

EGU23-3981, updated on 27 Apr 2024

<https://doi.org/10.5194/egusphere-egu23-3981>

EGU General Assembly 2023

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Exploring Planetary Geomorphology with NASA's Solar System Treks

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NASA's Solar System Treks Project (SSTP) online portals provide web-based suites of interactive visualization and analysis tools to enable planetary scientists, mission planners, students, and the general public to access mapped data products from past and current missions for a growing number of planetary bodies.

The Solar System Treks portals provide advanced data visualization and analysis capabilities for data returned from a vast number of instruments aboard many past and current missions to a growing number of planetary bodies throughout Solar System. Multiple map projections as well as interactive 3D views are available to optimize visualization of different landforms. A detailed set of analysis tools helps users find and interpret morphological features across diverse landscapes on the surfaces of planets, moons, and asteroids. In some cases, these tools make use of machine learning and artificial intelligence to help users locate, identify, and understand landforms drawn from very large datasets. Having an integrated suite of portals presenting geomorphology across a range of planetary bodies within the Solar System greatly facilitates studies of comparative planetology. The portals are currently being used for site selection and analysis by NASA and its international and commercial partners supporting upcoming missions.

Today, 11 web portals in the program are available to the public. This list includes portals for the Moon; the planets Mercury, Venus, and Mars; the asteroids Bennu, Ryugu, Vesta, and Ceres; and the outer moons Titan and Europa. The Icy Moons Trek portal features seven of Saturn's smaller icy moons. All of the portals are unified under a project home site with supporting content. These web-based portals are free resources and publicly available.

This presentation for EGU will detail and share examples of the how the portals can be applied to research in planetary geomorphology.