Space weather impacts on the climate system: Model experiments to the edge of space

Wednesday 21 June 2023 17:00 (1 hour)

Variations in the strength and speed of the solar wind related to solar coronal holes, coronal mass ejections, or corotating interaction regions, can initiate geomagnetic storms in the Earth's magnetosphere. These enhance electron fluxes and energies in the radiation belts and ring currents, but also precipitation of electrons over a large energy range from keV to MeV into the high-latitude atmosphere. Precipitation of energetic electrons into the mesosphere and lower thermosphere (70—150 km) in turn affects the composition and dynamics, initiating a chain of coupling processes leading to changes in composition and dynamics throughout the atmosphere, possibly even in tropospheric weather systems.

We combine the magnetospheric model VERB-4D with "high-top" chemistry-climate models to investigate the impact of space weather events on atmospheric composition and dynamics from the magnetosphere down to the surface.

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