2018 Workshop: Small scale GW dynamics in the MLT

Long title
Brian Laughman Tribute: Dynamics and roles of small-scale gravity waves in the MLT
Conveners
Katrina Bossert
Dave Fritts
Jonathan Snively
Description

This workshop will be dedicated to our late colleague and close friend, Dr. Brian Laughman (3/1/79-2/23/18). Brian contributed 15 years of gravity wave modeling research to the CEDAR community as a graduate student, postdoc, and research colleague. He will be deeply missed.

The workshop will include new modeling, theoretical, and observational studies addressing gravity waves, their dynamics, and influences in the MLT as well as their potential effects above in the thermosphere and ionosphere.

Agenda

Dave Fritts: Tribute to Brian and Overview of Research Contributions

Jonathan Snively: GW modeling

Katrina Bossert: MW Propagation in a Variable MLT Region

Tyler Mixa: characterizing high frequency gravity wave propagation through an inertial wave in the MLT

Chris Heale: Convectively generated gravity wave propagation in solztice and equinox conditions

Jia Yue: Observations of mesispheric bores from space

Gerald Lehmacher: Results from MTeX turbulence experiment

Jim Clemmons: Toward a new capability for upper atmospheric research using atmoic oxygen lidar: The TOMEX-plus experiment

Gary Swenson: Bridging composition (especially O) between the mesosphere and thermosphere 95-115km, measurement and modeling needs

Diego Janches: GW measurement capabilities in argentina

Justification

Gravity waves play central roles in MLT dynamics, among them 1) momentum transport from sources at lower altitudes, 2) momentum deposition that defines the seasonal variations of the zonal mean wind and temperature fields, 3) strong interactions with tides planetary and waves, and 4) instabilities and turbulence leading to diffusion and transports of heat, momentum, and species.

While the influences of gravity wave momentum deposition on mean winds is reasonably understood, there remains a need to understand smaller-scale dynamics associated with multi-scale gravity wave interactions, gravity wave breaking, and instabilities and turbulence influences.

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