

## Enhanced Mars Radar Observations with the Goldstone Solar System Radar

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The Goldstone Solar System Radar (GSSR) has successfully collected radar echo data from Mars over the past 30 years. GSSR radar data were critical in assessing the Viking Lander 1 as well as the Mars Pathfinder landing sites. A reprocessing to common format of the last ten years worth of GSSR Mars delay-Doppler sub-Earth radar track profiles was recently completed in aid of landing site characterization. The radar data obtained since 1988 by the GSSR comprise some 73 delay-Doppler radar tracks. Sixteen of those tracks also have interferometric radar data, which has never been processed, because the signal to noise is insufficient to constrain both the phases and the radar scattering parameters. The new topographic data from the Mars Orbiter Laser Altimeter on the Mars Global Surveyor spacecraft offer the best means to finally make radar maps that extend the radar properties coverage some 3 to 4 degrees beyond the sub-Earth radar track. This would be a significant expansion of the dataset, and is all the more warranted as the radar spatial resolution improves away from the sub-Earth track. At the outer edges the radar resolution cell is of the same order of size as the landing site ellipses for future mission (approximately 20 km diameter). Initial results of processing the interferometric data will be presented at the meeting.

The 2001 Mars opposition offers an opportunity to fill in some areas where radar data are lacking in the current dataset. We are planning 18 radar experiments from May through July of 2001. The goal of the observations will be to provide new, interferometric, improved-spatial-resolution radar data over the equatorial regions (latitudes -2 to +7) of Mars, in particular over the so-called Hematite Site in Sinus Meridiani.

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