

COMMUNICATION TIME PARAMETERS SHAPING SCIENCE ACTIVITIES DURING MISSION SURFACE OPERATIONS. Z. Mirmalek^{1 2}, D. S. S. Lim², A. Colaprete², L. Falcone^{2 3}, M. H. Shirley², D. S. Lees^{2 3}, ¹BAER Institute, P. O. Box 25, Moffett Field, CA, 94035, zara.mirmalek@nasa.gov, ²NASA Ames Research Center, Moffett Field, CA, 94035, ³KBR, Inc.

Introduction: NASA's Volatiles Investigating Polar Exploration Rover (VIPER) mission utilizes a formal timeframe comprised of a specific number of calendar days and clock hours that define the temporal boundaries of surface operations from start, e.g., when a rover is off-lander and operational, to finish, e.g., end of the nominal mission. And, as with all missions, a myriad of requisite activities occurs within the timeframe of mission surface operations, the mission timeline. A mission's science team needs to articulate and organize their activities for producing scientific knowledge within a) a mission timeline, b) the temporal parameters set by network conditions supporting communication between astronomical bodies and terrestrial workspaces, and c) the receiving and responding times for humans and robots. Another key temporal parameter with which a mission science team must engage is located in previous mission communication architectures and experiences.

This presentation (poster) addresses these temporal parameters using work carried out on the VIPER mission (2020 - present) on the questions: Across Moon and Mars missions, what were the temporal parameters within which mission scientists conducted their activities during surface operations? Among these missions, and from the standpoint of VIPER's communication time parameters, is there a set of intersecting social and technical categories that can be used to structure a reference table to support VIPER science operations building on previous missions' temporal organization of science activities?

The poster will present a table populated with a selection of missions and categories that foreground a comparative view across communication time parameters that have shaped science activities within mission timelines. The poster will also include a description on criteria used for mission selection and rationale of categories.

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