



## **BepiColombo – unveiling Mercury**

Johannes Benkhoff and Joe Zender

ESA-ESTEC, Science Support Office - SRE-S, Noordwijk, Netherlands (johannes.benkhoff@esa.int)

Mercury is in many ways a very different planet from what we were expecting. In October 2018 BepiColombo will be launched to follow up on answering the fundamental questions about the evolution history of the planet nearest to the sun.

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). From their dedicated orbits the two spacecraft will be studying the planet and its environment. The MPO scientific payload comprises eleven instruments/instrument packages and the MMO comprises 5 instruments/instrument packages to study the planet itself and its environment, respectively. The MPO 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 will focus on the plasma and particle environment and the magnetosphere. In addition, the BepiColombo mission will provide a rare opportunity to collect multi-point measurements in a planetary environment. This will be particularly important at Mercury because of short temporal and spatial scales in the Mercury's environment. The foreseen orbits of the MPO and MMO will allow close encounters of the two spacecraft throughout the mission.

Together, the scientific payload of both spacecraft will provide the detailed information necessary to understand Mercury and its magnetospheric environment and to find clues to the origin and evolution of a planet close to its parent star. The BepiColombo mission will complement and follow up the work of NASA's MESSENGER mission by providing a highly accurate and comprehensive set of observations of Mercury. The mission has been named in honor of Giuseppe (Bepi) Colombo (1920–1984), who was a brilliant Italian mathematician, who made many significant contributions to planetary research and celestial mechanics.