

MARCH 17, 2015 STORM: SAMI3/RCM MODEL COMPARISONS TO TEC DATA

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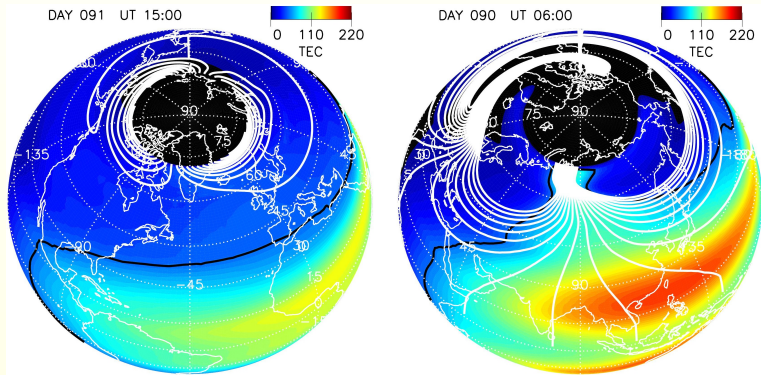
2016 CEDAR/GEM Workshop

Santa Fe, NM

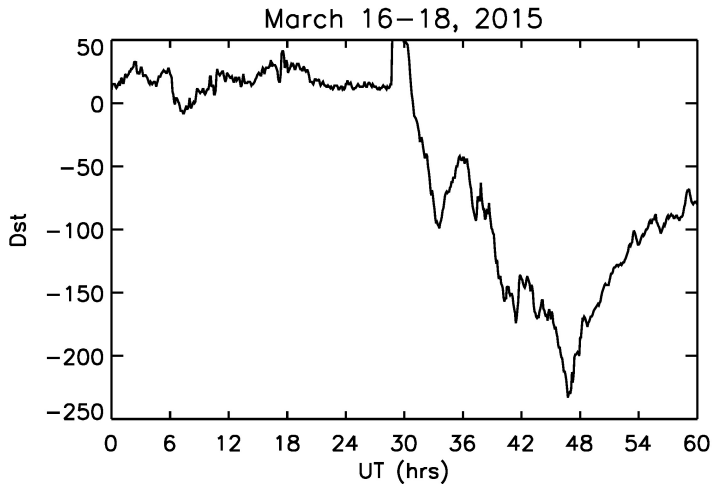
June 2016

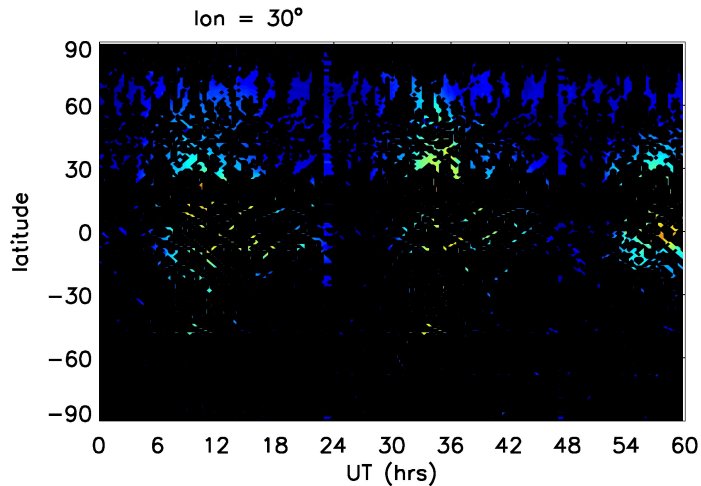
with A. Coster and S. Sazykin

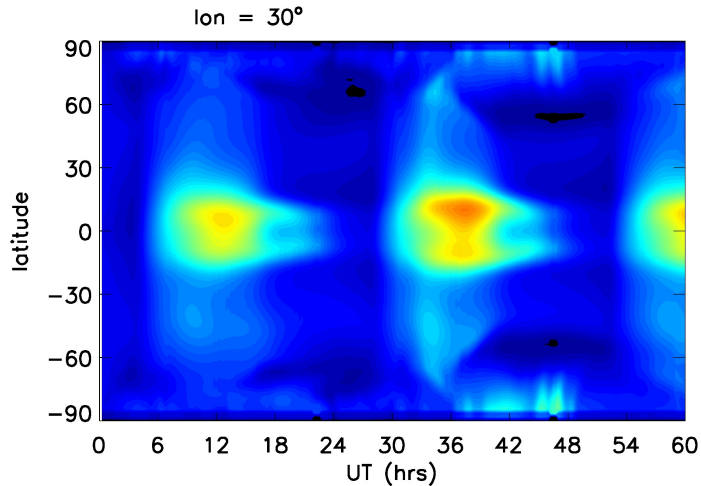
$$\nabla \cdot (\underbrace{\Sigma}_{\text{SAMI3}} + \underbrace{\Sigma_a}_{\text{RCM}}) \nabla \Phi = S(\underbrace{V_n}_{\text{HWM}}, \underbrace{J_{\parallel}(t)}_{\text{RCM}})$$



STORMTIME

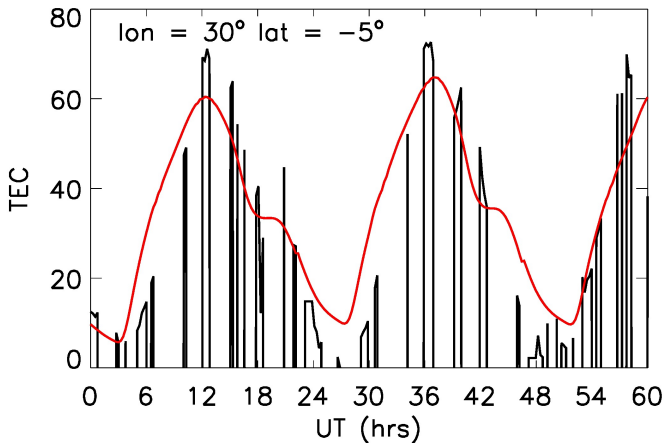


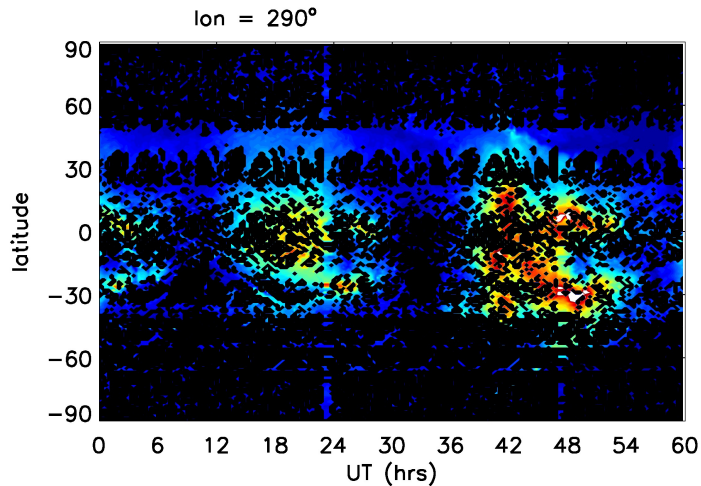


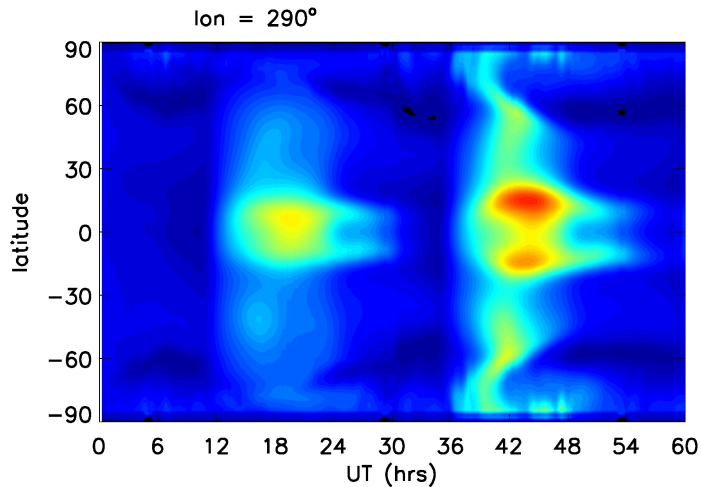


DATA/MODEL COMPARISON

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

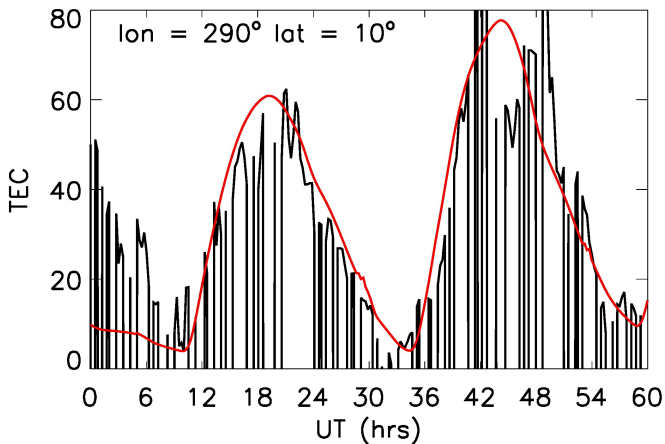






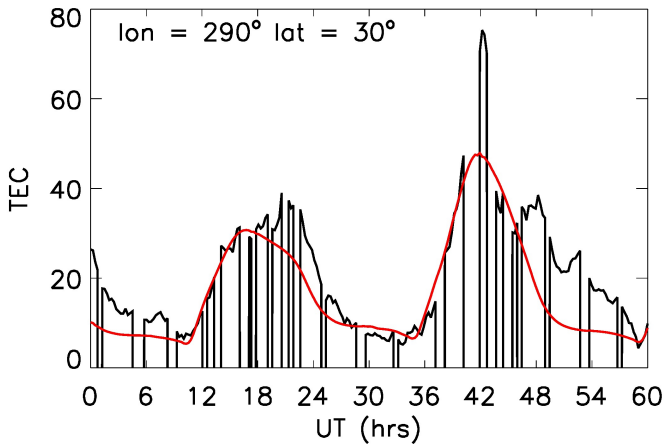
DATA/MODEL COMPARISON

longitude = 290° latitude = 10° (data: black; model: red)



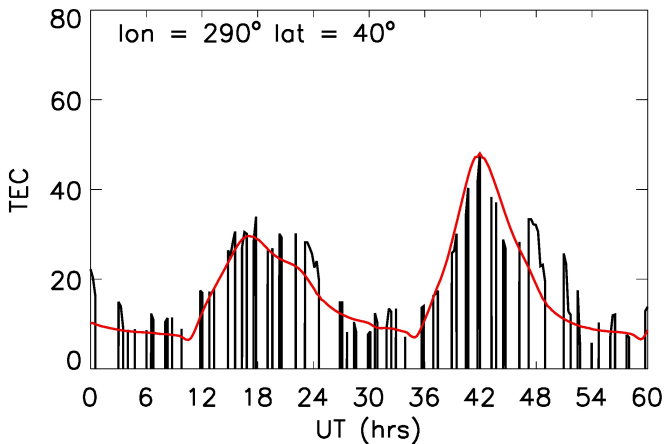
DATA/MODEL COMPARISON

longitude = 290° latitude = 30° (data: black; model: red)



DATA/MODEL COMPARISON

longitude = 290° latitude = 40° (data: black; model: red)



SUMMARY

- 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 ionosphere
- both show stormtime enhancement of the electron density in the mid-latitude ionosphere during local daytime / early evening
- caveat: SAMI3/RMC uses untilted, aligned dipole geomagnetic field; despite this results are good (offset model/data by difference in magnetic and geographic equator)