



Evidence of dispersion and refraction of a spectrally broad gravity wave packet in the mesopause region

时 间： 8月10日（周三）上午9:00

地 点： 九章大厦A708会议室

报告人： Yuan Tao

单 位： Center for Atmospheric and Space Sciences,
Utah State University

作者介绍:

Yuan Tao received the B.S. and M.S. from Changchun Institute of Optics and Fine Mechanics, China in Optical Physics in 1994 and in Applied Optics in 1997, respectively. He obtained the Ph.D. in Physics from Colorado State University, USA in 2004. In recent years, Prof. Yuan has concentrated on the upper atmosphere, especially in the area of the gravity wave and tidal wave.

April, 2016 – present, Research Associated Professor, CASS (Center for Atmospheric and Space Sciences), Physics Department, Utah State University

January, 2010 – March, 2016, Research Assistant Professor, CASS (Center for Atmospheric and Space Sciences), Physics Department, Utah State University

August, 2006 – December, 2009, Research Scientist, Physics Department, Colorado State University

July, 2004 – July, 2006, CEDAR (Coupling, Energetic, and Dynamics of Atmospheric Regions) Post-doc fellowship at Lidar lab at Colorado State University

报告内容:

Gravity wave packets excited by a source of finite duration and size possess a broad frequency and wavenumber spectrum, and thus span a range of temporal and spatial scales. Utilizing observations from the Na lidar at Utah State University and the nearby Mesospheric Temperature Mapper (MTM) at Bear Lake Observatory (BLO) [41.9° N, 111.4° W], we investigate a unique case of vertical dispersion for a spectrally broad gravity wave packet in the mesopause region over Logan, Utah (41.7° N, 111.8° W) that occurred on September 2nd, 2011, to study the waves' evolution as a packet propagates upward. The lidar observed temperature perturbation was dominated by close to a 1-hour modulation at 100 km during the early hours, but gradually evolved into a 1.5-hour modulation during the second half of the night. The vertical wavelength also decreased simultaneously, while the vertical group and phase velocities of the packet apparently slowed, as it was approaching a critical level during the second half of the night.

主办： 空间天气学国家重点实验室