THE SCIENTIFIC INSTRUMENTS OF THE MARS EXPRESS MISSION

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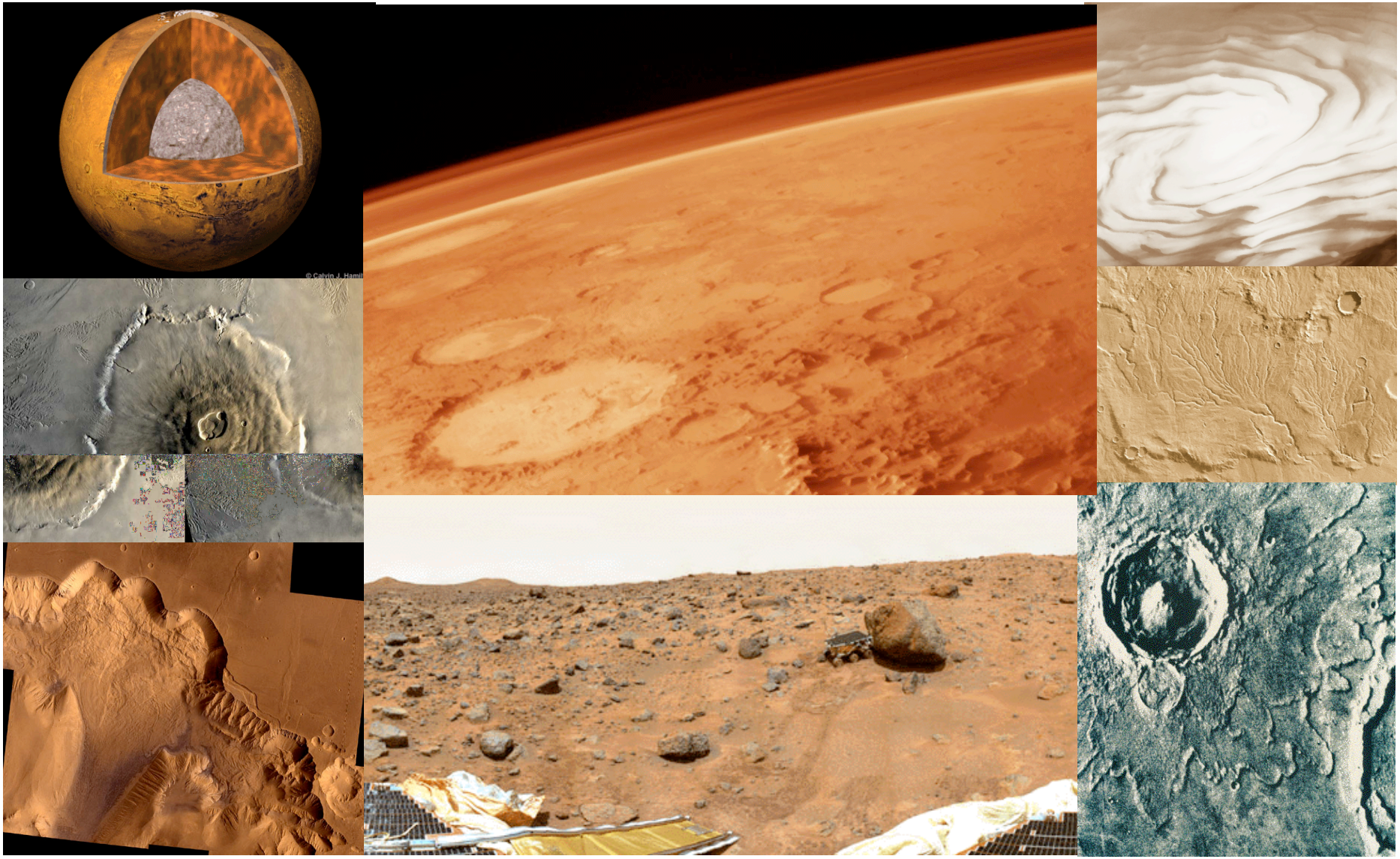
MEX Science Conf.
ESTEC, 21/25-02-05

MARS – A Fascinating Planet



ESA Solar System Missions

2011 ⇨ BEPI COLOMBO — Mercury

2005 ⇨ VENUS EXPRESS — Atmosphere & Surface

2004 ⇨ ROSETTA — Comet Orbiter & Lander

2003 ⇨ SMART-1 — Moon & Technology

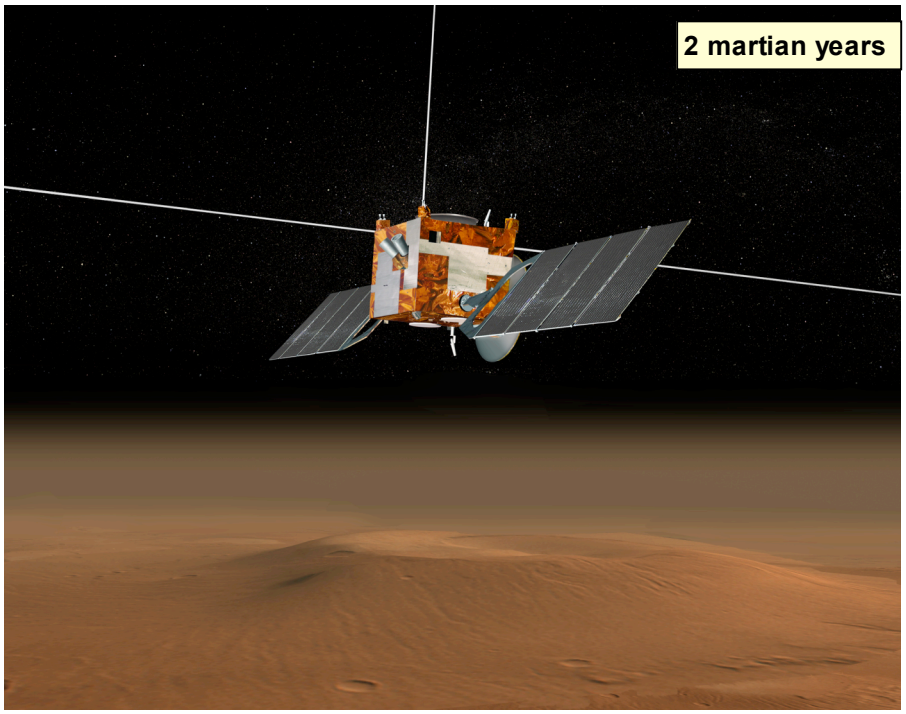
2003 ⇨ MARS EXPRESS — Planetology & Exobiology

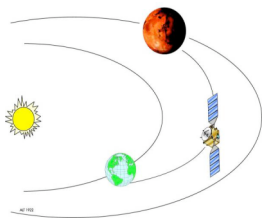
1997 ⇨ CASSINI-HUYGENS — Titan Probe

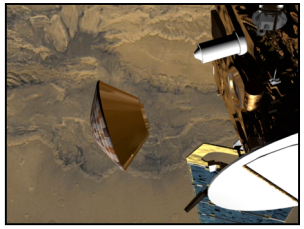
1986 ⇨ GIOTTO — Halley's Comet Fly-by

The Mars Express Mission

1 martian year = 687 days







6/7 month cruise

Polar elliptical orbit (86º)

Closest approach: 250 km

Lifetime: 1 Martian year

7 experiments on-board

Lander: Beagle 2

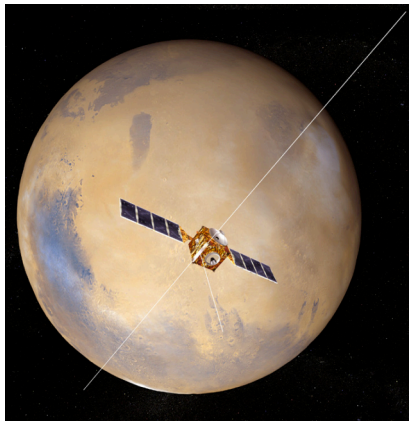
Scientists: EU, JP, US, RU

Mission budget: 200 M€

Development: 1988-2003

Mars Express Scientific Objectives

ORBITER



- Global high-resolution photogeology
- Super-resolution imaging of selected areas
- Global mineralogical mapping at 100 m resolution
- Global atmospheric circulation and composition
- Subsurface structure a few km down to permafrost
- Surface-atmosphere interactions
- Interaction of upper atmosphere with solar wind
- Gravity anomalies, surface roughness

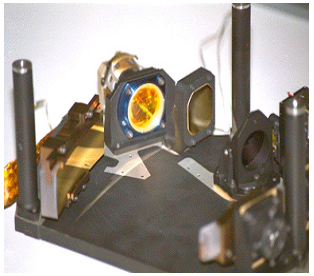
LANDER

- Geology and mineralogy of landing site
- Organic and mineral geochemistry
- Exobiology (i.e. search for life signatures)
- Meteorology and climatology

Mars Express Orbiter Instruments

HRSC: High Resolution Stereo Camera

G. Neukum, FUB/DLR Berlin (DE)

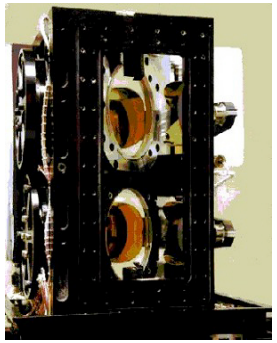


OMEGA: Visible and Infrared Mineralogical Mapping Spectrometer

J-P. Bibring, IAS Orsay (FR)

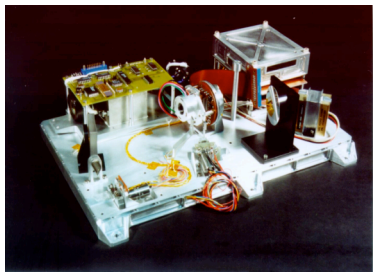
MARSIS : Sub-surface Sounding Radar Altimeter

G. Picardi, Univ. Rome (IT)



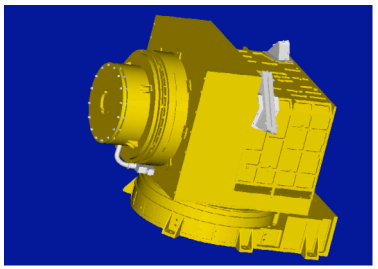
PFS: Planetary Fourier Spectrometer

V. Formisano, CNR Rome (IT)



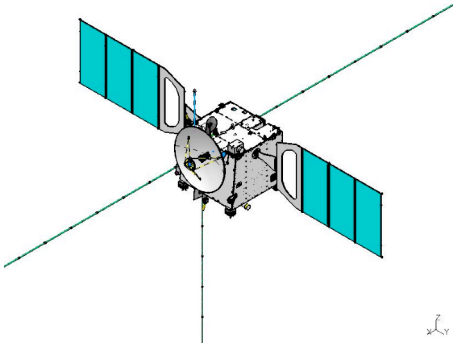
SPICAM: Ultraviolet and Infrared Atmospheric Spectrometer

J-L.Bertaux, CNRS Verrières (FR)



ASPERA: Energetic Neutral Atoms Analyser

R. Lundin, IRF Kiruna (SE)



MaRS: Mars Radio Science Experiment

M. Pätzold, Univ. Köln (DE)