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Radar observation of Venus' terrestrial analogues using TecSAR X-band SAR

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Venus is shrouded in a dense CO_2 atmosphere that prevents us from viewing the surface in visible light or with optronic sensors. Long wavelengths are required to 'see' through the dense atmosphere. In the early 1990s, the S-band synthetic aperture radar of the Magellan spacecraft acquired images of a variety of surface features on Venus, including morphologies attributed to wind processes. These include sand dunes, wind-sculpted hills (yardangs), and almost 6000 wind streaks. These aeolian landscapes were formed and shaped by near surface atmospheric circulation and local winds. These can serve as local markers, each providing an integrated wind direction. Since the Magellan mission, there were no missions to Venus until the Venus Express Mission of 2005 to examine the upper atmosphere. The future will probably include high-resolution SAR images of Venus. This poster will demonstrate high resolution SAR images in X-band from the TecSAR sensor launched by Israel in 2008. Observations of wind streaks, dunes and impact craters in desert areas will show the wealth of information that is extracted from high-res X-band data.
Detailed images of Aurounga impact crater in Chad, Kelso dunes, California and Pisgah lava flow show immense detail of the morphologies associated with these features. These are compared with Magellan images of sites on Venus and SRL data in C and L-bands. The X-band provides extremely high resolution and resembles optical data much more than the longer wavelengths.