GEM Challenge: Magnetic Fields at GOES Geosynchronous Satellites

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Also contributed:
CCMC staff and modelers

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Available data

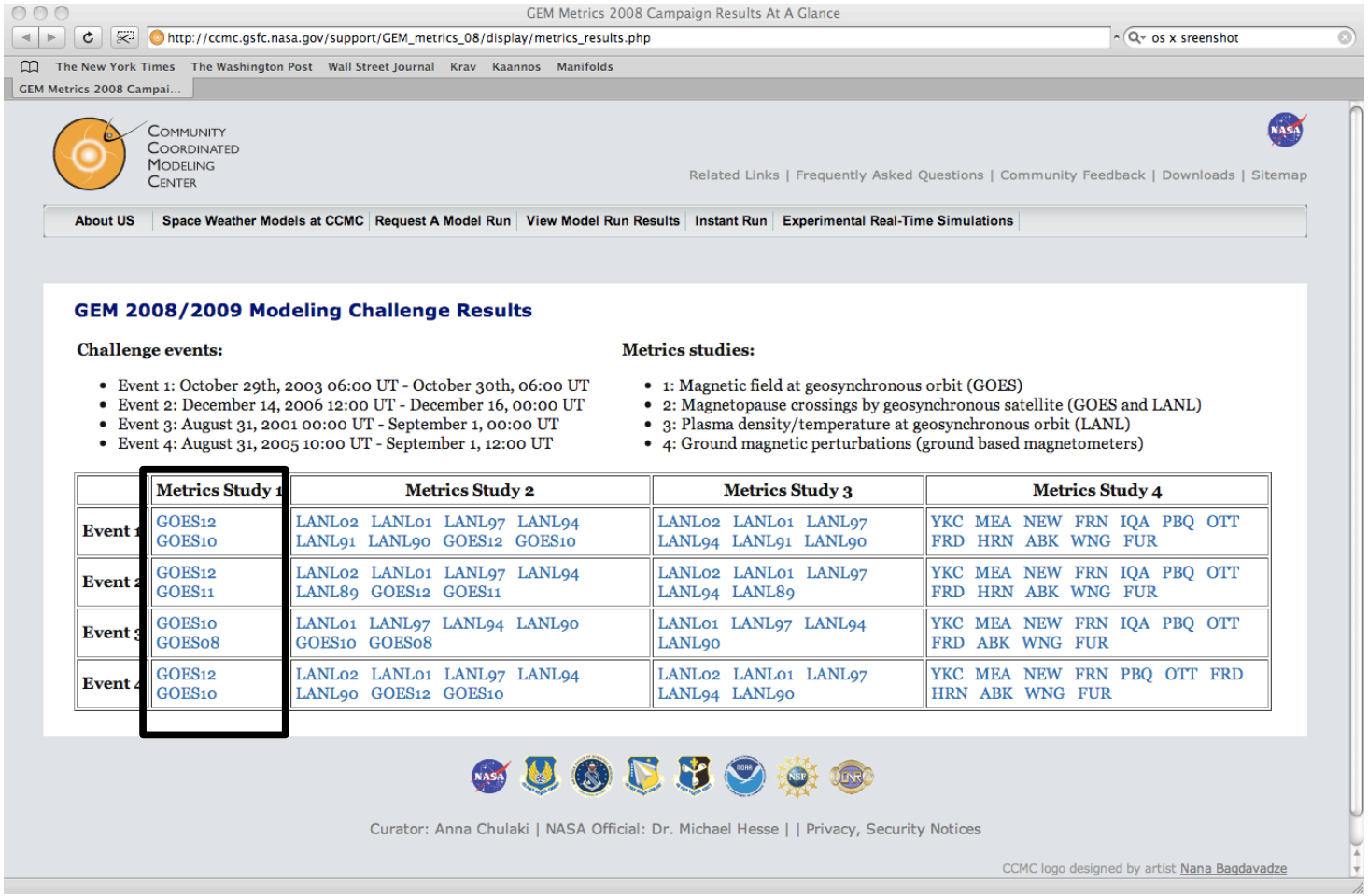
- GOES series, 2 s/c at each event:
- Event 1: GOES 10, 12
- Event 2: GOES 11, 12
- Event 3: GOES 08, 10
- Event 4: GOES 10, 12

Data preparation

- Data obtrained from CDAweb.
- Trajectories from SSCweb
- Small data gaps (a few minutes) interpolated to 1-minute cadence

Visualization

- Table to launch visualization at http:/ccmc.gsfc.nasa.gov/support/GEM_metrics_08/display/metrics_results.php



Visualization interface (Event 4, Metric 1, GOES10)

Update Plot *Update Plot* will update (generate) the plot with the chosen time and plot parameters below.
This will take some time (typically 10-30s) as data is read in and processed.

Start: Year: 2001 Month: 8 Day: 31 Hour: 0 Minute: 0 Second: 0
to End: Year: 2001 Month: 9 Day: 1 Hour: 0 Minute: 0 Second: 0

Choose **Quantity** to be displayed: B

Select quantity
(here: B, Bx,By,Bz)

Plot Options:
Image magnification 1
Line thickness 3
Character thickness 3 (all annotations)
Lock plot range:
Min.: -1 Max.: 1

Select model settings

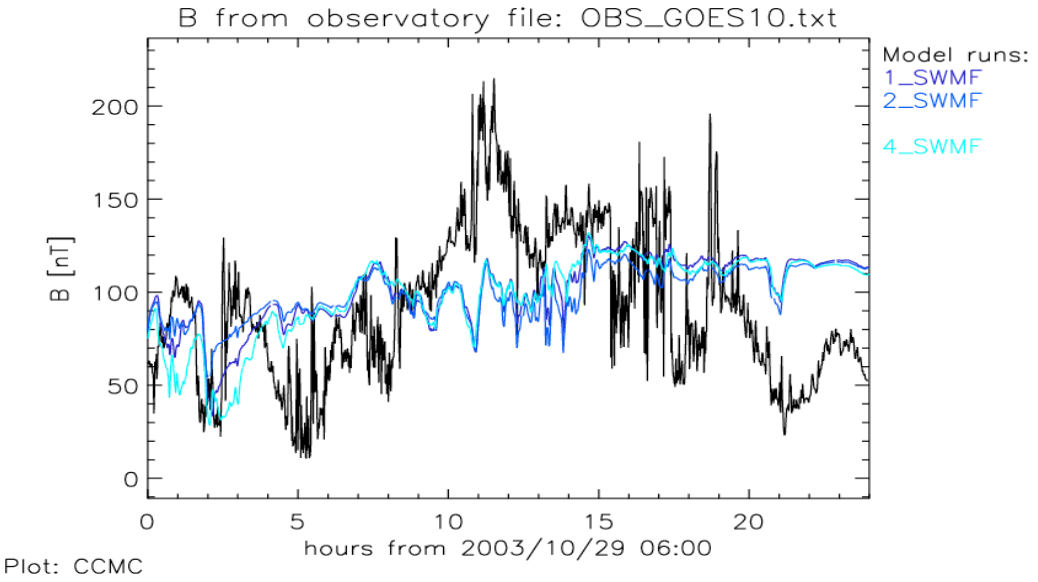
Available
model settings

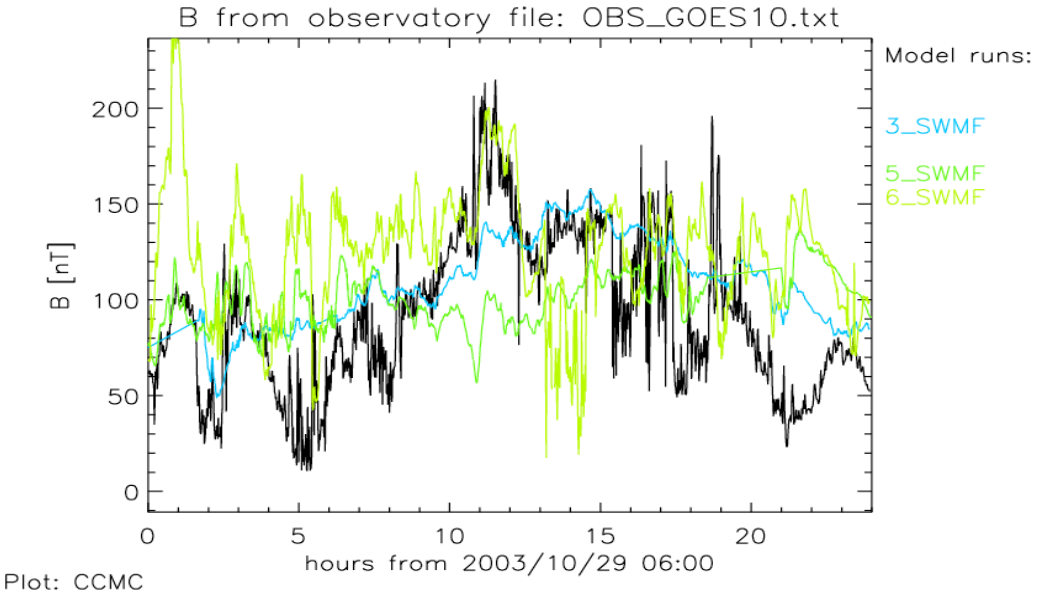
- [ ] 1_SWMF: BATSRUS 7.73, 2M cells, CCMC
- [x] 2_SWMF: BATSRUS 7.73, 700k cells (real-time setup), CCMC
- [ ] 3_SWMF: BATSRUS 8.01 with RCM, 2M cells, CCMC
- [ ] 4_SWMF: BATSRUS 8.01, 3 M cells, CCMC
- [x] 5_SWMF: BATSRUS 8.01 with RCM, 3M cells, CCMC
- [ ] 6_SWMF: SWMF V.20090403, BATSRUS+RCM2, 900k cells, RT on 64 procs., A. Ridley
- [x] 1_OPENGGCM: OpenGGCM 3.1, 3 M cells
- [x] 1_LFM: LFM, Michael_Wiltberger (13/11/2008,15/05/2009)

Reset Form *Reset Form* will reset changes to the defaults specified by the previous run of this script.
Update Plot *Update Plot* will update (generate) the plot with the chosen time and plot parameters above.

Runs-on-Request: Contact CCMC Staff
Visualization: Dr. Lutz Rastätter

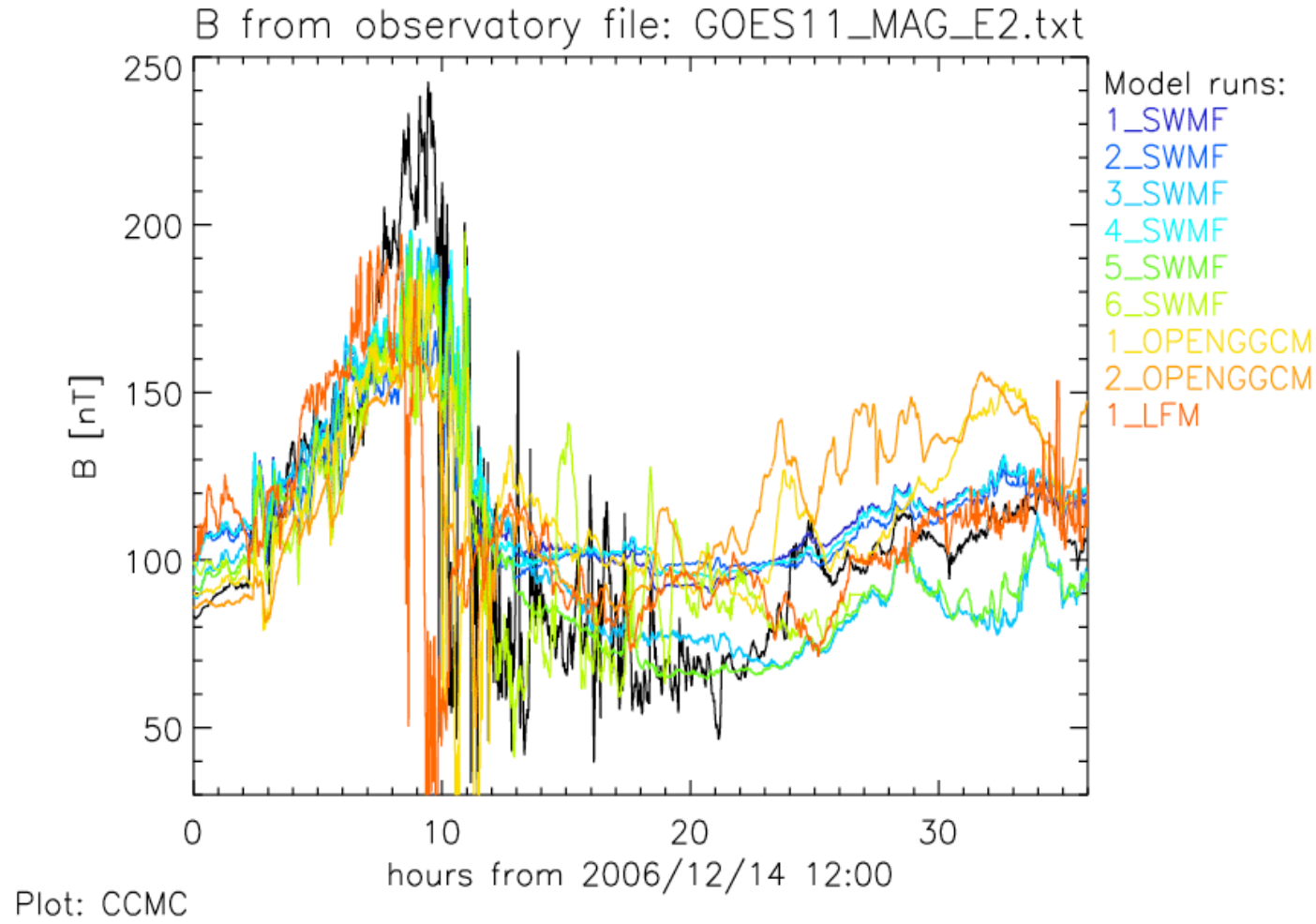
Last script update: June 12, 2009





- Event 1
- SWMF only
- Some improvement with RCM

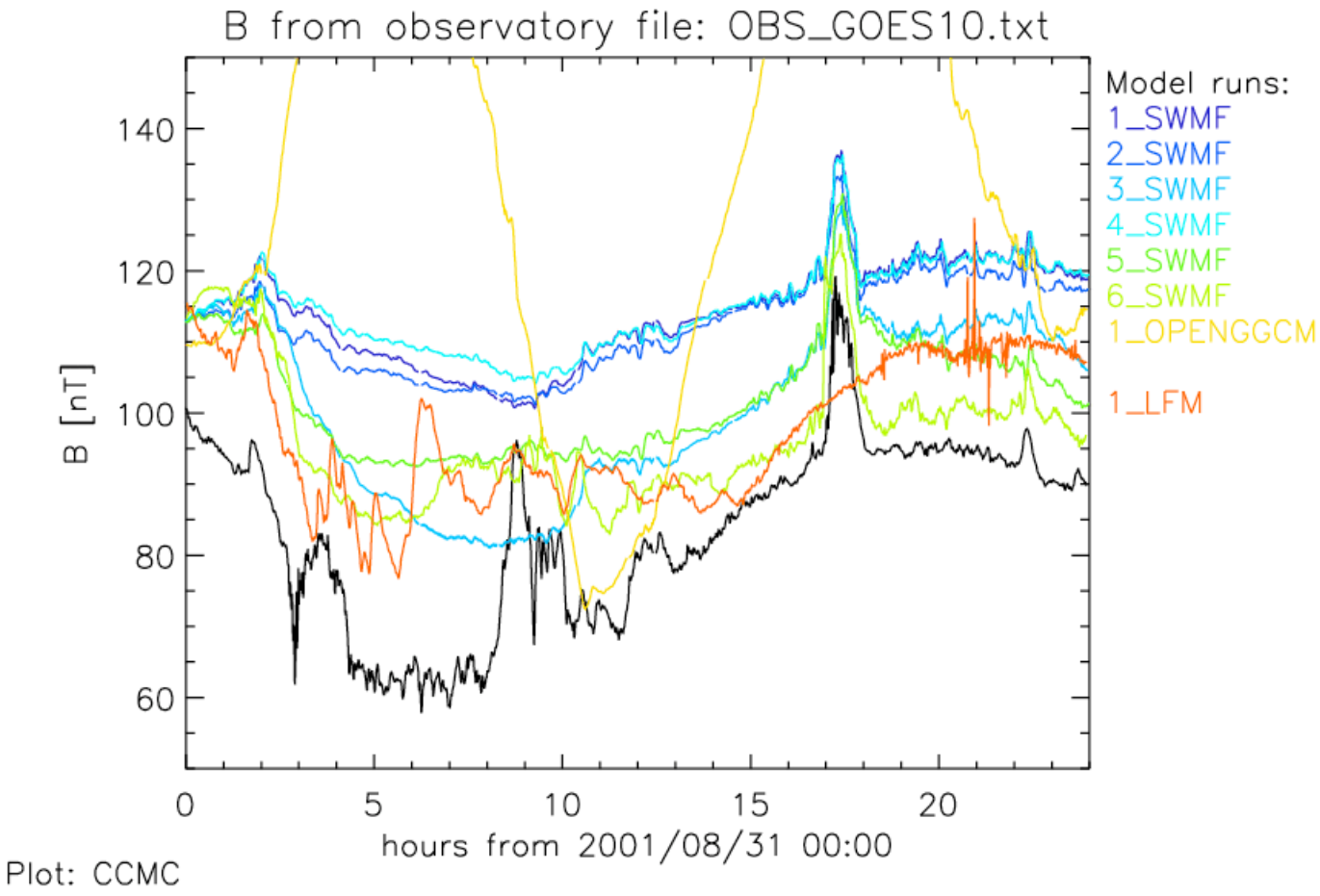
Strong event (2: AGU Storm)



All models see the large event

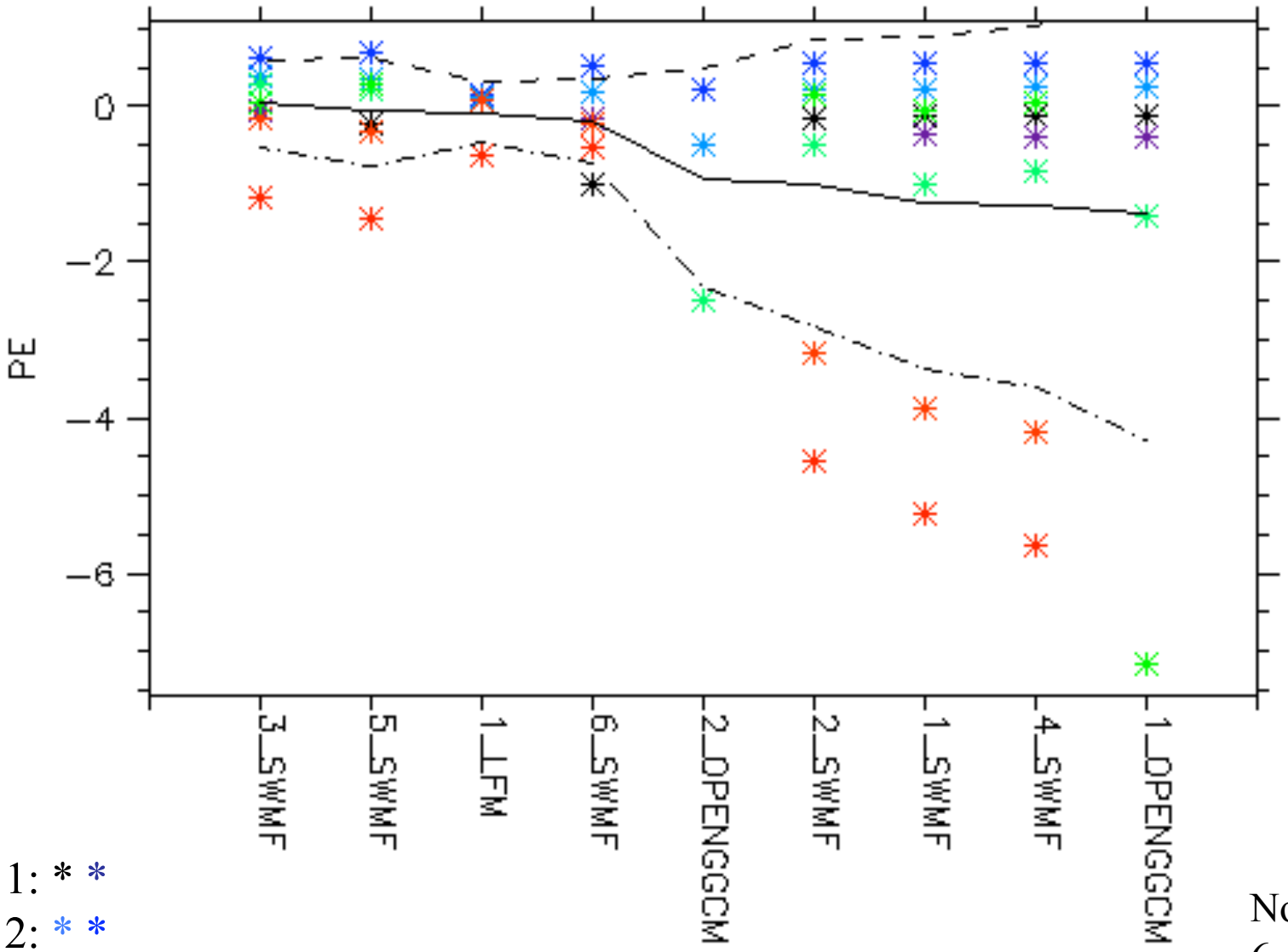
phase shifts seen between models and settings

Event 3



models follow diurnal variations – miss features in night side

Prediction Efficiencies

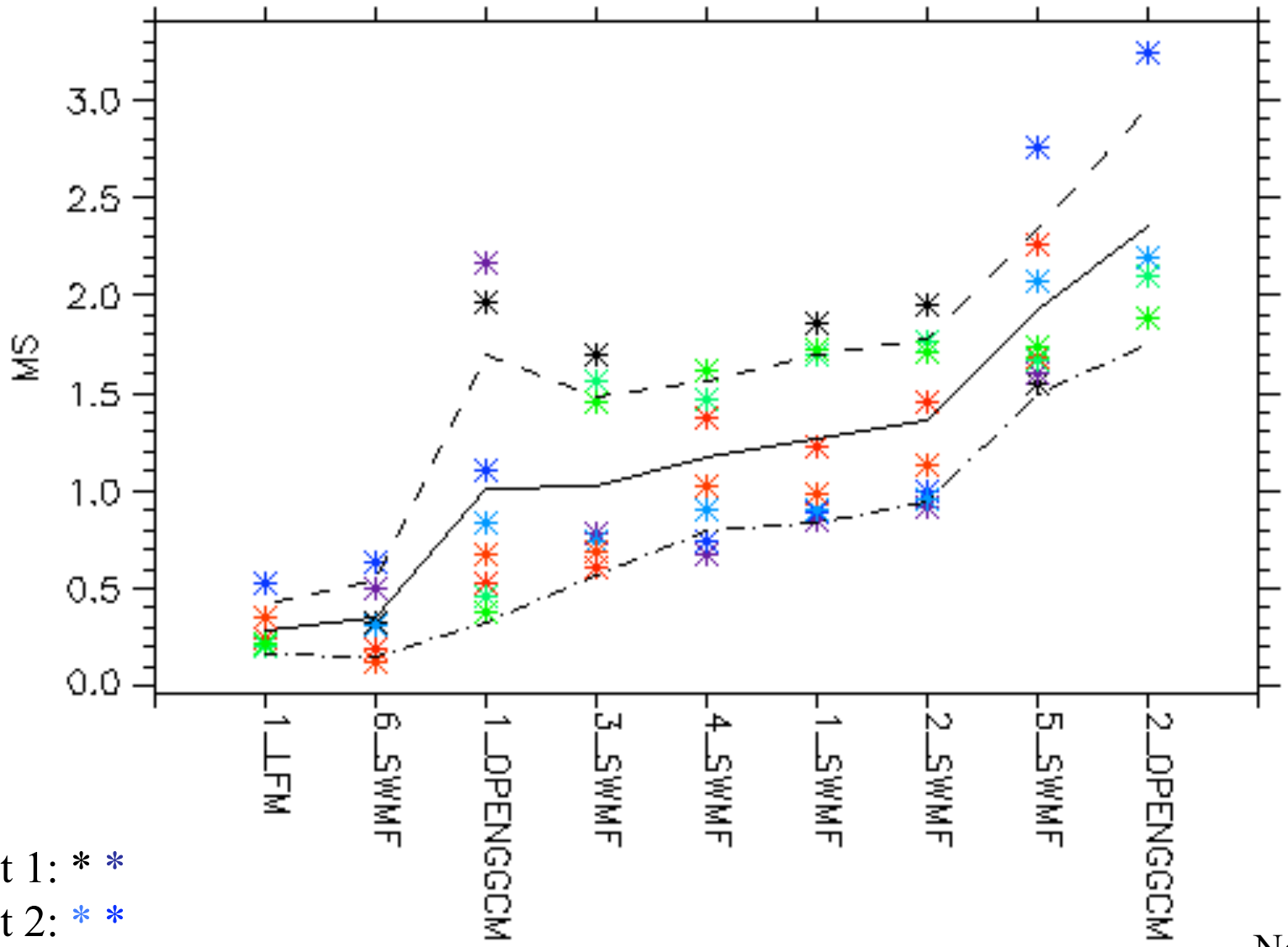


Event 1: * *
Event 2: * *
Event 3: * *
Event 4: * *

better ---------- worse

Not all events for 6_SWMF, 1_LFM, 1_OPENGGCM, 2_OPENGGCM

Log-Spectral Distances



Event 1: * *
Event 2: * *
Event 3: * *
Event 4: * *

better ---------- worse

Not all events for 6_SWMF, 1_LFM, 2_OPENGGCM