Geophysical Research Abstracts
Vol. 16, EGU2014-2369, 2014
EGU General Assembly 2014

Cassini RADAR at Titan : Results in 2013/2014

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Since the last EGU meeting, several Cassini flybys of Titan have featured significant RADAR observations. These include T91 and T92 (May/July 2013) with SAR and altimetry observations of Ligeia Mare. The latter have placed tight constraints on surface roughness (Zebker et al., in press), showing that wind-driven waves were not present. A remarkable altimetry analysis by Mastrogiuseppe et al. (submitted) detects a bottom echo from the bed of Ligeia, only possible if the liquid is exceptionally radar-transparent. This opens the way to wider radar bathymetry analyses of the northern seas. SAR coverage, augmented by some distant HiSAR observations, has now allowed construction of a more-or-less complete map of the northern polar region. This map now defines the extent of the northern lakes and seas, permitting oceanographic studies.
T95 (October 2013) made SAR observations of the impact crater Selk (previously observed by VIMS and RADAR). As well as a closer view of this rather polygonal crater, the observation shows dramatic change in the dune orientation around the crater and its ejecta blanket.
The T98 encounter is due to occur in February 2014, and will feature the last prime SAR observation of Ontario Lacus, giving a good baseline for change detection against prior observations. Additionally, close-approach observations (mandated to avoid solar heating constraints on other instruments) will give high-resolution altimetry data on the Shangri-La dunes. Preliminary results may be available in time for the meeting, at which this solicted talk will review analyses of these and other observations.