

ΔB calculation

Post processing allows calculation of magnetic perturbations from all current systems modeled by any magnetosphere–ionosphere coupled model

- Model validation: developed for and extensively tested in study commissioned by NOAA SWPC.

GEM Modeling Challenge results
[Online time series plotting tool](#)

Challenge events:

- Event 1: October 29th, 2003 06:00 UT - October 30th, 06:00 UT
- Event 2: December 14, 2006 12:00 UT - December 16, 00:00 UT
- Event 3: August 31, 2001 00:00 UT - September 1, 00:00 UT
- Event 4: August 31, 2005 10:00 UT - September 1, 12:00 UT
- Event 5: May 15, 2005 00:00 UT - May 16, 00:00 UT
- Event 6: July 9, 2005 00:00 UT - July 11, 00:00 UT

Metrics studies:


- 1: Magnetic field at geosynchronous orbit (GOES)
- 2: Magnetopause crossings by geosynchronous satellite (GOES and LANL)
- 3: Plasma density/temperature at geosynchronous orbit (LANL)
- 4: Ground magnetic perturbations (ground based magnetometers)
- 5: DST - final or provisional DST index from WDC, Kyoto (1-hour index) or from USGS (1-minute data)
- 6: Pointing Flux

	Metrics Study 1	Metrics Study 2	Metrics Study 3	Metrics Study 4	Metrics Study 5
Event 1	GOES12 GOES10	LANL-02A LANL-01A LANL-97A LANL-1994 LANL-1991 LANL-1990 GOES12 GOES10	LANL-02A LANL-01A LANL-97A LANL-1994 LANL-1991 LANL-1990	YKC MEA NEW FRN IQA PBQ OTT FRD HRN ABK WNG FUR	KYOTO USGS
Event 2	GOES12 GOES11	LANL-02A LANL-01A LANL-97A LANL-1994 LANL-1989 GOES12 GOES11	LANL-02A LANL-01A LANL-97A LANL-1994 LANL-1989	YKC MEA NEW FRN IQA PBQ OTT FRD HRN ABK WNG FUR	KYOTO USGS
Event 3	GOES10 GOES08	LANL-01A LANL-97A LANL-1994 LANL-1990 GOES10 GOES08	LANL-01A LANL-97A LANL-1994 LANL-1990	YKC MEA NEW FRN IQA PBQ OTT FRD ABK WNG FUR	KYOTO USGS
Event 4	GOES12 GOES10	LANL-02A LANL-01A LANL-97A LANL-1994 LANL-1990 GOES12 GOES10	LANL-02A LANL-01A LANL-97A LANL-1994 LANL-1990	YKC MEA NEW FRN PBQ OTT FRD HRN ABK WNG FUR	KYOTO USGS

Magnetic perturbations ΔB

- Run-on-Request: ΔB available for all magnetosphere models.

Run on Requests


 COMMUNITY COORDINATED MODELING CENTER
 Related Links
[About](#) | [Models at CCMC](#) | [Request A Run](#) | [View Results](#) | [Instant Run](#) | [Metrics and Validation](#) | [Education](#) | [R2O Support](#) | [Misc](#)

Paul_Tenford_033114_4

Title/Introduction:

Key Word: sharp turn in B_y

Model Type: GM
Model: LFM version LTR-2_2_0

Inflow Boundary Conditions:
Start Time: 2000/01/01 00:00
End Time: 2000/01/01 03:04
Dipole Tilt at Start in X-Z Plane: 0.00 deg.
Dipole Tilt in Y-Z GSE Plane: 0.00 deg.
Dipole Update With Time: no
Ionospheric Conductance: auroral

Radio Flux 10.7 cm: 150

Grid:
Coordinate System for the Output: SM
Initial Solar Wind (SW) Parameters in SM Coordinates:

SW Density: 8.00000 n/cc
 SW Temperature [Kelvin]: 13335.20000 Kelvin
 X Component of SW Velocity: -400.00000
 Y Component of SW Velocity: 0.00000 km/sec
 Z Component of SW Velocity: 0.00000 km/sec
 IMF Bx: 0.00000 nT
 IMF By: 0.00000 nT
 IMF Bz: 0.00000 nT
 IMF |B|: 0.00000 nT
 IMF Clock Angle: 0 deg.

- View solar wind input data
- List solar wind input data in ASCII format (see format description here).
- View Magnetosphere
- Create Timeseries in Magnetosphere
- View Ionosphere

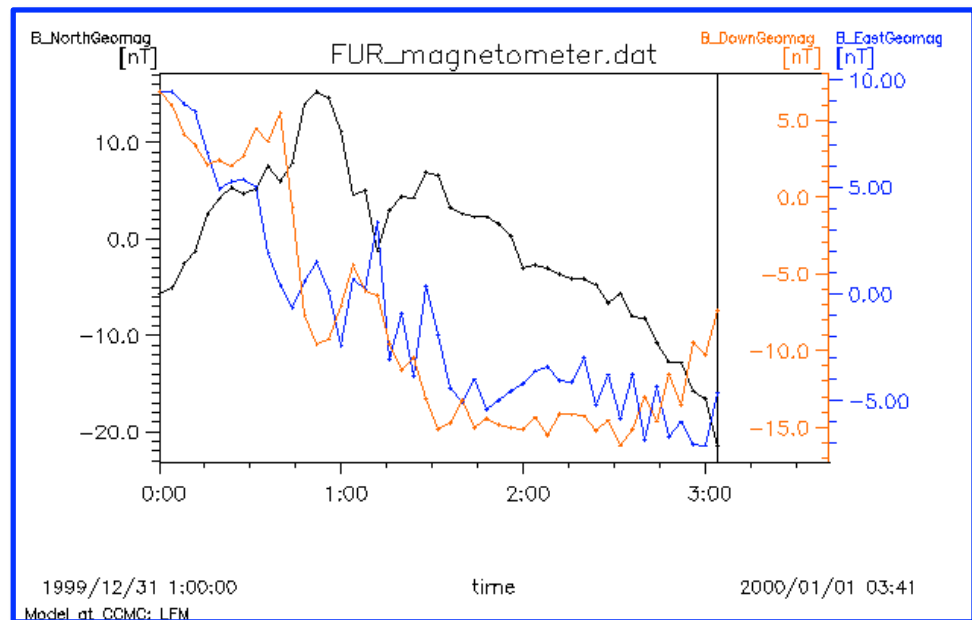
View pre-computed timeseries data:

- Northern hemisphere polar cap flux and area
- Southern hemisphere polar cap flux and area
- Magnetopause standoff and closest approach within 30 deg. of Sun-Earth line (local noon)
- Polar cap boundary at 24 magnetic local times in northern hemisphere
- Polar cap boundary at 24 magnetic local times in southern hemisphere
- Ionospheric dissipation

- View Quick look graphics for the run

View Magnetic perturbation calculated for magnetometer stations:

AAA	AAE	ABG	ABK	AIA	ALE	AMS	API	AQU	ARS	ASC	ASP	BDV
BEL	BFE	BFO	BLC	BMT	BNG	BOU	BOX	BRW	BSL	CBB	CLF	CMO
CNB	CNH	CSY	CTA	CZI	DED	DLR	DMC	DOU	DRV	DUR	EBR	ESK
EYR	FCC	FRD	FRN	FUR	GCK	GDH	GLN	GNA	GUA	GUI	GZH	HAD
HBK	HER	HLP	HON	HRB	HRN	HUA	HYB	IPM	IQA	IRT	ISK	IZN



Choose up to three different quantities to be displayed:

Q 1: Q 2: Q 3:

Log scale (apply to all quantities > 0 in plot)

Lock plot data range: Min.: Max.:

Image magnification:

Line style: Plot symbols: Symbol size:

Reset Form will reset changes to the defaults specified by the previous run of this script.

Update Plot will update (generate) the plot with the chosen time and plot parameters above or will print the entire file to screen.

Have data printed to text file.

The file format is slightly different from the original file visualized and can include computed quantities if offered and selected for plotting (i.e. quantities beyond basic MHD quantities N, P, V, B), such as B, V, J, E, J_{par}.

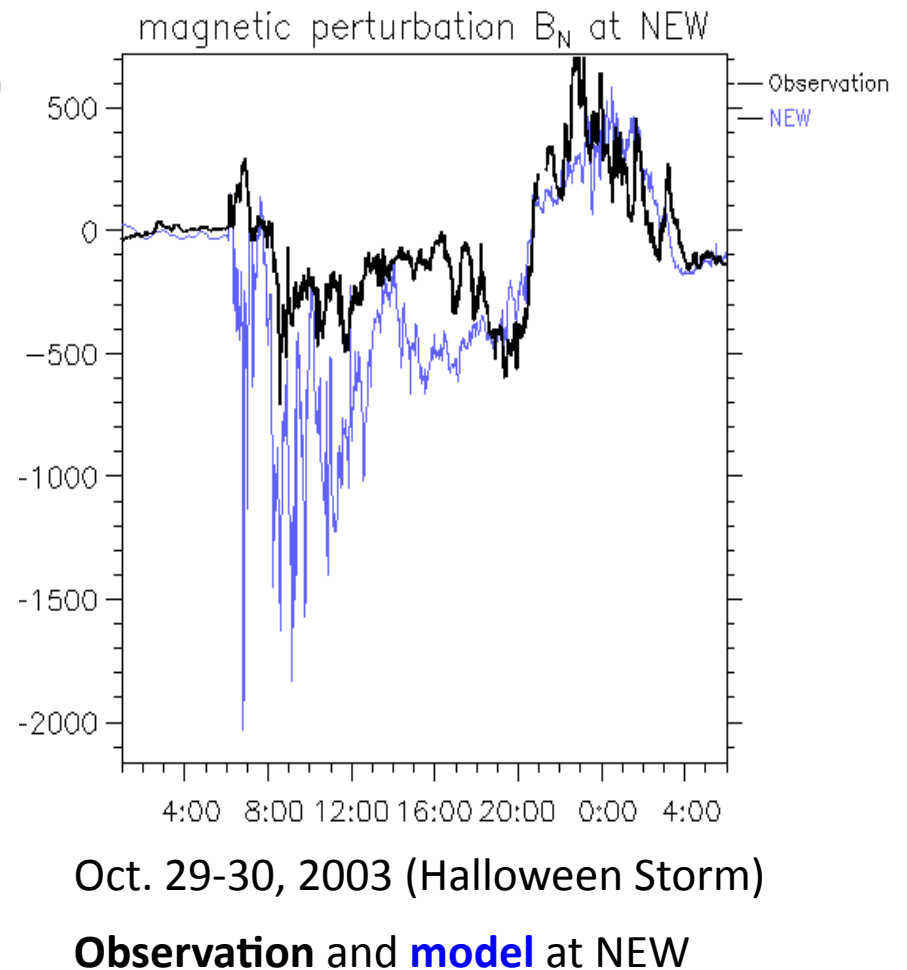
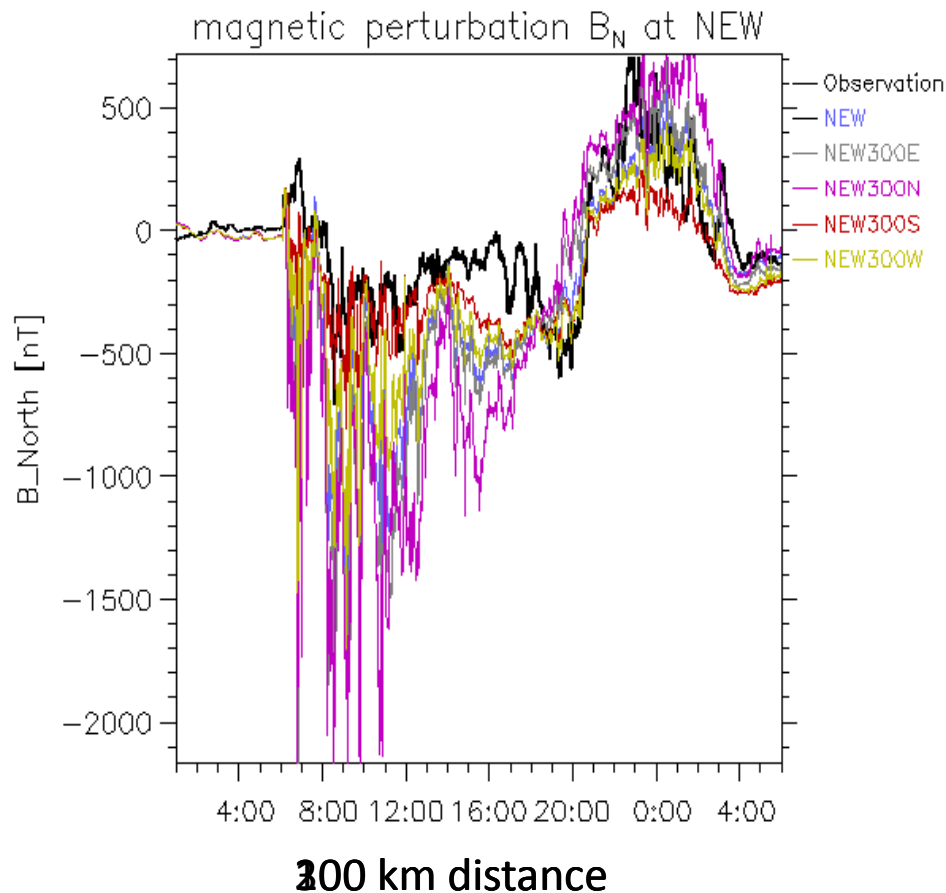
Runs-on-Request: [Contact CCMC Staff](#)

Visualization: [Dr. Lutz Rastätter](#)

Last script update: August 18, 2011.

ΔB at 130 magnetometer positions

Ensemble of virtual magnetometers



DEMO?