

The Manual for Bepi_SPP_VCO_widget_v2_WIN ('BSV_widget')

Version number: 2.0

OS: Windows 32/64 bits

Last update: 2020/06/29

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Description of the BSV_widget:

'BSV_widget' is a visualization tool of Venus/Mercury observation conditions from three spacecraft and from the Earth. The three spacecraft are Akatsuki (VCO), Parker (or, SOLAR PROBE PLUS, SPP), BepiColombo (Bepi). Locations of spacecraft are predicted conditions, so all users should use this widget to check a feasibility of your coordinated ground-based observations, and should contact spacecraft teams to confirm a real observation that may differ from this widget by a few min to a few hours.

The widget may be updated with new available kernels. And this will be named with number # in the file name "v2.#"

BSV_widget does not require any installation process, and even can run in a USB memory stick.

References of the surface image data:

LIR wave (Kouyama et al. 2018, <https://doi.org/10.1002/2017GL075792>)

LIR thermal tide (Kouyama et al. 2019, <https://doi.org/10.1029/2019GL083820>)

How to use? Follow 1.-7.

The screenshot shows the BSV_widget interface with the following callouts:

- 1. Select a type of figure** (points to the 'Type of figure' dropdown menu)
- 2. Type a specific time in YYYY-MM-DD hh:mn:ss (UTC)** (points to the 'Date' input field)
- (optional)** (points to the 's/c marking' checkboxes)
- (optional)** (points to the 'Venus surface image' radio buttons)
- (optional)** (points to the 'Mercury surface image' radio buttons)
- (optional)** Your jpeg image can be plotted over the planetary globes. But an image must cover Lon (-180, 180) from left to right, and Lat (90, -90) from top to bottom. (points to the main visualization area)
- 3. Click to display** (points to the 'Display (Ctrl+D)' button)
- 4. Type a directory to save the displayed figure** (points to the 'Directory to save' input field)
- 5. Type a file name to save. Specify a format: .png, .jpg, .ps, .gif** (points to the 'File name to save' input field)
- 6. Click to save** (points to the 'Save (Ctrl+S)' button)
- 7. Click to close** Your parameters will be saved for the next time use. (points to the 'Close (Ctrl+C)' button)

History of updates:

2020/03/11 BSV_widget_v1.0 is prepared. (a previous body is 'VCO_widget_v3')

2020/05/07 BSV_widget_WIN/LIN_v1.1 with the updated kernels

2020/06/29 BSV_widget_WIN/LIN_v2.0

- added the thermal tide image option (Kouyama et al. 2019)

- updated BepiColombo's spk kernel ([bc_mpo_fcp_00082_20181020_20251102_v01.bsp](https://naif.jpl.nasa.gov/pub/naif/unlabeled/pub/spk/bsv/00082_20181020_20251102_v01.bsp))

Acknowledgements:

Thanks to Angelos Vourlidas for the SPP information, and the Akatsuki team for the predicted kernel.

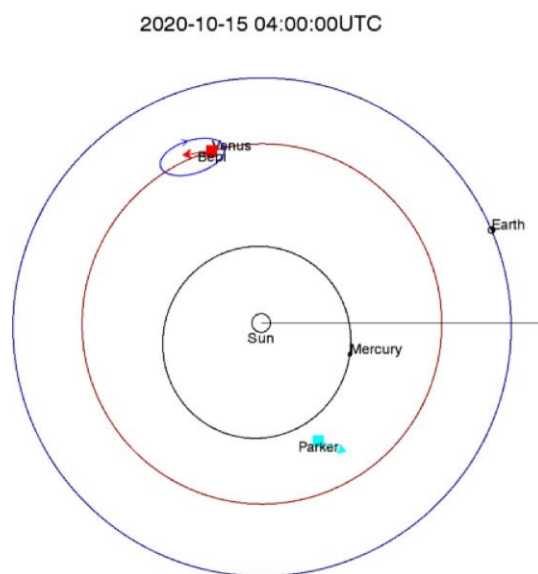
The spice kernel of BepiColombo is publicly available at

<https://www.cosmos.esa.int/web/spice/bepicolombo> (doi: 10.5270/esa-dwuc9bs).

Thanks to Ko-ichiro Sugiyama, Shin-ya Murakami, Javier Peralta, Toru Kouyama, Takao M. Sato, Takehiko Satoh, Ralph Lorenz, Takeshi Imamura, and Masataka Imai for help/comments on the VCO_widget series.

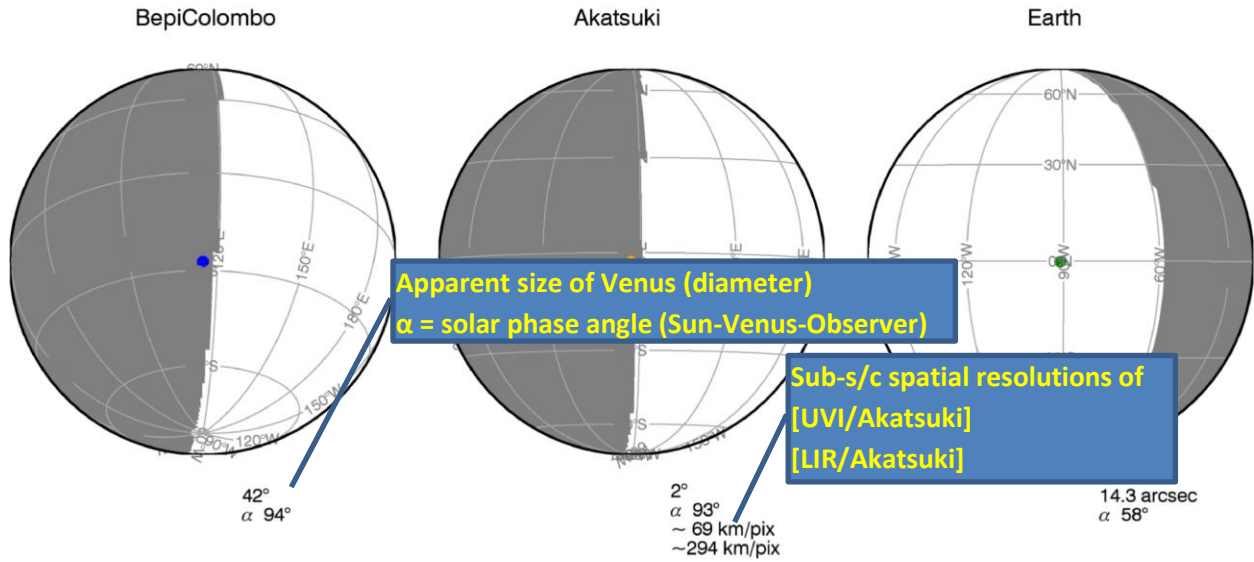
Contact about this widget: Send an e-mail to Yeon Joo Lee, y.j.lee@astro.physik.tu-berlin.de.

Example image 1:



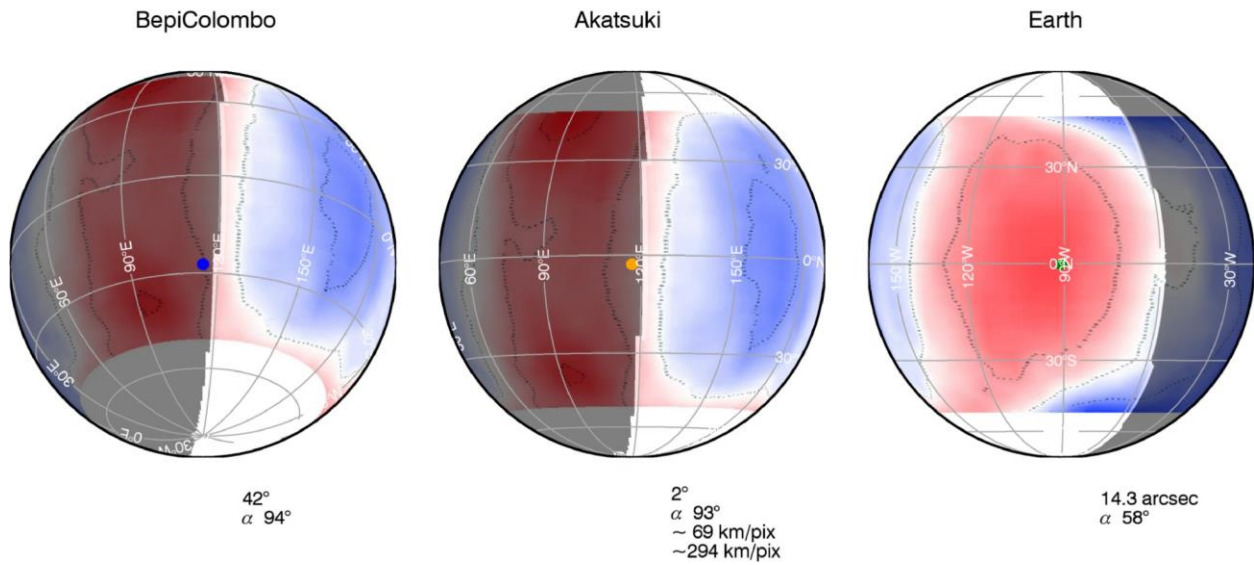
Example image 2:

Venus
2020-10-15 04:00:00UTC



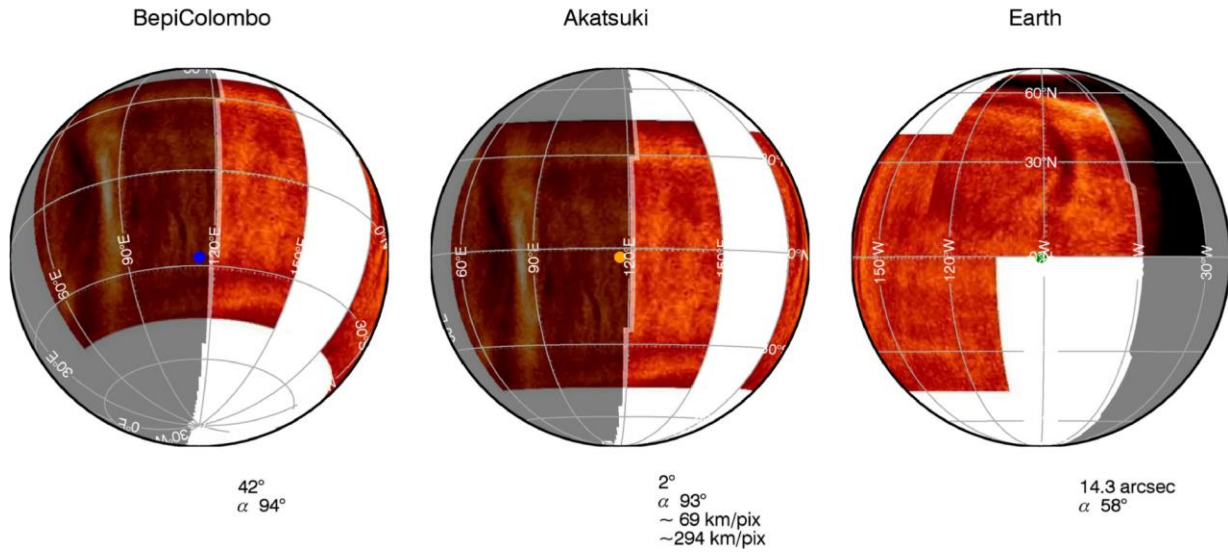
Example image 3:

Venus
2020-10-15 04:00:00UTC



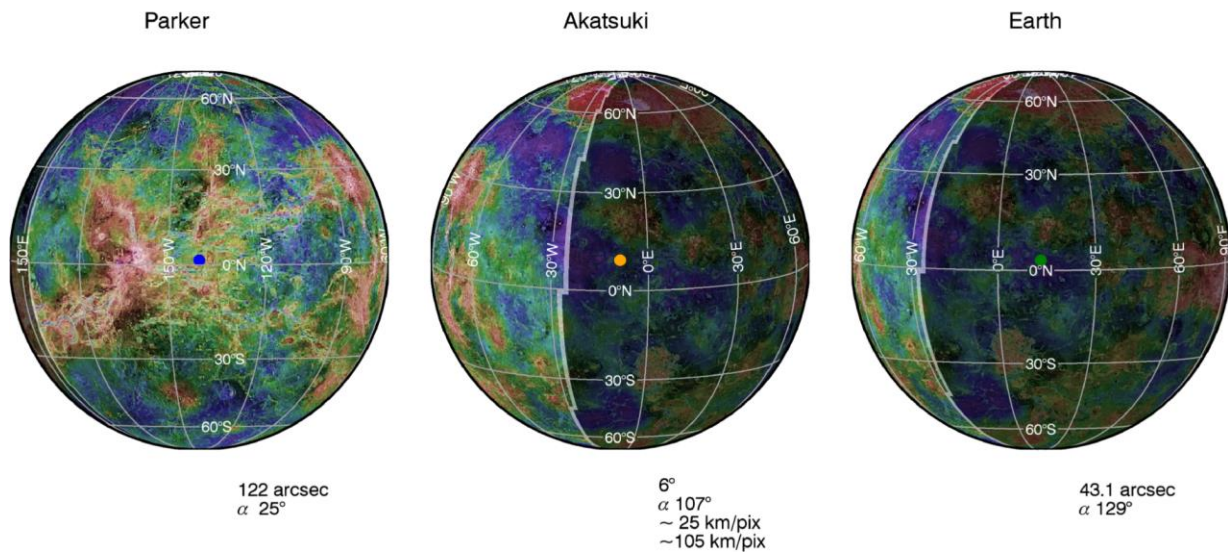
Example image 3:

Venus
2020-10-15 04:00:00UTC



Example image 4:

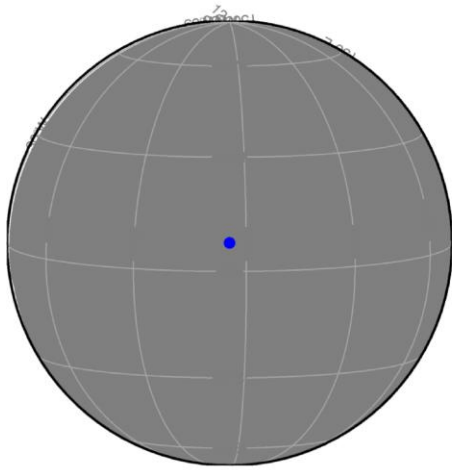
Venus
2020-07-01 00:00:00UTC



Example image 5:

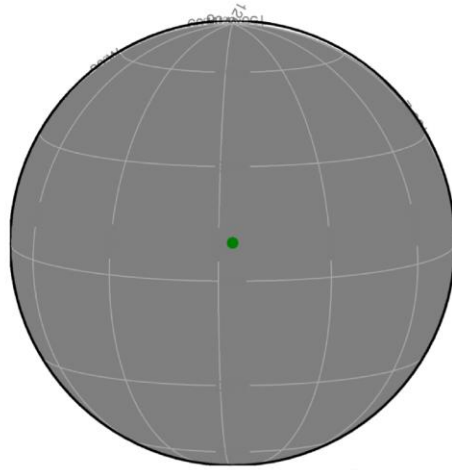
Mercury
2020-07-01 00:00:00UTC

BepiColombo



15 arcsec
 α 169°

Earth



11.97 arcsec
 α 170°