A TERRESTRIAL ANALOG PORTAL IN SUPPORT OF LUNAR SURFACE AND IMPACT ANALYSES.

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Introduction: With its innvoative GIS technology and rich set of lunar data products serving as a solid foundation, Moon Trek (https://trek.nasa.gov/moon), a NASA Solar System Treks portal, is ready to be extended to a Terrestrial Analog Trek portal that will provide easy discovery and access of terrestrial analog data in support of lunar surface and impact analyses.

Moon Trek Portal: Moon trek provides easy-to-use tools for browsing, data layering and feature search, including detailed information on the source of each assembled data product. Interactive maps include the ability to overlay a growing range of data sets including topography, mineralogy, abundance of elements, and geology. They provide analysis tools that facilitate measurement and study of lunar terrain including distance, height, and depth of surface features. They allow users to easily find and access the lunar geospatial products that are available. Lunar data products can be viewed in 2D, 3D and in virtual reality immersive mode. They can be stacked and blended together rendering optimal visualization that reveals details that no single data set can show. They can be plotted and compared against each other. In addition to keyboard and mouse control, standard gaming and 3D mouse controllers allow users to maneuver first-person visualizations of flying across lunar surfaces. The portal also provides users the ability to specify any area of lunar terrain for generation of STL/OBJ files that can be sent to 3D printers to make 3D models. Along with the web portal, the project supports additional clients, web services, and APIs that facilitate dissemination of lunar data to a range of external applications and venues.

Terrestrial Analog Trek Portal: Planetary analog field data are important for ground-truthing and testing hypotheses on a range of scientific and technical topics relevant to planetary bodies. Due to their intersection with both the earth and planetary sciences, analog field data do not fit easily into existing earth science or planetary science data archives, causing most data to reside with individual researchers or in disparate locations that hinders accessibility and discoverability of the data. Understanding how to effectively archive, manage, and access analog field data is critical for properly handling data returned from future field operations on the surfaces of the Moon and Mars [1]. The push to land humans back on the Moon in this decade makes it even more paramount to establish proper field data guidelines and standards. Recently NASA began to look into avenues for effectively archiving analog field data [2]; however, no plan has been formalized to the address the issues. We recommend and propose to leverage the Moon Trek's existing infranstructure, innovative visualization and analysis tools to develop a Terrestrial Analog Trek portal to host and serve analog data and/or to collect and harvest links to data from other hosts of lunar/planetary and earth science data to enhance discoverability, accessibility and usability of past and future data products. One focus of this new portal would be to facilitate sharing, visualizing, and analyzing data from terrestrial meteoritic impact crater sites. This will be an enabling tool for analog studies at terrestrial impact sites preparing for upcoming missions to the Moon and Mars. This presentation will give an overview of the Moon Trek and highlight how it can be extended to power this new portal.

Solar System Treks Suite: The proposed Terrestrial Analog Trek will become a member of the suite of Solar System Treks portals (https://trek.nasa.gov). These portals provide data visualization and analysis capabilities for a growing number of diverse planetary bodies throughout the Solar System, including planets, moons (rocky and icy), and asteroids. This greatly facilitates comparative planetology and enhanced understanding of key processes such as impact cratering.

References:

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