[EE] Evening Poster | P (Space and Planetary Sciences) | P-EM Solar-Terrestrial Sciences, Space Electromagnetism & Space Environment

[P-EM10]Coupling Processes in the Atmosphere-Ionosphere System

convener:Huixin Liu(Earth and Planetary Science Division, Kyushu University SERC, Kyushu University), Loren Chang(Institute of Space Science, National Central University), Yuichi Otsuka(名古屋大学宇宙地球環境研究所)
Tue. May 22, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)
Vertical coupling mechanisms throughout the whole atmosphere are critical to understanding the near Earth space environment, as well as its sensitivity to the solar, geomagnetic, and atmospheric drivers. This international session focuses on physical/chemical processes occurring in the mesosphere, thermosphere, and ionosphere (MTI) from both the poles to the equatorial region. Both quiet and disturbed states in response to lower atmospheric forcing or solar forcing are important for understanding the MTI system and its coupling to other regions. We invite presentations of observations and observational concepts with ground-based and/or space-borne instruments, theoretical studies, numerical simulations, and development of data analysis systems for various kinds of temporal and spatial variations in MTI system.

[PEM10-P06]Small-scale Stratospheric Gravity Waves over Poker Flat Alaska

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Keywords:Gravity waves, Lidar observations, Polar stratosphere

An important property of Atmospheric gravity waves (AGWs) is their ability to transport energy through the atmosphere. While the effects of AGWs have been studied for a number of years, current weather and climate models are still not capable of resolving the majority of small scale waves and their individual energy contributions. Hence, understanding how AGWs propagate from their tropospheric sources and across atmospheric regions is considered one of the most pressing scientific questions in the atmospheric and space sciences. This study investigates the propagation of gravity waves across the stratosphere over the altitude range of 40-80 km utilizing data collected from a Rayleigh lidar system located in interior Alaska. Various methods of extracting gravity waves from lidar systems are discussed. Three years of temperature data have been analyzed to reveal the wave characteristics, wave variability, and estimations of the energy carried by the individual waves.