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Concepts for a Titan Lake Probe Mission

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The lakes of Titan represent an increasingly tantalizing target for future exploration. As Cassini continues to reveal more details the lakes appear to offer a particularly rich reservoir of knowledge that could provide insights to Titan's formation and evolution, as well as an ideal location to explore Titan's potential for pre-biotic chemistry. This talk will discuss the status and preliminary results of a study to evaluate options for missions to investigate Titan's lakes (one of several dozen studies commissioned by the NRC's Planetary Decadal Survey to explore the technical readiness, feasibility and affordability of scientifically promising mission scenarios). In this study a range of potential mission architectures were considered, including in-situ vehicle delivery by a future Titan flagship mission, as well as options for lower cost, standalone missions that could be performed in the next decade. Detailed point designs have been developed for in-situ elements including both floating platforms and submersibles, instrumented to meet varying ranges of science objectives. In this talk we will present an overview of the science objectives of the missions, the mission architecture and surface element trades, and the detailed point designs chosen for more in-depth analysis.