



GIS-based Landing-Site Analysis and Passive Decision Support

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The increase of surface coverage and the availability and accessibility of planetary data allow researchers and engineers to remotely perform detailed studies on surface processes and properties, in particular on objects such as Mars and the Moon for which Terabytes of multi-temporal data at multiple spatial resolution levels have become available during the last 15 years.

Orbiters, rovers and landers have been returning information and insights into the surface evolution of the terrestrial planets in unprecedented detail. While rover- and lander-based analyses are one major research aim to obtain ground truth, resource exploration or even potential establishment of bases using autonomous platforms are others and they require detailed investigation of settings in order to identify spots on the surface that are suitable for spacecraft to land and operate safely and over a long period of time.

What has been done using hardcopy material in the past is today being carried by using either in-house developments or off-the-shelf spatial information system technology which allows to manage, integrate and analyse data as well as visualize and create user-defined reports for performing assessments. Usually, such analyses can be broken down (manually) by considering scientific wishes, engineering boundary conditions, potential hazards and various tertiary constraints.

We here (1) review standard tasks of landing site analyses, (2) discuss issues inherently related to the analysis using integrated spatial analysis systems and (3) demonstrate a modular analysis framework for integration of data and for the evaluation of results from individual tasks in order to support decisions for landing-site selection.