An international multi-point space exploration mission for intergrated observations in the space-Earth coupling system

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We report the current status and plan of a multi-point space plasma exploration mission for intergrated in-situ and remote-sensing satellite observations in the space-Earth coupling system. This mission is based on the international collaboration by Japanese FACTORS mission consisting of two identical compact satellites and the Swedisn InnoSat program of a micro satellite in order to realize the first Japanese formation flight configuration in the space and upper atmosphere, whose scientific goal of the most significance is the demonstrative and quantitative investigations on the plasma acceleration/transport mechanisms and the electromagnetic coupling processes emerging in the terrestrial polar magnetosphere and ionosphere. Beyond any previous space plasma exploration in our Japanese research community and the other overseas, we are proposing serveral cutting-edge measurement methodologies using high-time/spatial resolution techniques and direct evaluations for the energy transports between the plasma waves and particles as well as the simultaneous multi-point observations by the adjacent satellites with their controllable separation distances of 1-50 km. In this presentation, we focus particularly on the importance and strategy of the multi-point simultaneous observations carried out by these three compact/micro satellites of FACTORS and InnoSat.

Keywords: multi-point simultaneous satellite observation, integrated satellite observation, formation flight observation, international space exploration mission, space-Earth coupling system, space plasma

