[EE] Evening Poster | P (Space and Planetary Sciences) | P-PS Planetary Sciences

[P-PS01]Outer Solar System Exploration Today, and Tomorrow

convener:Jun Kimura(Osaka University), Yasumasa Kasaba(Dep. Geophysics Graduate School of Science Tohoku University), Steven Vance(Jet Propulsion Laboratory, Caltech, 共同), Kunio M. Sayanagi (Hampton University)

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The giant planets provide many keys to understanding planetary processes. They play an important role in shaping our solar system, and the physical and chemical processes they harbor also provide a unique opportunity to study the phenomena relevant for studying
Earth and other planets, including exoplanetary systems. In this session, we discuss a wide range of topics encompassing the giant planets and their moons, including their origins, interiors, atmospheres, compositions, surface features, and electromagnetic fields. To advocate for current and future outer planets exploration (Cassini, Juno, New Horizons, JUICE, and beyond), we also call for discussions on future missions to explore giant planet systems, including how to develop better international cooperation. Discussion in this latter category will include progress in developing a solar sail mission concept for observing the Jupiter system and its trojan asteroids.

[PPS01-P03]Evolution of Icy Moon's Interior Uncovered by Laboratory Experiment: Modeling of Space Weather by Ion Irradiation

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Keywords:Icy Bodies, Subsurface ocean, Plasma

In our solar system, several icy bodies have possibility for a liquid water ocean underneath a solid ice shell, while only Earth has ocean on the surface. The subsurface ocean could be potentially universal habitable environment. Duration of the subsurface ocean is an unsolved big problem for evolution of the icy body's interior and also for the possible life that has likely been evolving there. We uncover the evolutions of subsurface ocean based on the space weathering on solid surface that is driven by irradiation of energetic plasma around planets. Long-term space weathering at Ganymede that reaches Giga years is modeled by plasma irradiation to surface materials with laboratory beam experiment. Chronology for Ganymede's magnetic field excited by molten metallic core can be suggested based on a dependence of the space weathering on the Ganymede's magnetic field strength. We are going to pin down the subsurface ocean evolution from the magnetic field chronology. In this presentation, we report current status of our laboratory experiment made with an ion injector at Wakasa-wan Energy Research Center.