

The Geophysics and Environmental Package (GEP) of the ExoMars Mission

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ExoMars will be the first Mission in the ESA Aurora Program, and is currently foreseen to be launched to Mars in 2013 (backup 2015). The payload is to be distributed between a rover and a stationary, long-living Geophysics Environmental Package (GEP), the latter addressing the habitability (past and present) of the planet.

The GEP has been proposed with a core payload consisting of a seismometer, a meteorological package, an atmospheric probe, a heat flow and physical properties package, and a magnetometer. Additional payload elements were recommended following the ESA coordinated ExoMars Payload Confirmation Review. The accommodation of the whole suite of 11 proposed instruments (9 kg) has been shown to be feasible, leading to a total mass of ca. 30 kg; a final payload selection is foreseen in the frame of the ExoMars Implementation Review, June 2007.

The GEP will be integrated into the Lander platform and consists of several units containing the necessary support equipment (power system, central data management system, communications units, thermal control system) as well as the instruments and deployment mechanisms.

The proposed system design is based on a solar generator and radiothermal heaters to allow long term (>2 years) operations on the surface of Mars.

The landing areas for the mission are currently foreseen between 15° South and 45° Northern latitude, leading to a challenging power design, keeping in mind the extreme cases in winter, combined with the assumed dust environment.

The GEP will be contributed to the ESA-ExoMars Mission by an international consortium, under German lead and with major contributions from France, Denmark, Belgium and the UK.

In this paper, the final payload, its scientific objectives and capabilities will be discussed along with the technical realization of the package.