

## Improvement of high-latitude electric field and particle model in GAIA and its application to September 2017 event

\*Chihiro Tao<sup>1</sup>, Hidekatsu Jin<sup>1</sup>, Hiroyuki Shinagawa<sup>1</sup>, Hitoshi Fujiwara<sup>2</sup>, Yasunobu Miyoshi<sup>3</sup>, Mitsuru Matsumura<sup>4</sup>

1. National Institute of Information and Communications Technology, 2. Seikei University, 3. Kyushu University, 4. Nagoya University

GAIA (Ground-to-Topside Model of Atmosphere and Ionosphere for Aeronomy) solves physical and chemical dynamics of the whole atmosphere region from the troposphere to the exosphere under interactions with the ionosphere. Input from the polar region dramatically varies with the solar wind and magnetospheric conditions, which affects thermosphere and ionosphere globally, while the current GAIA does not include this effect. We are conducting improvements to input (1) polar electric field and (2) atmospheric ionization due to auroral precipitation into the GAIA. For the former, we refer to an empirical Weimer model which varies as a function of solar wind parameters. We will report the development and initial results applying to the solar wind disturbance triggered by X-class solar flares in September 2017 in this presentation.

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