2019 Workshop: New imaging modelling GW instabilities

Long title
New and emerging capabilities for imaging and modelling gravity wave and instability dynamics.
Conveners
Michael Taylor
Jonathan Snively
Dave Fritts
Lynette Gelinas
Description

This exciting workshop encompasses a broad range of ongoing and new studies of gravity waves and instabilities and their processes and effects. Talks are requested that utilize observations, modelling and theory enabled by ground, balloon- and space-borne measurements. Special emphasis is placed on studies that horizontally resolve the wave dynamics, e.g., via imaging or mapping of layers in the atmosphere. The workshop will bring together presentations of new results and will introduce new projects and missions.

Agenda

Mike Taylor: Introduction.

Dave Fritts: PMC Turbo Imaging/Analysis

Lynette Gelinas: NIRAC: Near Infrared Airglow Camera for the International Space Station – On Orbit Status Report

Tyler Mixa: Analysis of Ship Wave GWs Over Auckland Island

Yucheng Zhao: Comparison of High Latitude Winter Time Gravity Wave Activities in Both Hemispheres

Pavel Inchin: Modeling Hazard-Generated Acoustic-Gravity Wave Signatures in Airglow Layers

Asti Bhatt: MANGO Imaging of AGWs

Chris Heale: Radar-Constrained Convection and Signatures in the Stratosphere, Mesosphere, and Thermosphere-Ionosphere

Mike Taylor / AWE team: The Atmospheric Waves Experiment (AWE) a new NASA Mission of Opportunity: Global Gravity Wave Properties in the Upper Atmosphere and Impacts on the ITM: Collaborative Research Opportunities.

Justification

The justification of this workshop lies in the critical importance of understanding and quantifying the impacts of GWs on the upper atmosphere and near-Earth space environment, as they impose Space Weather “from below”. Gravity waves in particular provide the dominant dynamical coupling, via their fluxes of momentum and energy at short periods and small scales, from the lower atmosphere into the ionosphere, thermosphere, and mesosphere (ITM).

This workshop is relevant to the following CEDAR strategic goal:

Explore exchange processes at boundaries and transitions in Geospace. “To understand the transformation and exchange of mass, momentum, and energy in transitions within the ITM and through boundaries that connect with the lower atmosphere and magnetosphere. Studying these transitions and boundaries in terms of physical processes enables new knowledge about the nature of space-atmosphere interaction regions applicable to Earth and other planetary bodies”.

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