



Quantifying the storm effects on the modeled neutral density variations on the CHAMP satellite track

Progress since the mini-GEM meeting

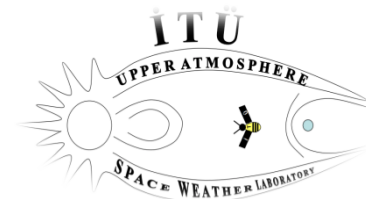
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Progress since the AGU 2013 Fall Mini-GEM

GEM-CEDAR STORM EVENTS

Event Date	Kpmax	Classification
13 December- 16 December 2006	8.3	Severe
15 May- 16 May 2005	8.3	Severe
31 August-1 September 2005	7	Moderate
9 July-11 July 2005	6.3	Moderate
22 May-25 May 2007	5.3	Minor
28 February- 01 March 2008	5.3	Minor
01 April-02 April 2007	4	Minor

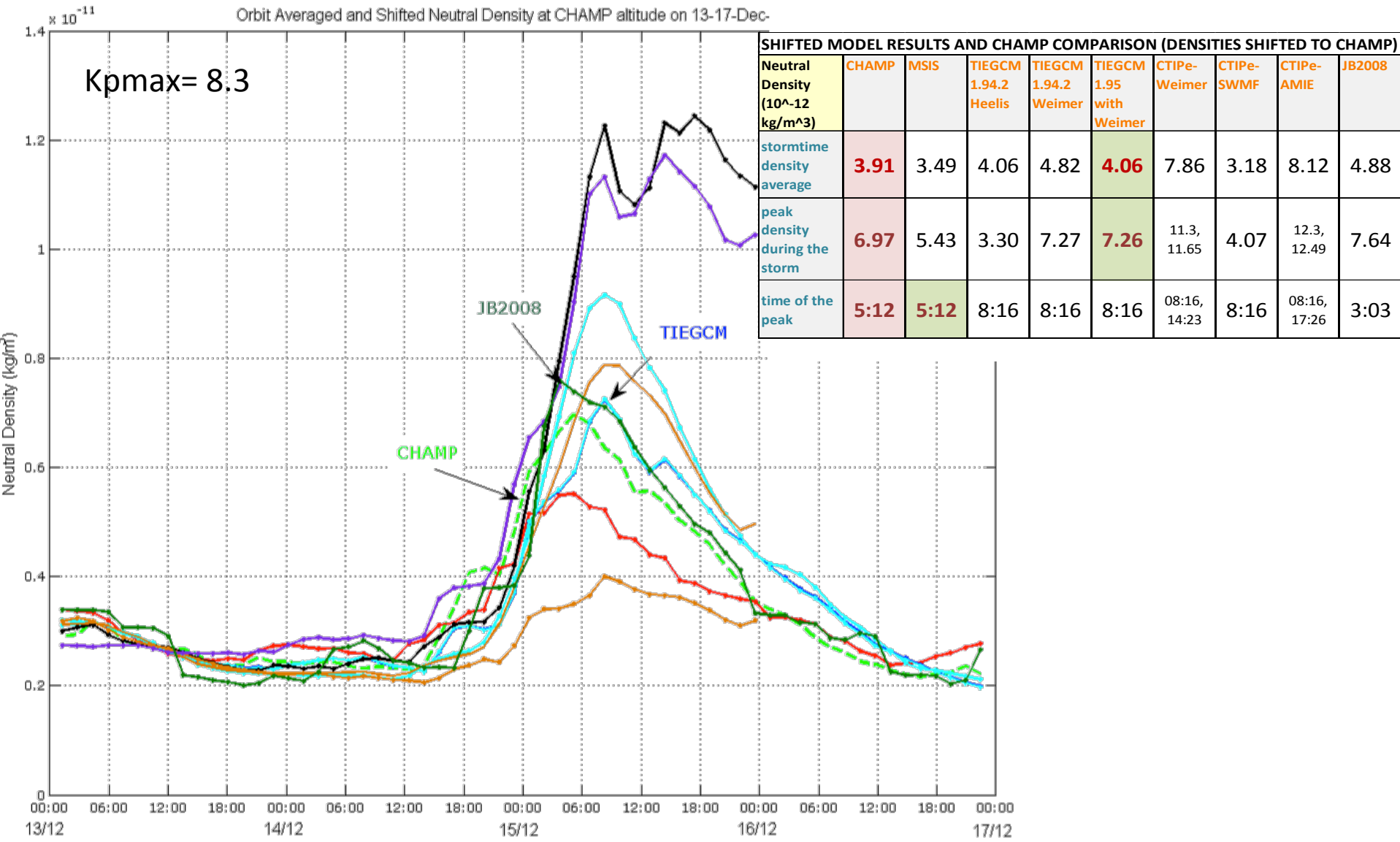
GEM-CEDAR QUIET DAYS

31 August-1 September 2001	4	Minor-Quiet
20 March-22 March 2007	1	Quiet
9 July- 10 July 2007	0.3	Quiet
7 December-8 December 2007	0.6	Quiet

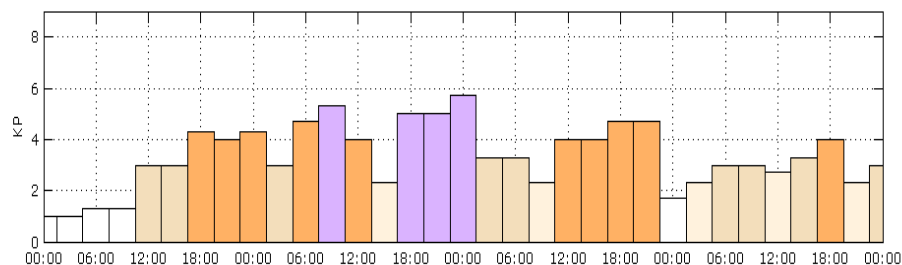
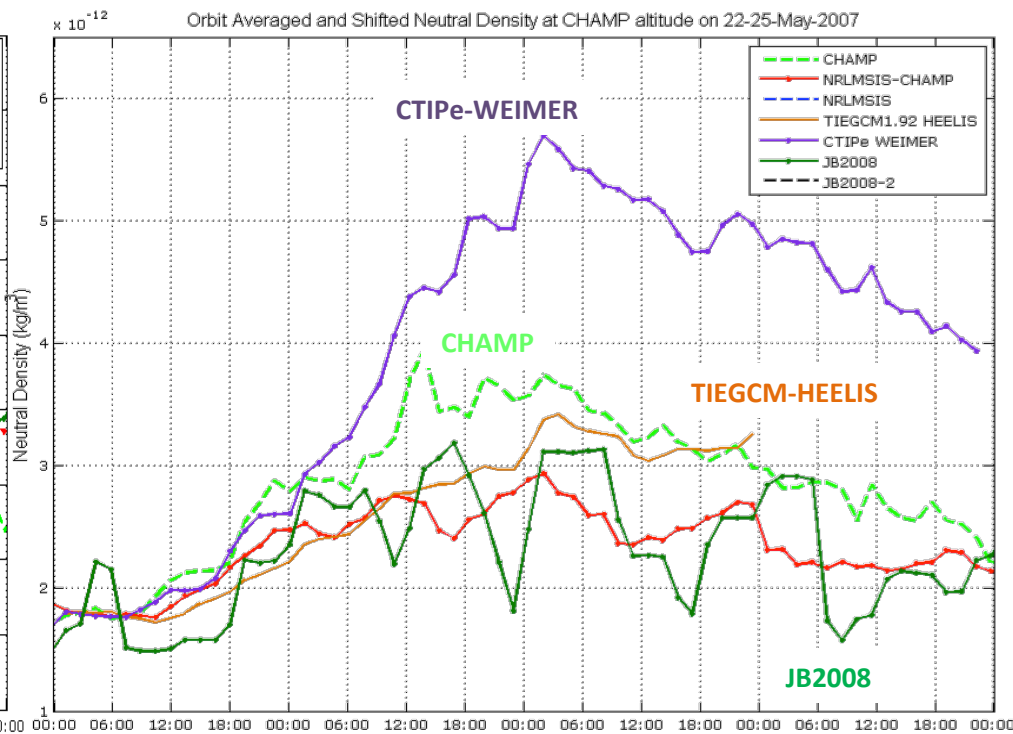
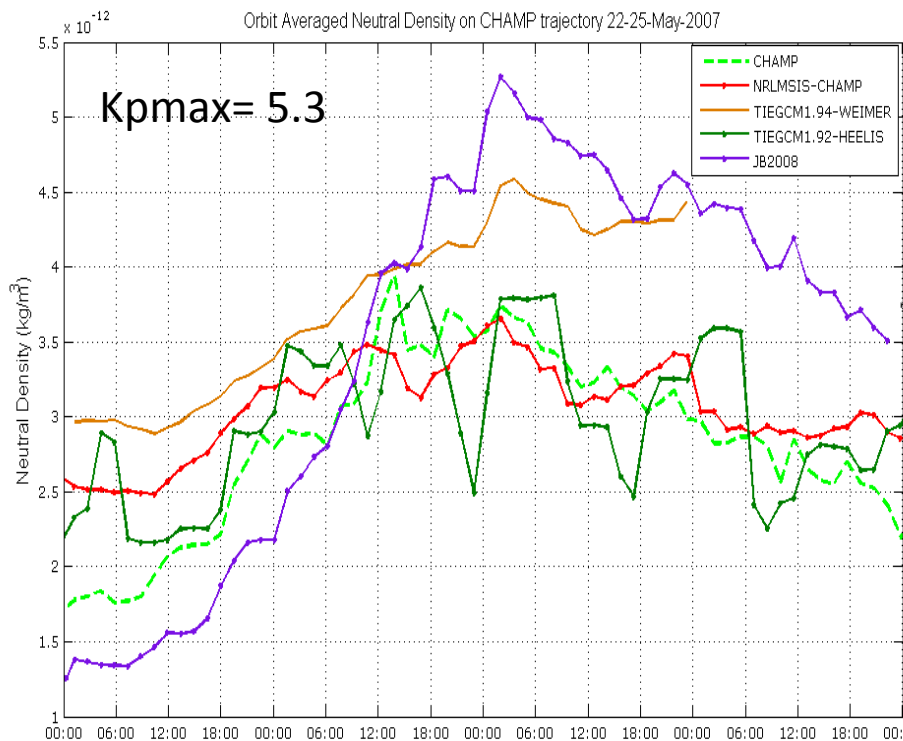
PROGRESS:

1. Empirical JB2008 model runs are added to the analysis set
2. Quiet times ($KP < 2.3$) are determined for all GEM-CEDAR events
3. Orbit averaging and subtraction of the model background are performed for all GEM-CEDAR events

Previous Event- JB2008 added



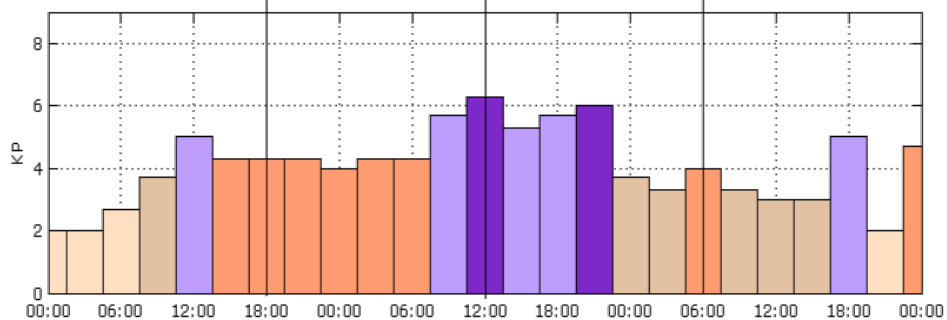
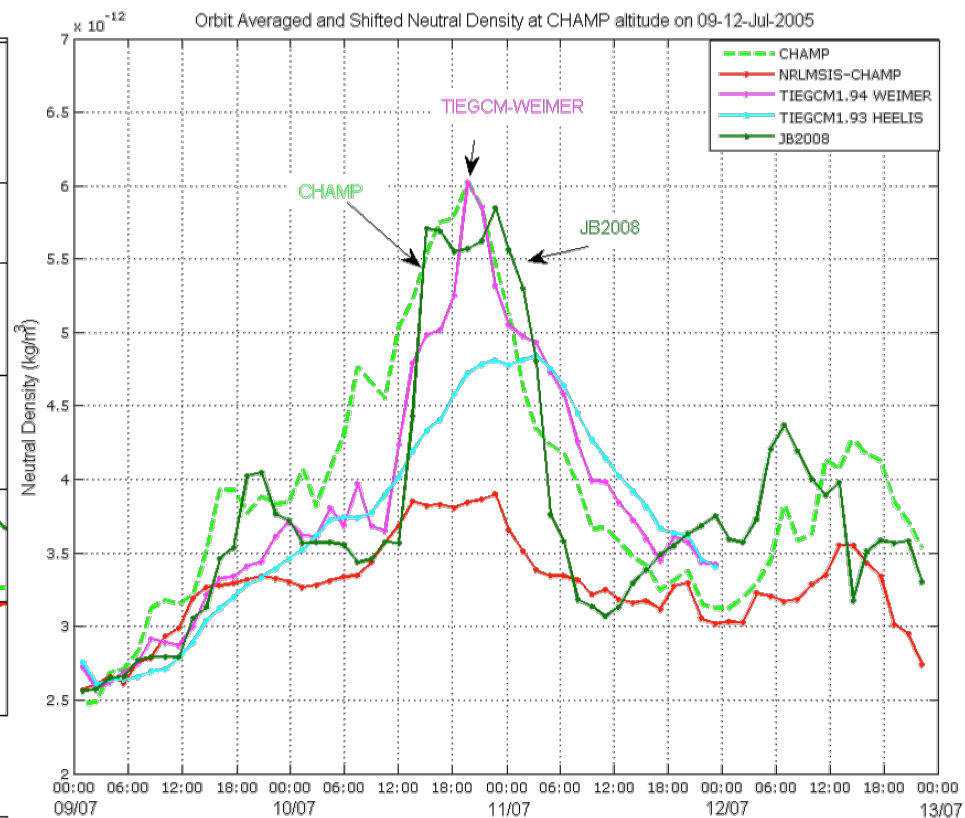
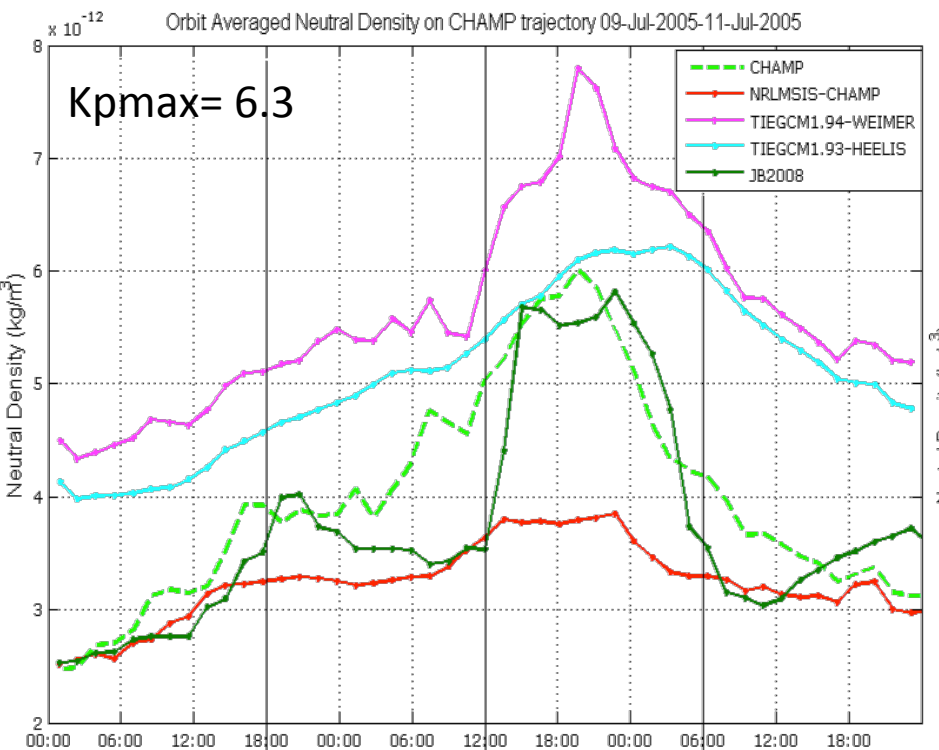
New Case: 1- Minor Event / 22-25 May 2007



All models shifted to CHAMP:

1. JB2008 has large fluctuations
2. TIEGCM 1.92 Heelis also captures the tendency of measurements, however has delay in the peak

New Case: 2- Moderate Event / 09-11 July 2005



All models shifted to CHAMP:
TIEGCM 1.94 WEIMER captures both the peak and timing of the storm successfully

CONCLUSION and ONGOING STUDIES

Quiet time selection is important while doing the background removal.

Physics based models are performing as good as the empirical models do, sometimes better for cases under investigation.

Remaining Questions:

Are the results sensitive to the background removal method?

When is this approach valid?

Investigation and quantitative analysis for metrics according to KP level is going on.