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Sounding rocket/ground-based observation campaign to study Medium-Scale Traveling Ionospheric Disturbances (MSTID)

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An observation campaign is under preparation. It is to launch sounding rockets S-520-27 and S-310-42 from Uchinoura Space Center of JAXA, while ground-based instruments measure waves in the ionosphere. The main purpose of the study is to reveal seeding mechanism of Medium-Scale Traveling Ionospheric Disturbances (MSTID). The MSTID is enhanced in the summer nighttime of the mid-latitude ionosphere. The MSTID is not only a simple reflection of atmospheric waves to the ionosphere, but includes complicated processes including the electromagnetic coupling of the F- and E-regions, and inter-hemisphere coupling of the ionosphere. We will measure ionospheric parameters such as electron density and electric fields together with neutral winds in the E- and F-regions. TMA and Lithium release experiment will be conducted with S-310-42 and S-520-27 rockets, respectively. The observation campaign is planned in summer 2012 or 2013. In the presentation we will overview characteristics of MSTID, and show plan and current status of the project. We also touch results from the sounding rocket S-520-26 that was launched on January 12, 2012. We will show results of the rocket-ground dual-band beacon experiment.

Keywords: sounding rocket, ground-based experiment, Medium-Scale Traveling Ionospheric Disturbances, observation campaign