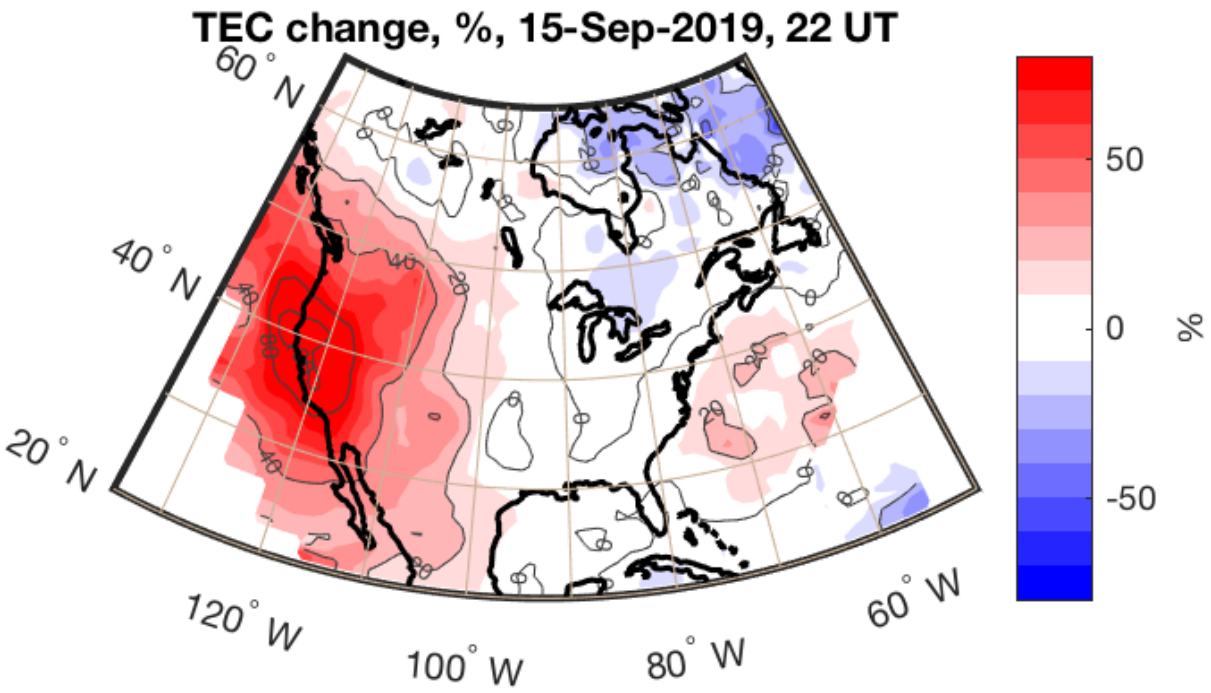
Impact of Antarctic Sudden Stratospheric Warming on Mid-Latitude Thermosphere and Ionosphere over USA and Europe

Larisa Goncharenko, V. L. Harvey, K. R. Greer, S.R. Zhang, A. J. Coster

- We use a case study of Antarctic SSW of September 2019 to understand meteorological drivers of the thermosphere-ionosphere
- ***At middle latitudes***, we observed strong, ***50-100%*** regional disturbances in TEC in the ***Western USA*** and over ***Europe***, but not over other locations
- Western US:
  - Positive (50-100%) and negative (20-40%) disturbances are persistent and have a 12-hr character
  - Working hypothesis: Modulation of thermospheric wind by SSW + longitudinal variations in geomagnetic field declination → increase or lowering of F-region peak height → positive or negative disturbances in TEC
- Europe:
  - A 20-40% suppression of TEC persists through September
  - TEC increase on Sep 15 and 21 is related to a Q6dW



Goncharenko et al., in prep