



Scientific perspectives of the Mars Express extended mission

P. Martin, A. Chicarro, F. Jansen, R. Pischel, T. Zegers

European Space Agency, ESTEC, Research and Scientific Support Department, Postbus 299,
NL 2200 AG Noordwijk, The Netherlands (patrick.martin@rssd.esa.int / Fax: +31 71 565
4697)

The ESA Mars Express nominal mission was completed on 30 November 2005, concluding one Martian year of highly successful scientific data taking. All payload instruments are currently fully functioning and the spacecraft is in good health. The mission has been extended for another Martian year, from 1st December 2005 to 31st October 2007. The scientific focus of this extended mission will be on fulfilling scientific goals not fully achieved during the nominal mission. This means augmenting/completing the global coverage of the Martian surface being provided by the optical imaging instruments HRSC and OMEGA at various spatial resolutions. The MARSIS radar will have major opportunities to perform subsurface sounding under optimal illumination conditions (nighttime), in particular for the coverage of the polar caps. Gravity measurements conducted in this extended period will also allow the radio science experiment team to further constrain the planet's internal structure. The ASPERA-3 instrument suite will be working on obtaining extended coverage of the plasma domains near Mars, which will yield exciting results regarding the ionospheric escape during the evolution of Mars and its environment. The spectrometers SPICAM and PFS will continue their coverage (spatial and seasonal) and characterisation of the atmosphere, along with related discoveries. Phobos and Deimos will remain dedicated targets for various payload instruments, and scientific collaboration between instruments and with other missions (e.g., Mars Exploration Rovers, Mars Reconnaissance Orbiter, Rosetta) will continue to enhance the scientific return of the Mars Express mission. In terms of constraints to the scientific operations of Mars Express in 2006, the passage through Aphelion, the eclipse season starting in August and the solar conjunction in the fall will have a non-negligible impact on science data taking.