

**JMARS - Easy Visualization and Analysis of Planetary Remote Sensing Data** S. Dickenshied<sup>1</sup>, S. Anwar<sup>1</sup>, D. Noss<sup>1</sup>, W. Hagee<sup>1</sup>, S. Carter<sup>1</sup>, <sup>1</sup>Mars Space Flight Facility, 201 E Orange Mall, Arizona State University, Tempe, AZ 85287 USA.

**Introduction:** JMARS is a geospatial information system developed by ASU's Mars Space Flight Facility to provide mission planning and data-analysis tools for NASA orbiters, instrument team members, students of all ages, and the general public. Originally written as a mission planning tool for the THEMIS instrument onboard Mars Odyssey, JMARS has since been released to the science community and the general public as a free tool to quickly locate and view planetary data for Mars, the Moon, Vesta, Ceres, Mercury, Earth, and many of the outer planet moons.

JMARS is actively used as a mission-planning tool for NASA instruments orbiting Mars and the Moon and will be used to target all of the science instruments on the upcoming OSIRIS-REx asteroid sample return mission. JMARS is also used as a visualization tool by numerous current and future NASA missions including THEMIS, MRO, LRO, Dawn, and OSIRIS-REx.

The public version of JMARS offers quick access to hundreds of maps and millions of individual images collected from planetary missions. These images can be easily located by geographic area or filtered down based on any number of scientific parameters, then viewed in situ without excessively large downloads or extensive knowledge of planetary data formats.

Numeric data is preserved in JMARS whenever possible, allowing the user to draw a profile line to quickly plot elevation, mineral abundances, and temperature data, or project an entire scene over available topography to create a 3D image. Vector data can be imported or created on the fly, then combined with numeric maps to calculate and report separate values for each shape.

Current development efforts include adding support for displaying planetary data on complex shape models like Itokawa and Bennu, and extending all existing JMARS functionality to also work well in a 3D view.

If the built in analysis features are insufficient, JMARS provides a quick link to the official repository for each image, allowing the user to download and process data on their own.

#### **References:**

[1] Christensen, P.R.; Engle, E.; Anwar, S.; Dickenshied, S.; Noss, D.; Gorelick, N.; Weiss-Malik, M.; JMARS – A Planetary GIS, AGU 2009, Abstract IN22A-06

**Acknowledgements:** JMARS was funded in part by the Mars Odyssey project, the Mars Program Office, and people like you.