MOON TREK: NASA'S NEW ONLINE PORTAL FOR LUNAR MAPPING AND MODELING. B. H. Day[1] and E. S. Law[2], [1] NASA Solar System Exploration Research Virtual Institute. NASA Ames Research Center. M/S 17-1. Moffett Field, CA, USA. 94035. (Brian.H.Day@nasa.gov), [2] Jet Propulsion Laboratory, California Institute of Technology. M/S 168-200. 4800 Oak Grove Dr. Pasadena, CA, USA 91109. (Emily.S.Law@jpl.nasa.gov).

Introduction: This presentation will introduce Moon Trek, a new name accompanying a major new release of NASA's Lunar Mapping and Modeling Portal (LMMP). Upgrading to the new Trek interface provides greatly improved navigation, 3D visualization, performance, and reliability. The new Moon Trek interface also provides compatibility with the other portals developed by NASA's Lunar and Planetary Mapping and Modeling Project. Behind the scenes, this release also entails upgrades to the portal's back end infrastructure and services. These will significantly facilitate the implementation of exciting new features and capabilities in the months to come, some of which will be previewed in this presentation.

An Integrated Suite of Interactive Tools: Originally designed to support site selection and analysis for the Constellation program, LMMP has evolved to Moon Trek to meet the needs of mission planners in a new era of lunar exploration. The portal integrates a suite of interactive tools that incorporate observations from past and current lunar missions, creating a comprehensive lunar research Web portal. The online Web portal allows anyone with access to a computer to search through and view a vast number of lunar images and other digital products. As a web-based toolset, Moon Trek does not require users to purchase or install any software be-yond current web browsers. The portal provides easy-to-use tools for browsing, data layering and feature search, including detailed information on the source of each assembled data product. Using Moon Trek, many hundreds of lunar data products can be both visualized and downloaded. Detailed metadata for each data product is also made available to the user. While emphasizing mission planning, Moon Trek also addresses the lunar science community, the lunar commercial community, education and public outreach (E/PO), and anyone else interested in accessing or utilizing lunar data. Its visualization and analysis tools allow users to perform analysis such as lighting and local hazard assessments including slope, surface roughness and crater/boulder distribution. Moon Trek provides a generalized suite of tools facilitating a wide range of activities including the planning, design, development, test and operations associated with lunar sortie missions; robotic (and potentially crewed) operations on the surface; planning tasks in the areas of landing site evaluation and selection; design and placement of landers and other stationary assets; design of rovers and other mobile assets; developing terrain-relative navigation (TRN) capabilities; deorbit/impact site visualization; and assessment and planning of science traverses.

Current data products include image mosaics, digital elevation models, local hazard assessment tools (such as maps of slope, surface roughness and crater/boulder distribution), lighting assessment tools, gravity models, and resource maps such as soil maturity and hydrogen abundance.

Moon Trek fosters outreach, education, and explora-tion of the Moon by educators, students, amateur astronomers, and the general public. It has been designated by NASA as a component of its Science Education Infrastructure While great utility is provided by Moon Trek's interface and tools, it also provides particu-lar value through its ability to serve data to a variety of other applications. In the outreach realm, this has been demonstrated with data served to planetariums and NASA's Eyes on the Solar System.

New Features and Coming Enhancements: The most notable enhancement in the new release is the greatly improved visualization and navigation capabilities provided by the new Moon Trek interface. Users can also now draw a bounding box around any surface feature and generate an STL file for use with 3D printers. New enhancements are also being made to hazard analysis tools. Looking further ahead, we are working on automated traverse planning tools, developing plans to facilitate examining surface temperatures as a function of time, and are collaborating with Bill Farrell and the DREAM2 SSERVI team on a Surface Potential Analysis Tool. We will collaborate with the NASA Astromaterials Acquisition and Curation Office to integrate with their Lunar Apollo Sample database in order to help better visualize the geographic contexts from which samples were retrieved. Additional clients in the works include a gesture-controlled touch table and virtual reality/augmented reality capabilities

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