

**MARSIS Calibration Plan.** R.L. Jordan<sup>1</sup>, A. Safaeinili<sup>1</sup>, W. Kofman<sup>2</sup>, G. Picardi<sup>3</sup>

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MARSIS (Mars Advanced Radar for Subsurface and Ionospheric Sounding) is the first of a new generation of radio sounders. MARSIS will be flown on the ESA Mars Express spacecraft. It will arrive at Mars in early 2004 for a two-year mission. MARSIS is the result of an international collaboration between NASA, the Italian Space Agency (ASI), and European Space Agency (ESA), is designed to sense planets interior to a depth of up to 5 km. MARSIS' main objective is to search for water if it exists in liquid form under the surface. It will also attempt to map and characterize the subsurface geological structure of Mars, which is hidden under a layer of surface dust. In addition to its subsurface exploration goals, MARSIS will study the ionosphere of Mars providing the most extensive amount of data on Martian ionosphere to date.

One of the main challenges of MARSIS is the calibration of the sounder instrument. The main objective of MARSIS is to probe the subsurface of Mars using low frequency radio waves and provide science data related to the electromagnetic behavior of the surface and subsurface. However, the sounder data is impacted by the instrument response and other environmental factors such as the ionosphere, Mars magnetic field and surface clutter. Removal from the scientific data of these effects will involve testing on the ground before flight and data acquisition after Mars orbit insertion. Removal of the effects of surface clutter will use available digital terrain maps of Mars provided by the MGS Mars Orbiter Laser Altimeter (MOLA) team. This talk will highlight the calibration activities for MARSIS.

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