



The BepiColombo mission to Mercury: a brief history

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The BepiColombo mission to Mercury, about to enter the development phase by ESA and ISAS/JAXA, is the outcome of a more than ten-year-long maturing process while the agencies optimised the mission design, spacecraft configuration and payload complement. Although the scientific merits of a mission to Mercury have long been generally accepted, technical challenges, programmatic considerations and cost constraints have delayed the start-up of the mission. ESA's Mercury mission was born out of a request for mission proposals in 1992. A relatively modest mission, simply called Mercury Orbiter, was proposed to ESA in May 1993 by an international team lead by the author. While popular with both planetary and magnetospheric scientists, its cost proved to be beyond the framework of a "medium" mission. When ESA re-evaluated its Horizon 2000 long term programme in 1995-96, a more ambitious Mercury mission, with two orbiters and a lander, was proposed as a "cornerstone" mission. The feasibility of the mission was greatly enhanced by recognising that Solar Electric Propulsion, by itself, could not lead to a satisfactory mission design. Instead, an imaginative combination of SEP, lunar and planetary swingbys and chemical propulsion has allowed the mission to proceed. This mission was formally selected by ESA in 2000. In the series of studies that followed, the proposed mission underwent several changes before the current design, based on a two-orbiter configuration was finally approved. The lander concept, while attractive, proved to be too challenging and costly. The joining of forces between ESA and ISAS/JAXA to provide the Planetary Orbiter the Magnetospheric Orbiter, respectively, has resulted in the optimised and ambitious mission that has now been approved to deliver the comprehensive exploration of Mercury. Following on NASA's more modest MESSENGER exploratory mission, Bepi-Colombo is a worthy culmination of the long and hard study programme that has been conducted by the agencies and the scientific community.