

Beagle 2: The Astrobiology Lander on ESA's Mars Express Mission

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Abstract. Due for launch in 2003 as part of the Mars Express mission, the primary goal of the Beagle 2 lander is the detection of extinct or extant life on Mars. Atmospheric studies, analysis of subsurface material and regime, and the first attempt at in-situ radiometric dating of rocks on another planet make Beagle 2 unique among planetary missions. The lander is named after Darwin's ship, H.M.S Beagle.

Beagle 2 (Fig. 1, left) will examine the mineralogy and chemistry of rocks and soils within reach of the PAW, an integrated collection of instruments deployed by a 0.7m long arm (Fig. 1, right). Samples acquired by the PAW will be delivered to the Gas Analysis Package (GAP) for isotopic analysis. Beagle 2 will attempt to date rocks in-situ via the K-Ar method with data from the X-ray spectrometer (⁴⁰K) and the GAP (⁴⁰Ar). An Environmental Sensor Suite measures quantities including atmospheric pressure, wind speed and radiation levels at the landing site. The 60 kg lander (9 kg of which is instrumentation) is due to reach the Martian surface in December 2003 in an airbag-assisted landing, and has an operational lifetime of 180 Sols. The prime landing site is Isidis (270°W 12°N), an area which may have experienced influx from fluvial and mud flow mechanisms. The Beagle 2 Operations centre will be based at the National Space Science Centre in Leicester (UK).

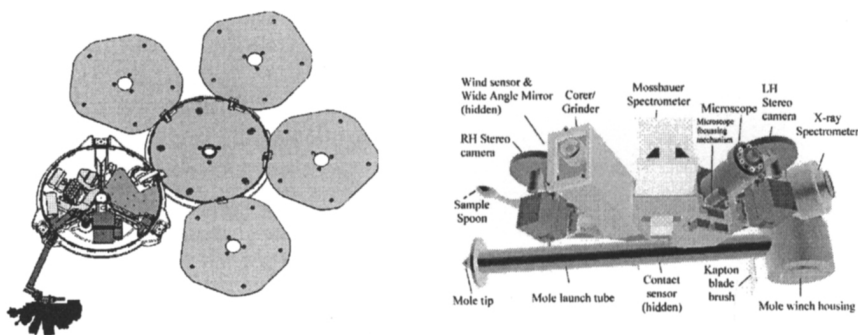


Figure 1. Left: Beagle 2 lander. Right: PAW instrumentation.