

SPACE EXPLORATION SYMPOSIUM (A3)  
Interactive Presentations (IP)

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MARS TREK: AN INTERACTIVE WEB PORTAL FOR CURRENT AND FUTURE MISSIONS TO  
MARS

**Abstract**

This presentation will provide an overview of the uses and capabilities of NASA's Mars Trek online mapping and modeling portal, a web based suite of data visualization and analysis tools designed to support mission planning, scientific research, and education/outreach.

The portal integrates a suite of interactive tools incorporating observations from past and current missions. The online web portal allows anyone with access to a computer to search through and view a vast number of coregistered images and other digital products. As a web-based application, Mars Trek does not require users to purchase or install any software beyond current web browsers. The portal provides easy-to-use tools for browsing, data layering, and feature search. Mars Trek features 3-D visualization and output of user-selected terrain to 3-D printers. Current tools include distance measurement, elevation profiling, and calculating Sun angles. Data sets include photographic, spectrometric, mineralogy, thermal, and landform data, as well as DEMs generated from stereo imagery and laser altimetry.

Originally designed as a public outreach tool, Mars Trek is currently being enhanced to support site selection and analysis for upcoming human and robotic missions to Mars. Many new data products are being added, with emphasis on providing detailed information for proposed exploration zones. New tools will include lighting analysis, slope mapping, crater detection, boulder detection, and traverse planning. Users will be able to download data products from Mars Trek and access metadata for each product. Web services and APIs will allow other clients to access data from Mars Trek's servers.

As private industry and space agencies of a growing number of nations plan new missions to Mars, detailed maps and models of Mars' surface and climate will be essential for mission planning. Mars Trek's generalized suite of tools are being designed to meet the needs of this new generation of missions. The portal will also provide an outstanding means of dissemination of data from these missions. Layering and blending many different data products and putting individual products in the context of many others will facilitate mining of information going far beyond what individual products can provide separately. In addition to mission planning and planetary science, Mars Trek will continue supporting the essential task of engaging the public in this great adventure.