



Recent developments of surface sampling techniques in ESA programmes

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For nearly 20 years, the European Space Agency has initiated the development of a number of sampling devices for planetary surfaces, essentially in the frame of its basic Technology and Research Programme (TRP).

Sampling is generally performed by means of drilling, coring, scooping or penetration. A complete sampling device performs in-situ sample acquisition and transfers the sample for analyses. A derived device with a Mole may be used to carry a set of sensors under the surface. For recent space missions, the size of the developed devices aims at acquiring mostly small samples.

Sampling or soil probing capabilities was or is included to various extents in the past, current or near-future ESA missions carrying a planetary lander: CASSINI-HUYGENS, MARS EXPRESS, ROSETTA. Some of the sampling devices from the TRP could find there a direct application; in other cases, a derived concept could fulfill updated requirements.

Some sampling-related developments for future Mars exploration missions, performed within the AURORA programme, are outlined.