

Sprint-A/EXCEED observation of solar- and solar wind-driven atmospheric escape from Venus, Mars, and Mercury

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Sprint-A is an Earth-orbiting extreme ultraviolet spectroscopic mission (to be) launched in August 2013. One of the primary objectives of Sprint-A/EXCEED is to study atmospheric escape from Venus, Mars, and Mercury responding to variations of solar and solar wind parameters, and its impact on the evolution of the planetary environments. The amount of atmospheric volatiles escaping to space from these planets still remains poorly constrained. Sprint-A/EXCEED will constrain the escape rates of oxygen, carbon, nitrogen, sulfur, etc. from Venus, Mars, and Mercury atmospheres by measuring the resonant scatterings of O^+ , C^+ , N^+ , and S^+ from the distant tails and from the ionospheres, those of neutral oxygen and hydrogen in the exospheres, and emissions from solar wind charge exchange, all of which are expected to significantly vary responding to Sun's EUV and solar wind variations. In this presentation, the scientific objectives of Sprint-A/EXCEED related to the observation of escaping planetary atmospheres will be presented. We will also introduce/discuss the planned collaborations with the MHD solar wind model at STEL [Shiota et al., to be submitted] (<http://st4a.stelab.nagoya-u.ac.jp/susanoo>) and with the in-situ observations by the ASPERA-4 and MAG instruments aboard Venus Express and ASPERA-3 aboard Mars Express.