4.21 ISSI project: Geospace Coupling to Polar Atmosphere

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The International Space Science Institute's (ISSI) international team "Geospace Coupling to Polar Atmosphere" is aimed to studying the impact of the near-Earth space to the polar atmosphere and lower ionosphere. Our scientific interest lies on examining how the forcing from the Sun and the near-Earth space induces changes in this region extending from low to high altitudes, particularly through precipitation of high energy particles. We use a variety of different data sets from ground based and satellite platforms together with models of the atmosphere and ionosphere to achieve a unified global picture of the geospace impact on the Earth's atmosphere through the polar regions.

One specific goal of the team is working towards improved understanding of the electron precipitation input into the atmosphere. With the help of satellite data we have determined levels of variation in electron precipitation over time. This variation can be further communicated into atmospheric models and can be used to determine the importance of the strength of the high altitude NO_x source when combined with Sudden Stratospheric Warmings (extreme dynamical events) in driving the levels of NO_x descending into the stratosphere, which provides a strong overlap with the HEPPA model/measurement inter-comparison study.

Here we will introduce the ISSI team and our goals as well as present some initial results.

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