

## On the cause of post-midnight field-aligned irregularities at low-latitudes based on the GAIA simulation

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Post-midnight field-aligned irregularities (FAIs) observed with VHF radars at low-latitudes frequently occur around June solstices in low solar activity conditions. Most of post-midnight FAIs exist within plasma bubbles generated around midnight at magnetic equator. Uplift of the F-layer at magnetic equator is a key factor for the generalized Relay-Taylor instability, which generates plasma bubble at magnetic equator. In this study, we investigate causes of the F layer uplift at post-midnight in summer using the Ground-to-topside model of Atmosphere and Ionosphere for Aeronomy (GAIA). We have analyzed plasma density data simulated by GAIA, and found that F layer uplift at post-midnight occurs most frequently around June solstice, and that the occurrence rate is approximately 70%. Neutral temperature of GAIA shows that midnight temperature maximum (MTM) appears more frequently on June solstice (>70%) than other seasons (>50%). Seasonal variations of neutral winds, temperature, and altitude of F-layer at low-latitudes are examined to disclose the cause of post-midnight FAIs. Further detailed results will be discussed in the presentation.