2022 Workshop: Gravity Waves in the MTI system.

Long title
Acoustic and Gravity Wave Modeling and Observations throughout the MTI system.
Conveners
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Description

This session seeks to explore topics related to Acoustic, Acoustic-Gravity, and Gravity wave generation, propagation, dissipation, and vertical coupling through the Earth's atmosphere. These topics include, but are not limited to, source generation mechanisms, multi-layer observations, high-resolution and global modeling, AGW nonlinear processes, dissipation, breaking, turbulence, and secondary wave generation. We aim to have short talks of 10 minutes with a preference for talks aimed at system level studies including multi-instrument observations and modeling.

Agenda

10:00 -10:05:
Opening remarks

10:05 – 10:15:
Jonathan Snively – Embry Riddle Aeronautical University - TBD

10:15-10:25:
Jaime Aguilar Guerrero - Embry Riddle Aeronautical University - Observability, synthetic imaging, and visualizations of AGWs in 3D model data

10:25-10:35:
Erin Lay – Los Alamos National Laboratory - Probing D-region globally using lightning wave forms detected by ENTLN

10:35-10:45:
Sharon Vadas: -NorthWest Research Associates - Gravity waves and travelling ionospheric disturbances in the stratosphere, mesosphere and thermosphere from the polar vortex via multi-step vertical coupling

10:45-10:55:
Bjorn Kjellstrand - Arizona State University - Ducted waves and the quasi-two-day wave over the Andes Lidar Observatory

10:55-11:05:
Mike Taylor - Utah State University - Progress in the Atmospheric Waves Experiment (AWE): A NASA Mission of Opportunity for Global Gravity Wave Investigations

11:05-11:15:
Shuang Xu – Hampton University - Gravity Waves in GOCE.

11:15-11:25:
Sophie Phillips – Arizona State University- From the Troposphere to the Thermosphere: Tracking Upward Atmospheric Wave Propagation

11:25-11:35:
Katrina Bossert – Arizona State University- Studying gravity wave forcing from below using GUVI and multi-instrument measurements

11:35-11:45:
Asti Bhatt - SRI - Imaging thermospheric wave field and winds with green and red line imagers and FPIs in the MANGO network

11:45-11:55:
Nathaniel Frissell - University of Scranton - Recent Advances in Observing Traveling Ionospheric Disturbances Using Amateur Radio Techniques

11:55-12:00:
Closing remarks

Justification

Acoustic, Acoustic Gravity, and Gravity waves are important sources of vertical momentum and heat transport in planetary atmospheres. They play a crucial role in defining the structure and circulation of the Earth’s atmosphere and transporting/mixing chemical species. The nature of their deep propagation through

all atmospheric layers and their coupling to the Ionosphere facilitate a systems science approach that utilizes combinations of multi-layer observations and detailed modeling. This is relevant to CEDAR Strategic Thrust #1: Encourage and undertake a systems perspective of geospace. Continued study of AGWs is also crucial to understanding the dynamical state of our atmosphere, weather, and climate as the transfer of energy and momentum between the vertical layers. They are integral to CEDAR Strategic Thrust #2: Explore Exchange Processes at Boundaries and Transitions in Geospace.

Related to CEDAR Science Thrusts:
Encourage and undertake a systems perspective of geospace
Explore exchange processes at boundaries and transitions in geospace
Workshop format
Short Presentations
Keywords
Gravity Waves, Acoustic Waves, MTI coupling, TIDs,
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