Mission Overview

- BepiColombo is Europe's first mission to Mercury. The mission comprises two spacecraft: the Mercury Planetary Orbiter (MPO) and the Mercury Magnetospheric Orbiter (MMO). BepiColombo is a joint mission between ESA and JAXA, executed under ESA leadership.
    - ✓ MPO (ESA-led spacecraft): 11 instruments (see slide 4).
    - ✓ MMO (JAXA-led spacecraft): 5 instruments (see slide 5).
- Launch date: August, 2015. Start of Science Mission: June, 2022.
- Mission duration: 1 year nominal mission plus 1 year potential extension.
- Related links for information:
    - ESA BepiColombo Mission Page
    - ISAS/JAXA BepiColombo Mission Page
    - PSA BepiColombo Mission Page

Mission Timeline (Science Archive Perspective)

- **2012-Oct** Archive Plan preparation starts
- **2012-Nov** Experiment to Archive Documentation preparation starts
  PDS4 Data Product design starts
- **2013-Jan** PDS4 Pipeline development starts
  (4-5 demonstrable pipelines @ Launch)
- **2015-Apr** BepiColombo Planetary Science Archive (PSA) "launch" release
- **2015-Aug** BepiColombo Launch
- 2021-Dec BepiColombo Planetary Science Archive (PSA) "operational" release
- 2022-May Mercury Orbit Insertion (MOI)
- MOI + 3m Start of Science Operations (1 year nominal + 1 year extension)
  PDS4 nominal data ingestion and distribution starts

Journey to Mercury and Mission Duration

- BepiColombo Launch: August 2015.
- ~6.5 year cruise to Mercury (no science operations)
- Earth, 2 Venus, 4 Mercury flybys/gravity assists.
- Arrival at Mercury: January 2022.
- Gravity capture into Mercury orbit. Injection of the MPO and MMO into their respective orbits by chemical propulsion.
- The MPO and MMO final orbits will both travel over Mercury's poles. The MPO orbit will range between 400 km and 1500 km above the surface of the planet, while the MMO orbit will range between 400 km and 12000 km in altitude.
- Start of Science Mission: June 2022.
- Mission duration: 1 year nominal mission plus 1 year potential extension.

MPO Instruments

MPO			
PI, Nationality	**Instrument**		**Measurements**
N. Thomas, CH; T. Spohn, D	BepiColombo Laser Altimeter	BELA	Topographic mapping
V. Iafolla, I	Italian Spring Accelerometer	ISA	Non-gravitational accelerations of MPO
K.H. Glassmeier, D	Magnetic Field Investigation	MPO/MAG	Detailed description of planetary magnetic field, its source and interaction with the solar wind
H. Hiesinger, D	Mercury Radiometer and Thermal Imaging Spectrometer	MERTIS	Global mineralogical mapping (7-14 µm), surface temperatures and thermal inertia
Mitrofanov, RUS	Mercury Gamma-Ray and Neutron Spectrometer	MGNS	Elemental surface and subsurface composition, volatile deposits on polar areas
G. Fraser, UK	Mercury Imaging X-ray Spectrometer	MIXS	Elemental surface composition, global mapping and composition of surface features
L. Iess, I	Mercury Orbiter Radio Science Experiment	MORE	Core and mantle structure, Mercury orbit, fundamental science, gravity field
E. Quèmerais, F	Probing of Hermean Exosphere by UV Spectroscopy	PHEBUS	UV spectral mapping of the exosphere
S. Orsini, I	Search for Exospheric Refilling and Emitted Natural Abundances	SERENA	In situ study of composition, vertical structure and source and sink processes of the exosphere
J. Huovelin, FIN	Solar Intensity X-ray and particle Spectrometer	SIXS	Monitor solar X-ray intensity and solar particles in support of MIXS
E. Flamini, I	Spectrometers and Imagers for MPO BepiColombo Integrated Observatory	SIMBIO-SYS	Optical high resolution and stereo imaging, near-IR (< 2.0 µm) imaging spectroscopy for global mineralogical mapping

MMO Instruments

MMO			
PI, Nationality	**Instrument**		**Measurements**
W. Baumjohann, A	MMO Mercury Magnetometer	MMO/MAG	Detailed description of Mercury's magnetosphere and of its interaction with the planetary magnetic field and the solar wind.
Y. Saito, Japan	Mercury Plasma Particle Experiment	MPPE	Study low- and high-energetic particles in the magnetosphere.
I. Yoshikawa, Japan	Mercury Sodium Atmospheric Spectral Imager	MSASI	Measure the abundance, distribution and dynamics of sodium in Mercury's exosphere.
Y. Kasaba, Japan	Mercury Plasma Wave Instrument	PWI	Detailed analysis of the structure and dynamics of the magnetosphere.
K. Nogami, Japan	Mercury Dust Monitor	MDM	Study the distribution of interplanetary dust in the orbit of Mercury.