2018 Workshop: Gravity wave coupling MTL IT

Long title
Gravity waves and atmospheric coupling MLT-IT
Conveners
Erich Becker
Katrina Bossert
Description

This workshop addresses questions about gravity wave processes and interactions through both modeling and observations in regions ranging from the MLT to the I-T.

Agenda

Anne Smith (15 minutes): Proposing a path for revising the parameterization of non-orographic gravity waves in WACCM

Fabio Vargas (10 minutes) Gravity Wave Vertical Scales Detectable by the Imagery of the Thermospheric O(1D) Redline (Modeling and Observation)

Jonathan Snively (10 minutes): Mesospheric Airglow Signatures of Acoustic and Gravity Waves Generated by Natural Hazard Events

Matt Zetteregreen (10 minutes): TEC and Magnetic Field Signatures of Acoustic Waves Generated by Natural Hazard Events

Irfan Azeem (15 minutes): Traveling ionospheric disturbances over the United States excited by the 2011 Tohoku tsunami

Katrina Bossert (10 minutes): Orographic gravity wave influences into the thermosphere

Katelynn Greer (10 minutes): On the capability of the GOLD mission to observe gravity waves

Nikolay Zabotin (10 minutes): Resonance excitation of atmospheric waves by vibration of the ground, ocean surface, and ice shelves

Xinzhao Chu (15 minutes): Updates on lidar studies of persistent gravity waves over McMurdo, Antarctica

Erich Becker (8 minutes): Thermospheric effects of GWs in a high-resolution GCM

Justification

The generation, propagation, and breaking/disspation of atmospheric gravity waves (GWs) represents a major coupling mechanism that reaches from the boundary layer to the upper atmosphere. In the middle and upper atmosphere the coupling mainly results from GW drag and its effects on the circulation, GW energy deposition, GW mixing of minor constituents, interaction of GWs with planetary waves and thermal tides, and turbulent energy cascades induced by GW breaking. GWs also lead to large fluctuations in winds and temperatures that can create traveling ionospheric disturbances (TIDs). In addition, the spatial and temporal intermittency of GW drag can generate large-scale secondary GWs that propagate to higher altitude. Contributions based on modeling and observations regarding these and other GW-related topics are welcome.

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