

Inter-hemispheric Asymmetry of Magnetospheric Forcings and Its Impacts on the Ionosphere-Thermosphere System During the 8-10 October 2012 Geomagnetic Storm MITC - 7Yu Hong¹, Yue Deng¹, Qingyu Zhu², Astrid Maute², Marc R Hairston³, Cheng Sheng¹, Daniel Welling⁴, Ramon E Lopez¹



¹ UTA ² NCAR/HAO ³ UTD

Email: yu.hong@mavs.uta.edu

H is enhanced earlier under

SH is delayed under B_v + and

 B_v + and delayed under B_v -

boosted when B_v reversed

Both total Joule heating and

 $d\rho$ have B_v flip responses,

they have similar changes

with ~2-3 hours differences

LT differences in high-latitude

Data-Model comparisons

show some similar storm-

time responses and TAD

GITM $d\rho$ has more clear

and closer responses to

Joule heating and larger

 $d\rho$ when B_v -

Result - 3: IHA in the global ionosphere-thermosphere system

Summary & Conclusions

IHA in the high-latitude region: magnetospheric forcings

AMIE outputs magnetospheric forcings have obvious IHA during storm period

	South	Asymmetry Index
/	74.4 kV	AI = 18.42%
N	26.5 GW	AI = 19.76%
V	184 GW	AI = -5.91%

The convection extension shows strong storm phase and B_v dependences,

GITM (AMIE) and GOCE $d\rho$ show similar IHA to the storm, which could be affected by the IHA in magnetospheric forcings and related Joule heating

> Hong et al., (2022) Inter-hemispheric asymmetry of Ion convection and its impacts on the ionosphere-thermosphere system during the 08-10 October