

Japan Geoscience Union Meeting 2011

(May 22-27 2011 at Makuhari, Chiba, Japan)

©2011. Japan Geoscience Union. All Rights Reserved.



PEM032-P13

Room:Convention Hall

Time:May 27 10:30-13:00

Atmosphere-Ionosphere Coupling Studied with a High-Resolution Electrodynamics Model

Hidekatsu Jin^{1*}, Yasunobu Miyoshi², Hitoshi Fujiwara³, Hiroyuki Shinagawa¹, Kaori Terada³

¹NICT, ²Kyushu University, ³Tohoku University

Ionospheric electrodynamics plays an important role not only in causing storm-time ionospheric disturbances but in causing day-to-day ionospheric density variation and irregularity. The latter phenomena are known to be related to thermospheric variations, some of which originate from the lower atmosphere. For example, the day-to-day variation of equatorial ionization anomaly (EIA), which affects ionospheric density at low-to-mid latitudes, is driven by low-latitude electric field generated from atmospheric waves via dynamo process. Recently observed 4-wave structure of EIA suggests that some of the variations are of tropospheric origin. The occurrence of equatorial plasma bubble also varies on the day-to-day basis.

We are developing an atmosphere-ionosphere coupled model, which is expected to contribute to the understanding of lower atmospheric effects on the ionospheric day-to-day variation and irregularity. In this presentation, we report some recent upgrades of the electrodynamics model as a component of the atmosphere-ionosphere coupled model.

Keywords: ionosphere, thermosphere, lower atmosphere, electrodynamics, geomagnetic variation, simulation