



Stormtime SAPS events: OpenGGCM-RCM-CTIM modeling and data comparisons

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Sub-Auroral Polarization Streams (SAPS) form through the interaction of magnetosphere, ionosphere, and thermosphere processes. Their primary ionosphere manifestation are fast westward flows that occur at latitudes lower than auroral precipitation, and well separated from the high-latitude convection pattern, along with a trough in electron density. SAPS are believed to be driven by a combination of region-2 currents and low ionospheric conductance. Here, we focus on the GEM-CEDAR storm event of 2013-03-17 (St. Patrick's day storm), which showed clearly developed SAPS structures. We compare OpenGGCM model results with data from DMSP, incoherent scatter radars, and other sources. We modify model parameters, such as precipitation, numerical resolution, and ring current feedback, to gain a better understanding of how SAPS form and whether or not a positive conductance feedback exists or not.