

Interactive Webmap-Based Science Planning for BepiColombo

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Abstract

For BepiColombo, ESA's Mission to Mercury, we will build a web-based, map-based interface to the Science Planning System. This interface will allow the mission's science teams to visually define targets for observations and interactively specify what operations will make up the given observation. This will be a radical departure from previous ESA mission planning methods. Such an interface will rely heavily on GIS technologies.

This interface will provide footprint coverage of all existing archived data for Mercury, including a set of built-in basemaps. This will allow the science teams to analyse their planned observations and operational constraints with relevant contextual information from their own instrument, other BepiColombo instruments or from previous missions. The interface will allow users to import and export data in commonly used GIS formats, such that it can

be visualised together with the latest planning information (e.g. import custom basemaps) or analysed in other GIS software.

The interface will work with an *object-oriented concept of an observation* that will be a key characteristic of the overall BepiColombo science-planning concept. Observation templates or classes will be tracked right through the planning-execution-processing-archiving cycle to the final archived science products.

By using an interface that synthesises all relevant available information, the science teams will have a better understanding of the operational environment; it will enhance their ability to plan efficiently minimising or removing manual planning.

Interactive 3D visualisation of the planned, scheduled and executed observations, simulation of the viewing conditions and interactive modification of the observation parameters are also being considered.

The screenshot displays the 'bepicolombo observation catalogue' web interface. The main content area features a map of Mercury with a green polygon highlighting a target area. A 'Target Information' popup is visible, displaying details for a target named 'etc_target_ast_002'. The interface includes navigation tools, a search bar, and a sidebar with various icons. The top navigation bar includes the ESA logo and the text 'bepicolombo observation catalogue concept'.

Target Information

- Name: etc_target_ast_002
- Target Instrument: SMISHO-SYS BTC
- Created by: User
- Created: 24/12/14 12:34
- Modified: 27/12/14 09:53
- Surface Area: 1352 sq km
- Type: Multi-Polygon
- Access: Shared

Target Details:

- Julian Date: 2459016.57967
- Date: 16/06/2024 01:54:43
- MTA: 160.28°
- Orbit No.: 8
- MPO Altitude: 1237.11 km
- Longitude: 133.72°
- Latitude: 51.51°
- SIAGT: -35.86°
- TGT: -173.15°C
- Distance to Earth: 0.6438 AU
- Sun Az (MPO): 24.6°
- Sun El (MPO): 35.9°