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MMPM - Mission implementation of Mars MetNet Precursor

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We are developing a new kind of planetary exploration mission for Mars – MetNet in situ observation network based on a new semi-hard landing vehicle called the Met-Net Lander (MNL). The key technical aspects and solutions of the mission will be discussed.

The eventual scope of the MetNet Mission is to deploy some 20 MNLs on the Martian surface using inflatable descent system structures, which will be supported by observations from the orbit around Mars. Currently we are working on the MetNet Mars Precursor Mission (MMPM) to deploy one MetNet Lander to Mars in the 2009/2011 launch window as a technology and science demonstration mission. The MNL will have a versatile science payload focused on the atmospheric science of Mars. Detailed characterization of the Martian atmospheric circulation patterns, boundary layer phenomena, and climatology cycles, require simultaneous in-situ measurements by a network of observation posts on the Martian surface. The scientific payload of the MetNet Mission encompasses separate instrument packages for the atmospheric entry and descent phase and for the surface operation phase. The MetNet mission concept and key probe technologies have been developed and the critical subsystems have been qualified to meet the Martian environmental and functional conditions. This development effort has been fulfilled in collaboration between the Finnish Meteorological Institute (FMI), the Russian Lavoschkin Association (LA) and the Russian Space Research Institute (IKI) since August 2001. Currently the INTA (Instituto Nacional de Técnica Aeroespacial) from Spain is also participating in the MetNet payload development.