

Low-Frequency Imaging Radar for Subsurface Geologic Studies in Arid Regions

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We are working to evaluate the utility of low-frequency imaging radar for detecting and mapping buried lava flows and alluvial channels in arid regions. We are seeking to determine optimum sensor characteristics (wavelength, polarization, look angle, etc.) as well as the environmental conditions that affect detection and mapping, such as sediment type (e.g. silt, sand, gravel), moisture content, subsurface interfaces, surface roughness, etc. Initially P-band (70 cm) AIRSAR polarimetric radar data are being used, but it is intended to evaluate VHF wavelengths (up to 15 m) as well. Results of this work will provide input into sensor design and applications for future Mars imaging radars as well as a possible Earth-orbiting low-frequency imaging radar.

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