PROGRESS ON GLOBAL GEOLOGIC MAPPING OF PLUTO

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ABSTRACT

We are using established planetary geologic mapping techniques [1] to produce a global US Geological Survey Scientific Investigations Map (SIM) at 1:7M scale for the >75% of Pluto's surface that was imaged during the *New Horizons* flyby in 2015. The well-resolved encounter hemisphere is covered by imaging between 76 to 890 m/pixel, and the poorly-resolved far side by imaging between 2.2 to 40.6 km/pixel. We have divided Pluto's encounter hemisphere into six geological groups, with each group consisting of units that are interpreted to represent a distinct episode of geological activity on Pluto's surface (Fig. 1). We will present a summary of the mapping that has been completed to date, which includes the Sputnik, Wright, Tartarus, and Hayabusa groups, in addition to structural mapping of the entire encounter hemisphere [2]. Geologic mapping of Pluto's far side has been completed for a separate study [3], the line work of which will be imported into the final SIM upon completion of mapping of the encounter hemisphere.

References: [1] Skinner J. A. et al. (2018) *Planetary Geologic Mapping Protocol-2018.* USGS, Flagstaff, AZ. [2] McGovern P. J. et al. (2019) *Pluto System After New Horizons*, Abstract #7063. [3] Stern S.A. et al. (2020) *Icarus*, 113805.

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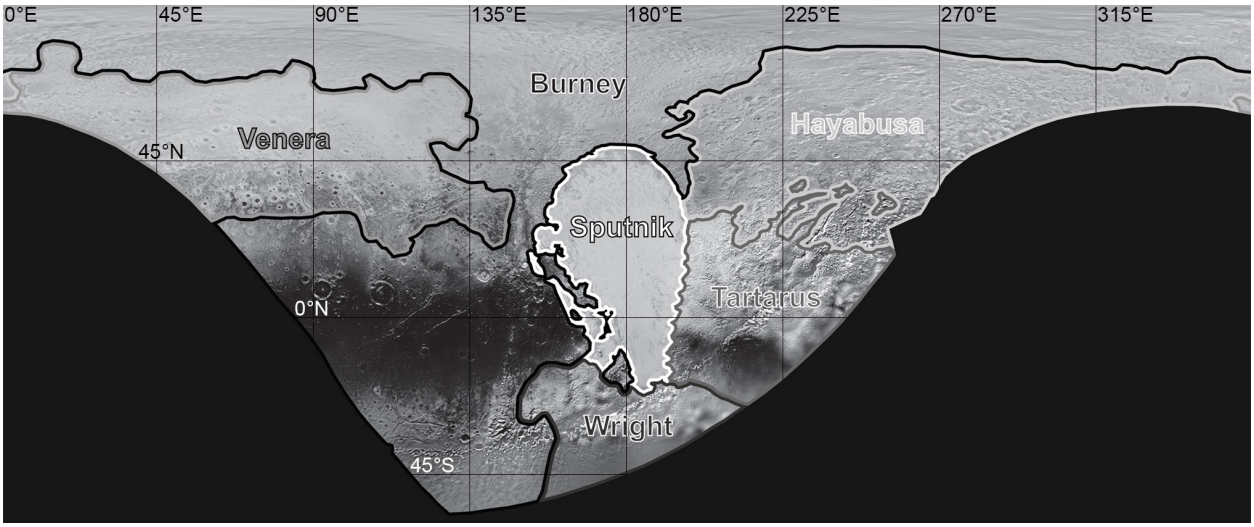

Figure 1: Mapping of the approximate boundaries of the six geological groups identified in Pluto's encounter hemisphere. In chronological order from youngest to oldest, these are Sputnik, Wright, Tartarus, Hayabusa, Venera, and Burney.