Geophysical Research Abstracts,
Vol. 11, EGU2009-517-1, 2009
EGU General Assembly 2009

NASA-ESA Joint Mission to Explore Two Worlds of Great Astrobiological Interest - Titan and Enceladus

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Rugged shorelines, laced with canyons, leading to ethane/methane seas glimpsed through an organic haze, vast fields of dunes shaped by alien sciroccos...

An icy moon festooned with plumes of water-ice and organics, whose warm watery source might be glimpsed through surface cracks that glow in the infrared...

The revelations by Cassini-Huygens about Saturn's crown jewels, Titan and Enceladus, have rocked the public with glimpses of new worlds unimagined a decade before. The time is at hand to capitalize on those discoveries with a broad mission of exploration that combines the widest range of planetary science disciplines—Geology, Geophysics, Atmospheres, Astrobiology,Chemistry, Magnetospheres—in a single NASA/ESA collaboration. The Titan Saturn System Mission will explore these exciting new environments, flying through Enceladus' plumes and plunging deep into Titan's atmosphere with instruments tuned to find what Cassini could only hint at. Exploring Titan with an international fleet of vehicles; from orbit, from the surface of a great polar sea, and from the air with the first hot air balloon to ride an extraterrestrial breeze, TSSM will turn our snapshot gaze of these worlds into an epic film.

This paper will describe a collaborative NASA-ESA Titan Saturn System Mission that will open a new phase of planetary exploration by projecting robotic presence on the land, on the sea, and in the air of an active, organic-rich world.