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Forcing of the ionosphere from above and below during the Arctic winter of 2005/2006

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This presentation focuses on planetary wave type responses of the thermosphere/ionosphere system to forcing from above and below during the Arctic winter of 2005/2006. The forcing from above is described by the sunspot numbers, the solar wind speed, the Bz component of the IMF and the geomagnetic Kp-index, while the forcing from below, i.e. by upward propagating atmospheric waves, is represented by the SABER/TIMED temperatures. The observed global ionospheric zonally symmetric oscillations with periods of ∼9, ∼14 and ∼24-27 days were approved to be of solar origin. The most persistent ∼9-day oscillation is linked to a triad of solar coronal holes distributed roughly 120o apart in solar longitude. The ∼18-day westward propagating wave with zonal wavenumber 1, observed in the ionospheric currents (detected by magnetometer data), and in the F-region plasma (foF2 and TEC) is allocated to a simultaneous 18-day westward propagating planetary wave observed in the stratosphere/mesosphere/lower thermosphere region with large (∼70 km) vertical wavelength.