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MARS PATHFINDER LANDING SITE RADAR PROPERTIES

A. F. C. Haldemann (1), R.F. Jurgens (1), M. P. Golombek (1), M. A. Slade (1), H. Moore (2) and T. Blackmon (3)

(1) Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA 91109-8099, USA, (2) U. S. Geological Survey, Menlo Park, CA 94025, USA, (3) NASA Ames Research Center, Moffat Field, CA 94035, USA.

albert@dasdev.jpl.nasa.gov/Fax:[+1] 818-354-6825

Prior to Pathfinder's launch, much effort was invested to assess possible landing sites. Earth-based radar observations were among the remote sensing data used to select the Arcs Vallis site. The observed radar parameters for wide regions of Chryse and Ares Vallis can now be examined in the context of Pathfinder actual landing site morphology: the radar assessment of the Arcs Vallis site was very successful. Radar provides three forms of information: ranging, reflectivity or cross-section, and roughness. Delay-Doppler ranging found an elevation of the site in excellent agreement with ranging to the lander itself. How these numbers compare in detail depends on what elevation is being measured in the 10 km x 156 km radar pixel. Rock statistics within 6m of the lander applied to radar models produce good agreement with both the delay-Doppler and Doppler-only scattering parameters, as do surface height statistics. Extrapolation from the landing site to the entire Chryse region remains an issue. These analyses reflect on both the usefulness and limitations of radar observations for understanding terrestrial planet surfaces.

Submittal Information

1. Albert Haldemann
Jet Propulsion Laboratory
Mail Stop 238-420
Pasadena, CA 91109-8099
USA
Tel.:[+1] 818-354-1723
Fax.:[+1] 818-354-6825
E-mail:albert@dasdev.jpl.nasa.gov
2. Mars Pathfinder Mission - Update
3. H. U. Keller
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EGS Office
Max-Planck-Str. 13
37191 Katlenburg-Lindau
Germany

Tel.:[+49] 5556-1440
Fax.:[+49] 5556-4709
E-mail:EGS@Copernicus.org
<http://www.Copernicus.org/EGS/EGS.html>