



## **Plans for coordinated measurements with the Mars Express and MAVEN spacecraft**

Olivier Witasse (1), Alejandro Cardesin-Moinelo (2), Marc Costa (2), Sophia ID Salah (1), Bruce Jakosky (3), Joseph Grebowsky (4), Rob Lillis (5), Hermann Opgenoorth (6), Paul Withers (7), and Andrea Opitz (1)

(1) European Space Agency, RSSD, Noordwijk, Netherlands (owitasse@rssd.esa.int, 0031-71-565-4697), (2) European Space Agency, INSA, Villafranca del Castillo, Spain, (3) LASP, Boulder, USA, (4) GSFC, NASA, USA, (5) SSL, Berkeley, USA, (6) IRF, Uppala, Sweden, (7) Boston University, Boston, USA

The NASA MAVEN spacecraft will be launched in November 2013, will arrive at Mars in September 2014, and will begin its year-long primary science mission at the start of November, 2014. Its main goals are to characterise in detail the state of the Mars' upper atmosphere and to determine the role that the loss of atmospheric gas into space has played in changing the Martian climate over time. The ESA Mars Express mission is in orbit since December 2003. It includes a comprehensive payload suite for the study of Mars' aeronomy. Hence, the scientific investigations of both missions are very complementary. From the end of 2014 onwards, the two spacecraft will be able to perform coordinated measurements. There is significant overlap in instrumentation between MAVEN and Mars Express (e.g., measurements of electrons and ions), yet also significant differences (e.g. magnetometer on MAVEN, topside ionosphere sounder on Mars Express). This allows a combination of measurements that are more extensive than the complete data set from either mission. In addition, the orbits will provide a number of interesting geometrical configurations that will enable the atmosphere to be explored from two vantage points. Consequently, this will allow us to separate temporally- and spatially-varying phenomena. Here we describe preliminary plans for coordinated measurements with the two platforms. In particular, the following dedicated observation campaigns will be discussed: a) Mars Express radio-occultation seasons; b) upstream solar wind monitoring by Mars Express or MAVEN; c) MAVEN "deep-dip" campaigns to 120km periapsis; d) 2014 and 2016 planetary alignment campaigns; e) ionospheric observations from opposite hemispheres.