STORMTIME SAMI3/DATA COMPARISONS:
  SAMI3/RCM (March 17, 2015)
  SAMI3/ICON (May 8, 2005)

J.D. Huba
Plasma Physics Division
Naval Research Laboratory
Washington, DC 20375

2016 CEDAR/GEM Mini-Session
San Francisco, CA
December 2016

with A. Coster, S. Sazykin, A. Maute, and G. Crowley
\[ \nabla \cdot \left( \sum_{\text{SAMI3}} + \sum_{\text{RCM}} \right) \nabla \Phi = S\left( V_n, J_{\|}(t) \right) \]
TEC DATA

longitude = 30°
DATA/MODEL COMPARISON

longitude = 30° latitude = -5° (data: black; model: red)
TEC DATA

comparison of data (black squares) and sami3 (red)
SAMI3/ICON MODEL

developed for the NASA ICON mission

- SAMI3/TIEGCM/AMIE
- TIEGCM provides neutral composition, temperature, and winds to SAMI3 (i.e., one-way coupled)
- AMIE provides high-latitude potential
- SAMI3 uses IGRF via the Richmond apex model
PLASMASPHERE

day 127  18:00 UT

day 129  18:00 UT
SAMI3/RCM used to model March 17, 2015 storm
- quantitative comparison with TEC data
- model results agree reasonably well in the low- to- mid-latitude northern hemisphere but not very good in the southern hemisphere
- caveat: SAMI3/RCM uses untilted, aligned dipole geomagnetic field; despite this results are good (offset model/data by difference in magnetic and geographic equator)
- to be published in JGR (Huba et al., 2017)

SAMI3/ICON used to model May 8, 2005 storm
- quantitative comparison with TEC data
- reasonable agreement
- caveat: no stormtime penetration electric fields
- submitted to Space Sci. Rev. (Huba et al., 2017)