

BepiColombo the next step to explore Mercury – Status update and Science goals

Johannes Benkhoff (1), Masaki Fujimoto (2), and Joe Zender (1)

(1) ESA-ESTEC, Science Support Office - SCI-S, Noordwijk, Netherlands (johannes.benkhoff@esa.int), (2) Japan Aerospace Exploration Agency, Dept. Solar System Sci. Sagamihara Campus, Kanagawa, Japan

NASA's MESSENGER mission has fundamentally changed our view of the innermost planet. Mercury is in many ways a very different planet from what we were expecting. Now BepiColombo has to follow up on answering the fundamental questions that MESSENGER raised and go beyond.

BepiColombo is a joint project between ESA and the Japanese Aerospace Exploration Agency (JAXA). The Mission consists of two orbiters, the Mercury Planetary Orbiter (MPO) and the Mercury Magnetospheric Orbiter (MMO). The mission scenario foresees a launch of both spacecraft with an ARIANE V in late 2017/early 2018 and an arrival at Mercury in 2024. From their dedicated orbits the two spacecraft will be studying the planet and its environment.

The MPO scientific payload comprises eleven instruments/instrument packages; the MMO scientific payload consists of five instruments/instrument packages. Together, the scientific payload of both spacecraft will perform measurements to find clues to the origin and evolution of a planet close to its parent star.

The MPO on BepiColombo will focus on a global characterization of Mercury through the investigation of its interior, surface, exosphere and magnetosphere. In addition, it will be testing Einstein's theory of general relativity. The MMO provided by JAXA focuses on investigating the wave and particle environment of the planet from an eccentric orbit. Together, the scientific payload of both spacecraft will provide the detailed information necessary to understand the process of planetary formation and evolution in the hottest part of the proto-planetary nebula as well as the similarities and differences between the magnetospheres of Mercury and the Earth.

All scientific instruments have been integrated into the spacecraft and both spacecraft are now under final acceptance testing.