Subsurface planetary data streamed on the web by 2D and 3D visualizations

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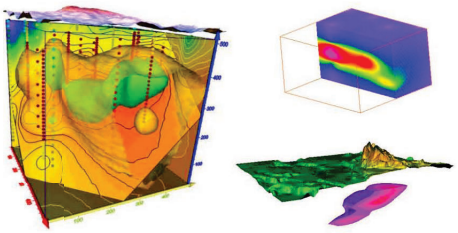


The products and the demonstrators shown in this poster are based on the SHARAD Mars Reconnaissance Orbiter and MARSIS Mars Express mission data, and are used in the ASI PROC (Planetary Radar Operation Center) facility in Matera, Italy.

State-of-the-art

Subsurface data analysis and visualization represents one of the main aspects in Planetary Observation.
Generally, they are represented as 2D radargrams in the perspective of space track and z axes (perpendicular to the subsurface) but as standalone pictures and without direct correlation to other data acquisition or knowledge on the planet

Scientific needs

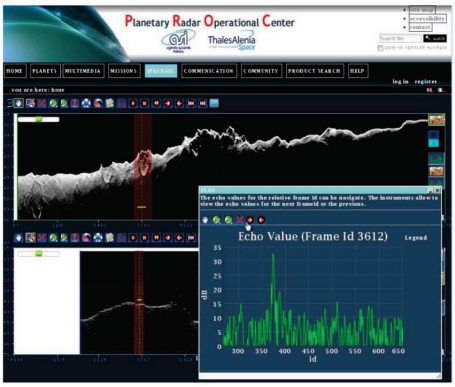
1) Representing the subsurface data with a 3D model.
2) Correlate these kinds of data with other data acquisition or knowledge on the planet.

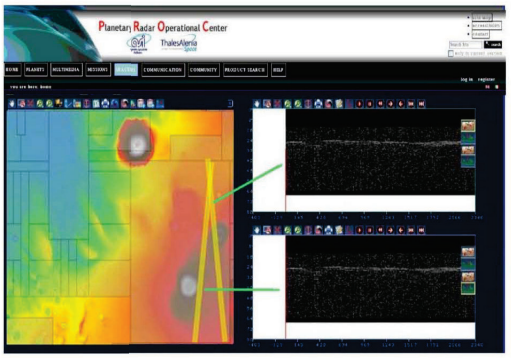
Auxiliary tools

Paraview: open-source, multi-platform data analysis and visualization application.
Paraview GEO: Paraview for Geoscience.
Paraview WEB: a collection of components that enables the use of ParaView's visualization and data analysis capabilities within Web applications.
SGeMS: open-source computer package for solving problems involving spatially related variables.

The SpaceGIS Tool

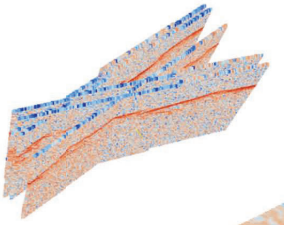
The ***SpaceGIS*** web tool gives the possibility to integrate Mars maps, radargrams and their data ground tracks in a unique vision allowing the use of different on-line.



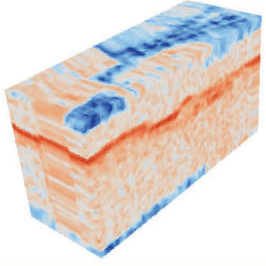


The 3D Model

The ***3D Model*** approach allows the subsurface navigation in all directions and the analysis of different sections and slices. It moreover allows to navigate the iso-surfaces with respect to a value (or interval) and to link the on-ground data, as imaging, to the underground ones by geographical and context field of view.

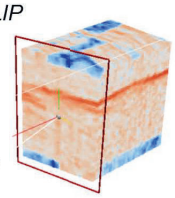


3D Georeferred Radargrams

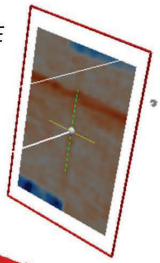


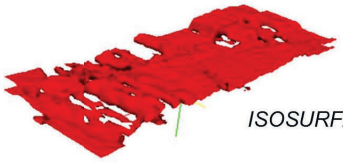
Radargrams Volumetric Interpolation

CLIP



SLICE





ISOSURFACE