2013 Workshop: Lidar Workshop

Long title
Advances in lidar and coordinated studies of middle and upper atmosphere globally
Conveners
Xinzhao Chu
Titus Yuan
Jeffrey P Thayer
Description

Starting in year 2010, several new lidar observational campaigns have been conducted worldwide. Plus many other lidar observations with multiple instruments being continued by CEDAR researchers, resonance and Rayleigh lidars are providing new and exciting data to the CEDAR science community. The renewed Consortium of Resonance and Rayleigh Lidars (CRRL) are enhancing the coordinated community effort for lidar innovation and science advancement. Collaborative studies among lidar groups and with co-located radar, imager, ionosonde, etc. and with satellite measurements have provided new potentials for multi-dimensional studies of the global upper atmosphere. This lidar workshop will provide a platform for the newest results to be presented, stimulating more science collaborations among observations, data analysis and modeling, and seeking new science potentials.

Intriguing results including significant science discoveries have been obtained in the physics, chemistry and dynamics of the middle and upper atmosphere. There is also good progress in lidar development. Consequently, the lidar workshop 2013 focuses on two main topics: ***Neutral-ion coupling*** and ***SMLT dynamics***. (SMLT: Stratosphere, Mesosphere and Lower Thermosphere)

Agenda

2013 Lidar Workshop Agenda

Wednesday, June 26, 1:30-3:30pm @ Century in Millennium Hotel

Topic 1 – Neutral-Ion Coupling: Thermospheric neutral metal layers, temperatures, descending E layers, and relationship to electrodynamics, neutral dynamics, chemistry, and geomagnetic activity

1) **Xinzhao Chu**: The latest observations of thermospheric Fe layers and temperatures at McMurdo

2) **Zhibin Yu**: Numerical modeling of thermospheric Fe and Fe+ layers

3) **Tim Fuller-Rowell**: Impact of geomagnetic activity on lower thermosphere temperature

4) **Jonathan Friedman**: Thermospheric K layers at Arecibo Observatory

5) **Takuo Tsuda**: Thermospheric Na layers at Syowa, Antarctica

6) **Titus Yuan**: Coordinated investigation of summertime mid-latitude descending E layer at USU

7) **Sharon Vadas** and **Mike Nicolls**: Observation and modeling of thermospheric gravity waves

Thursday, June 27, 10am-12pm @ Century in Millennium Hotel

Topic 2 – SMLT Dynamics: Planetary, tidal and gravity waves, fluxes, and thermal structures

1) **Xian Lu**: Wintertime planetary waves and temperature tides at McMurdo

2) **Fabio Vagas**: Na and heat fluxes at Cerro Pachon, Chile

3) **Wentao Huang**: Na, Fe and heat fluxes at Boulder

4) **Yucheng Zhao**: Inferring OH layer altitudes using lidar/MTM comparison at USU and Chile

5) **Vince Wickwar**: Upgraded Rayleigh lidar and temperatures above 100 km at USU

6) **Rich Collins**: Rayleigh and resonance lidar studies at LRL-PFRR

7) **Biff Williams**: Airborne lidar tests

8) **Mike Taylor**: Airborne temperature mapper

9) **Jia Yue**: lidar program at Hampton University

Justification

This session is relevant to the active lidar campaigns and studies being conducted by numerous groups in US and in the world. It provides a platform to present the coordinated measurements, science studies and technology innovations by the CEDAR lidar community. The lidar and coordinated studies are addressing numerous topics articulated in CEDAR: New Dimensions, e.g., the neutral-ion coupling, wave coupling through the whole atmosphere, etc. The workshop will help stimulate new science collaboration and discussion.

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