



Variations in Antarctic Mesospheric winds during Solar Proton Events

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During March 2012 a solar proton event (SPE) occurred that coincided exactly with a large change in the neutral wind field in the upper mesosphere above Rothera station on the Antarctic Peninsula. This change appeared as an enhancement in the tidal magnitude in both the meridional and zonal winds. Rothera is well outside the expected cut-off region for very energetic solar protons and consequently the change to the neutral wind field is assumed to be non-local in nature; observations from higher latitude stations are inconclusive due to the attenuation of the radar signal during the SPE. We examine past events in the lifetime of the Rothera radar (2002-current) and show similar responses as well as clear differences during other SPE. We speculate on the underlying mechanism with reference to the chemical and radiative heating effects of energetic protons on the middle atmosphere.