



Integrated study on magnetosphere-ionosphere-atmosphere system for investigation of coupling process in the space-terrestrial transition region

Akimasa Yoshikawa¹

¹ Department of Earth and Planetary Sciences, Kyushu University
e-mail: yoshikawa.akimasa.254@m.kyushu-u.ac.jp

The transition region between the Earth's atmosphere and space plasma, which extends from the atmosphere to the ionosphere and magnetosphere, is a system in which the dynamics of the Earth's atmosphere powered by sunlight, and space plasma driven by the solar wind, strongly influence each other through mechanical collisions.

Furthermore, in this transition region, electrodynamic driven by plasma motion, is activated in the vertical coupling between the magnetosphere-ionosphere-atmosphere and the global coupling from the polar to equatorial regions. Therefore, the establishment of "the science of the transition region between the Earth's atmosphere and space plasma" is an essential evolution for understanding the past, present, and future of the general circulation system of the Earth's atmosphere and space plasma and the Earth system connected to the universe.

To investigate the coupling process in the space-terrestrial transition region, we organized observational study and developed several types of magnetosphere-ionosphere-atmosphere coupling scheme and simulators.

In this presentation, we will introduce our strategy of integration of modeling and global observation to approaching "space-terrestrial transition region" from viewpoint of inter-spheres coupling physics.