

USGS GLOBAL GEOLOGIC MAP OF TITAN

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ABSTRACT

NASA's *Cassini* mission (2004-2017) revealed the complex geologic landscape and the active meteorological cycle of Saturn's largest moon, Titan, in great detail, and many studies by the *Cassini* science team identified the processes that formed and continue to shape Titan's surface. For most of the last decade we have used geological mapping as a tool to investigate the geological processes and geological history of Titan's unique surface, as demonstrated by multiple regional geologic maps [*Lopes et al.*, 2010, *Icarus* 205; *Williams et al.*, 2011, *Icarus* 212; *Malaska et al.*, 2016, *Icarus* 270; *Birch et al.*, 2017, *Icarus* 282], and most recently, by the first simplified, 6-unit global geologic map [*Lopes et al.*, 2020, *Nat. Astro.* 4]. We think now, after the end of the *Cassini* mission and prior to the arrival of the *Dragonfly* aerial rover mission to Titan next decade, is the ideal time to produce the first global geologic map of Titan to be published by the USGS. This year we are proposing to the NASA PDART Program to produce a standardized 1:20,000,000 geological map. The objective of this proposal is to convert our global geomorphologic map of Titan (based on SAR coverage, scale 1:800,000) into a global (SAR- and non-SAR based) 1:20,000,000-scaled map in ArcGIS format and meeting all USGS standards, including all documentation, and to work closely with USGS for final map production and archiving. The proposal creates a higher-order product for the scientific community using multiple *Cassini* datasets (radar, imaging, and visible and infrared spectroscopy).