



ESA SPICE Server

An Introduction to the ESA SPICE Server



ESA SPICE Server

Overview

One of the tasks of the **Planetary Science Archive** is the generation and archive of all the SPICE products for the ESA planetary missions, with the support of NAIF.

- All the SPICE data products produced by the ESA SPICE Support Team are available from the PSA web and the PSA SPICE server.
- Some kernels produced outside of ESA are also available :
 - Generic Kernels produced by NAIF
 - Mission specific kernels produced by Scientific Institutes in Europe (e.g. Belgium Royal Observatory, DLR)



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The PSA Web Page

The **Planetary Science Archive** (PSA) web page is the main source of information for SPICE data related to ESA Planetary missions:

<http://www.sciops.esa.int/index.php?project=PSA&page=ancillary>

This includes links to the operational set of kernels, and also to the archived kernels (in PDS format).



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The Web Interface (I)

The **Planetary Science Archive** (PSA) provides a web interface that allows browsing the operational set of kernels and getting information from them in an easy way (see next two slides).



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The Web Interface (II)

The screenshot shows the ESA SPICE Repository Browser web interface. At the top, there is a navigation bar with links for 'Research & Science Home', 'ESA Public Web Site', and 'Sci-Tech Portal'. Below this is the ESA logo and the text 'PLANETARY SCIENCE ARCHIVE'. The main content area is titled 'SPICE Repository Browser' and includes a description: 'The SPICE Repository Browser is a web-based tool that allows browsing, visualising, and downloading operational SPICE kernels for ESA's missions. It also lets you plot and export geometrical parameters from ORBNUM files.' To the right, there is a 'Browse' section with a list of mission repositories: BepiColombo, Mars Express, Rosetta, SMART-1, and Venus Express. Below this is an 'About ORBNUM files' section explaining that ORBNUM files are derived geometry products used to determine time boundaries for orbits. A table titled 'SPICE Repository' lists links for BEPI, MEX, ROSETTA, SMART-1, and VEX, each with a corresponding description link. On the left side, there is a vertical navigation menu with categories like 'PSA', 'Data Access', 'Solar System Missions', 'Resources', 'Restricted Items', and 'Restricted Access Logon'. The 'Restricted Access Logon' section shows a login form with fields for 'UserID' (jvazquez) and 'Pass', along with 'Login' and 'Reset' buttons.

Research & Science Home | ESA Public Web Site | Sci-Tech Portal

esa PLANETARY SCIENCE ARCHIVE

Astrophysics Missions | Planetary Exploration Missions | Solar Terrestrial Science Missions | Fundamental Physics Missions | Science Faculty

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SPICE Repository Browser

← Ancillary Data

The SPICE Repository Browser is a web-based tool that allows browsing, visualising, and downloading operational SPICE kernels for ESA's missions. It also lets you plot and export geometrical parameters from ORBNUM files.

Browse

- BepiColombo Repository
- Mars Express Repository
- Rosetta Repository
- SMART-1 Repository
- Venus Express Repository

About ORBNUM files

For some of the orbiter-style missions, a derived geometry product known as an Orbit Number File (ORBNUM) is created. The primary purpose of such a file is to provide SPICE users a means to determine the time boundaries for each orbit.

SPICE Repository

BEPI	Description of the BEPI Repository
MEX	Description of the MEX Repository
ROSETTA	Description of the ROSETTA Repository
SMART-1	Description of the SMART-1 Repository
VEX	Description of the VEX Repository

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Restricted Access Logon

UserID: jvazquez

Pass: *****

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The Web Interface (III)


PLANETARY SCIENCE ARCHIVE

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SPICE Repository Browser

← Ancillary Data

The SPICE Repository Browser is a web-based tool that allows browsing, visualising, and downloading operational SPICE kernels for ESA's missions. It also lets you plot and export geometrical parameters from ORBNUM files.

Contents of the MEX spk directory

Body (NAIF ID)	Start of Coverage (UTC)	End of Coverage (UTC)	Comments
BEAGLE 2 (-44)	2003-07-03T23:58:56	2007-10-07T23:58:55	
DE405.BSP			
MERCURY BARYCENTER (1)	1950-01-01T00:00:00	2049-12-31T23:59:58	
VENUS BARYCENTER (2)	1950-01-01T00:00:00	2049-12-31T23:59:58	
EARTH BARYCENTER (3)	1950-01-01T00:00:00	2049-12-31T23:59:58	
MARS BARYCENTER (4)	1950-01-01T00:00:00	2049-12-31T23:59:58	
JUPITER BARYCENTER (5)	1950-01-01T00:00:00	2049-12-31T23:59:58	
SATURN BARYCENTER (6)	1950-01-01T00:00:00	2049-12-31T23:59:58	
URANUS BARYCENTER (7)	1950-01-01T00:00:00	2049-12-31T23:59:58	
NEPTUNE BARYCENTER (8)	1950-01-01T00:00:00	2049-12-31T23:59:58	
PLUTO BARYCENTER (9)	1950-01-01T00:00:00	2049-12-31T23:59:58	
SUN (10)	1950-01-01T00:00:00	2049-12-31T23:59:58	
MERCURY (199)	1950-01-01T00:00:00	2049-12-31T23:59:58	
VENUS (299)	1950-01-01T00:00:00	2049-12-31T23:59:58	
MOON (301)	1950-01-01T00:00:00	2049-12-31T23:59:58	
EARTH (399)	1950-01-01T00:00:00	2049-12-31T23:59:58	
MARS (499)	1950-01-01T00:00:00	2049-12-31T23:59:58	
EARTHSTNS_FX_050714.BSP			
Body (NAIF ID)	Start of Coverage (UTC)	End of Coverage (UTC)	Comments

Browse

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- Mars Express Repository
- Rosetta Repository
- SMART-1 Repository
- Venus Express Repository

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FTP Repository

- All the kernels are also available via the PSA ftp server, at:

<ftp://ssols01.esac.esa.int/pub/data/SPICE>

All the kernels for a particular mission are located under [MISSION]/kernels.

- NAIF mirrors the FTP server several times a day:

<ftp://naif.jpl.nasa.gov/pub/naif>

- The *geolib* library (SPICE-related software for geometry data generation) can be found under:

<ftp://ssols01.esac.esa.int/pub/software/GEOLIB>



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ESA Support for SPICE

- **ESA SPICE Support:** esa_spice@sciops.esa.int

- For information about naming conventions, how the kernels are generated, etc, go to the mission-specific ancillary data section in the PSA web. For example, for MEX:

<http://www.rssd.esa.int/index.php?project=PSA&page=mexrepository>

- You can receive a notification when new kernels are available. Send a mail to esa_spice@sciops.esa.int if interested.



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Archived Kernels

The PSA (with NAIF support) archives all the SPICE kernels in PDS format. The resulting data sets are available on the PSA web page and the PSA web interface, and also from the NAIF node of the Planetary Data System:

<http://naif.jpl.nasa.gov/pub/naif/pds/data>

At the moment, data sets for Mars Express, Venus Express and Rosetta are available.

Please note that generating the data sets takes time and is done typically once or twice per year. Therefore, if you need the most up to date kernels, please go to the ftp server or the web interface.