[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-P08]The response of the ionosphere to increase of CO_2: simulation results with GAIA model

*Takamichi Abe[1], Huixin Liu[2], Yasunobu Miyoshi[3] (1.Department of Earth and Planetary Sciences, Kyushu University, 2.Earth and Planetary Science Division, Kyushu University SERC, Kyushu University, 3.Department of Earth and Planetary Sciences, Faculity Sciences, Kyushu University)

Keywords:ionosphere, cooling effect

We investigated the influence of increasing CO_2 on the ionosphere by conducting two simulations with the atmosphere-ionospheric model of GAIA. This model indicated that trends of F_2 peak (N_mF_2 and H_mF_2) are negative in most locations under the CO_2 cooling effect. The global averaged magnitude of N_mF_2 negative effect is about -0.7%, but a number of positive locations cannot negligible. Trends of N_mF_2 are seasonally asymmetry; winter hemisphere tend to have positive trends while summer hemisphere tend to have negative trends during 12LT and 0LT. The trends of H_mF_2 are also negative in many locations, which global averaged magnitude is about -0.7km. Trends of H_mF_2 have positive only near geomagnetic dip equator.