2012 Workshop: Wave Dynamics in the Polar Regions

Long title
Wave Dynamics in the Polar Regions
Conveners
Kim Nielsen
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Margit Dyrland
Description

Waves on various scales such as planetary, tidal, and gravity waves are responsible for driving large-scale motions in the atmosphere as well as providing localized heating/cooling and acceleration of the background atmosphere. Some of these effects are seen at high polar latitudes, where a cold summer mesopause can lead to the creation of high-altitude polar mesospheric clouds, while also the breakdown of the wintertime polar vortex can lead to stratospheric warming events and inter-hemispheric coupling. The aim of this workshop is to address recent developments in observation, theory, and modeling related to wave dynamics in the polar regions and how it couples to the atmosphere and near-space environment.

Agenda

13:35 – 13:45 Chihoko Yamashita "Responses of Gravity Waves to Planetary Wave Enhancements during the 2009 Stratospheric Sudden Warming"

13:45 – 13:55 Katelynn Greer "Evidence and Modeling of Synoptic Scale Baroclinic Instabilities in the Polar Winter Middle Atmosphere"

13:55 – 14:05 Nick Mitchell "GraviTimety wave fluxes in the mesosphere and stratosphere of the Antarctic and the Southern hot spot"

14:05 – 14:15 Manja Placke "Investigation of gravity wave momentum fluxes from MF Doppler radar and meteor radar measurements in the polar mesosphere"

14:15 – 14:25 Cao (Chris) Chen "Inertia-gravity waves in Antarctic MLT: A case study with simultaneous lidar and radar measurements at McMurdo (77.8° S, 166.7°E)"

14:25 – 14:35 Mike Taylor "Investigating Small and Medium-Scale Gravity Waves over Antarctica"

14:35 – 14:45 Dominique Pautet "High-Latitude Temperature Mapping of Mesospheric Waves"

14:45 – 14:55 Mark Conde "Gravity Wave observations over Alaska utilizing Fabry–Perot Spectrometers"

14:55 – 15:05 Margit Dyrland "Mesopause region wave dynamics observed from Svalbard (78N)"

15:05 – 15:15 Rich Collins "Rayleigh lidar observations of waves and instabilities at Chatanika, AK"

15:15 - Discussions

Justification

In the past, observations of wave dynamics in the polar regions have been comparatively less than those performed at mid and equatorial latitudes. Recent observation efforts in both the Arctic and Antarctic, regarding wave dynamics at various scales, have greatly improved our understanding of how waves couple to different atmospheric layers, from the troposphere through the thermosphere. This topic is of relevance to the CEDAR strategic plan as it addresses the interactions and variability between the atmosphere and space.

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