbit
  - Rastaetter et al, SWJ, 2010

  Study 4: Ground magnetic perturbations
  - Pulkkinen et al, SWJ, in press, 2010
  - Reports are ready (Antti Pulkinnen, Lutz Rastaetter). Ready for publication.
  - Selected for the Operational Metrics by NOAA SWPC (Regional Kp, dB/dt)
- Study 3: Plasma parameters at geosynch. orbit
  - Simulations completed. Waiting for SOPA correction to plasma pressure (LANL team).
- Study 2: Magnetopause crossings by geosynch. satellite
  - LANL magnetopause in/out time series are ready (Michelle Thomsen).
  - Preliminary analysis done by Lutz
  - Baseline model comparisons to understand large differences in mp standoff distance produced by different models (most likely related to different inner boundary conditions)

Phys. Parameter/ Metrics Study	When Initiated	Deliverables /Expected completion			Relevant GEM research topics/ GEM FG co-sponsors
		Observ. data time series preparation	Database of model results	Paper upon 1st round (*) completion.	
1. Magnetic field at geosyn. orbit.	summer 2008	completed	completed	Rastaetter et al., 2010; Pulkkinen et al., 2010,a	Inner Magneto-sphere FG, RBSP
2. Magnetopause crossing by geosyn. satellites	summer 2008	completed	expected: 2011	expected: 2012	Dayside RA, Reconnection
3. Plasma parameters at geosyn.. orbit	summer 2008	expected: 2011	completed	expected: 2012	Inner Magneto-sphere FG
4. Ground magnetic perturbations	summer 2008	available	completed	Pulkkinen et al., 2010,a,b	(**)(***)
5. Dst Index	summer 2009	available	expected: 2011	expected: 2011	Inner Magneto-sphere FG,
6. Heat flux into ionosphere	summer 2010	expected: 2011	expected: 2011	expected: 2012	Dayside FACs and Energy Deposition FG (***)
7. Auroral oval	fall 2010	new			Inner Magneto-sphere FG (**)(***)

CCMC On-Line Metrics Tool Suite

- Simulation results submission interface

  Accepts time series derived from simulation results obtained outside the CCMC. Interactive file format check.

- Database of model settings

  Model setting (model/combination of models, version, number of grid cell, max resolution..) as a main database entry.

- On-line time series plotting tool.

  Observations and simulation output for different model settings at the same plot (for selected event, physical parameter, event, instrument)

- Configurable table of metric results

  Pick metric parameter, metric (skill score) type(s), event(s). Get a table of model setting descriptions with skill scores

Modeling Challenge Goals

- Address the differences between various modeling approaches
- Evaluate the *current* state of the space physics modeling
- Demonstrate effects of model coupling, grid resolution
- Encourage collaborations.
- Facilitate further model improvements.