User Manual for Leaflet-Planetary

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CartoCosmos

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Leaflet-Planetary provides a new, faster way of viewing planetary bodies using Leaflet's lightweight, high-performance package at its core. Whether you are a scientist or researcher aiding the exploration of the solar system, or just someone who wants to see the solar system up-close and in detail, this user manual is designed to help guide you through it.

Prerequisites

This application is supported by all major web browsers. Specifically, taken from the Leaflet website (www.leafletjs.org):

Browser Support

- Desktop
- Chrome
- Firefox
- Safari 5+
- Opera 12+
- IE 7–11
- Edge

Mobile

- Safari for iOS 7+
- Android browser 2.2+, 3.1+, 4+
- Chrome for mobile
- Firefox for mobile
- IE10+ for Win8 devices

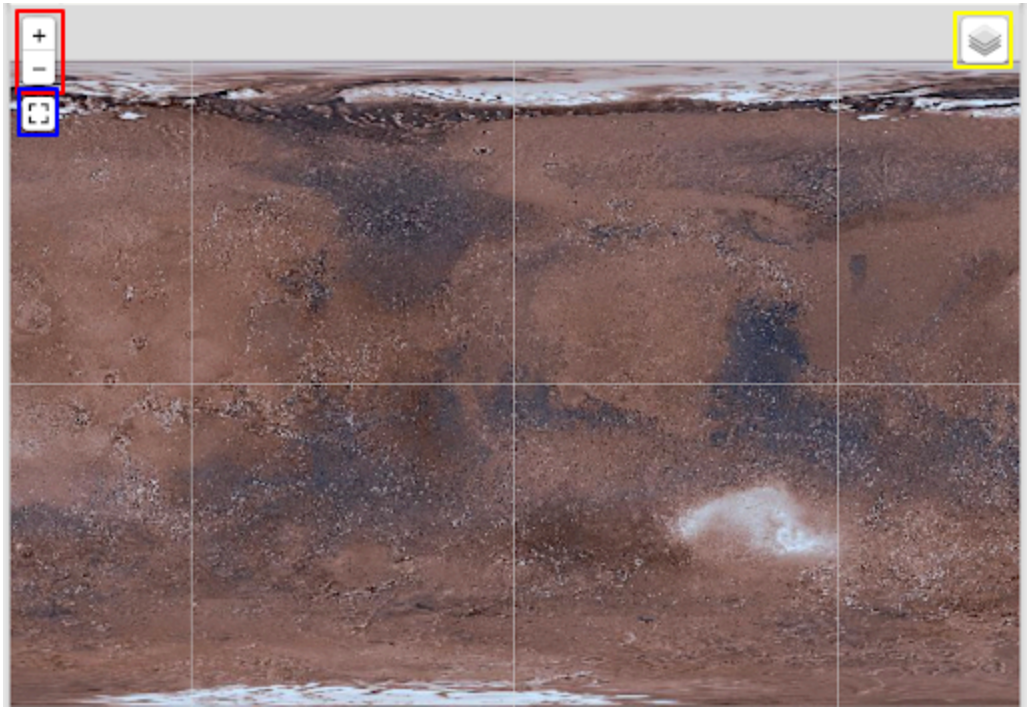
Components

The Console

- ⇒ Longitude and Latitude Buttons
- ⇒ Projection Buttons
- ⇒ Under-Cursor Coordinate Display

The Map

- ⇒ Zoom Control
- ⇒ Enter Full-Screen Mode
- ⇒ Layer Switcher



Instructions

How to Control Map Movement

To change the active viewing location displayed within the map there are two options:

- Using your mouse:
  - left-click then drag to pull the map in all directions
- Using your keyboard:
  - use the arrow keys (up, down, left, and right) to move the map in all directions

How to Zoom In/Out

To view the map in more detail or from farther away, there are two ways to zoom in and out of the map:

- Using the scroll functionality with your mouse or trackpad:
  - Scroll up to zoom in
  - Scroll down to zoom out
- Using the Zoom Control:
  - + to zoom in
  - - to zoom out

How to Enter/Exit Full-Screen:

Leaflet-Planetary offers the functionality to display the map across an entire monitor.

- To enter full-screen mode:
  - Click the Full-Screen button
- To exit full-screen mode:
  - Press ‘ESC’ key on your keyboard

How to Change the Active Layer Displayed on the Map:

For certain bodies, there are multiple layers to choose between that offer different types of imaging from satellites equipped with the technology. To change the active layer:

- Using your mouse:
  - Hover over the Layer Switcher
  - Select one of the available options from the dropdown list

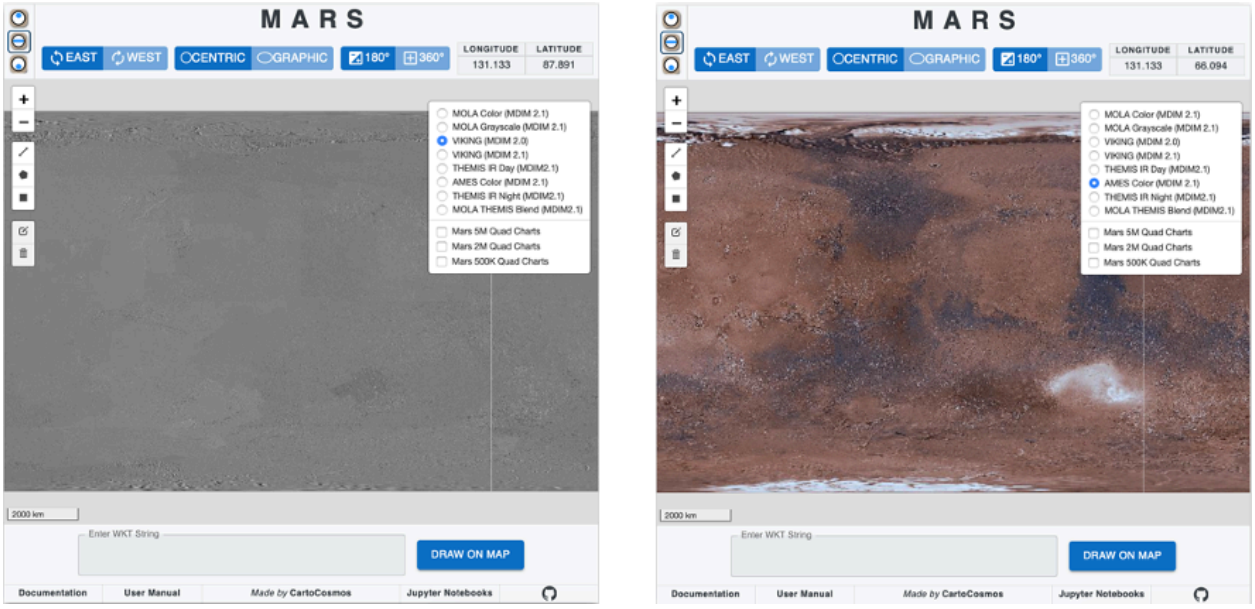


Figure: Showing the Layer Switcher and Switching Layers

How to Change the Current Projection:

Leaflet-Planetary supports displaying north polar, cylindrical, or south polar projections. On the left-hand side of the console displayed above the map, there are three buttons arranged in a vertical line that each displays a globe with an area of it highlighted. The button corresponding to the map's active projection is outlined in black. To change the current projection to:

- North Polar:
  - Click the first (top) button displaying the upper region of the globe highlighted in orange.
- Cylindrical (default):
  - Click the second (middle) button displaying the middle of the globe highlighted in orange.
- South Polar:
  - Click the third (bottom) button displaying the lower region of the globe highlighted in orange.

Note: Some projections may not be available for a target body due to a lack of mapping data. When this is the case, the button for that projection will be greyed out. Also, upon pointer-hover on the projection button, the tooltip display will show the projection availability.

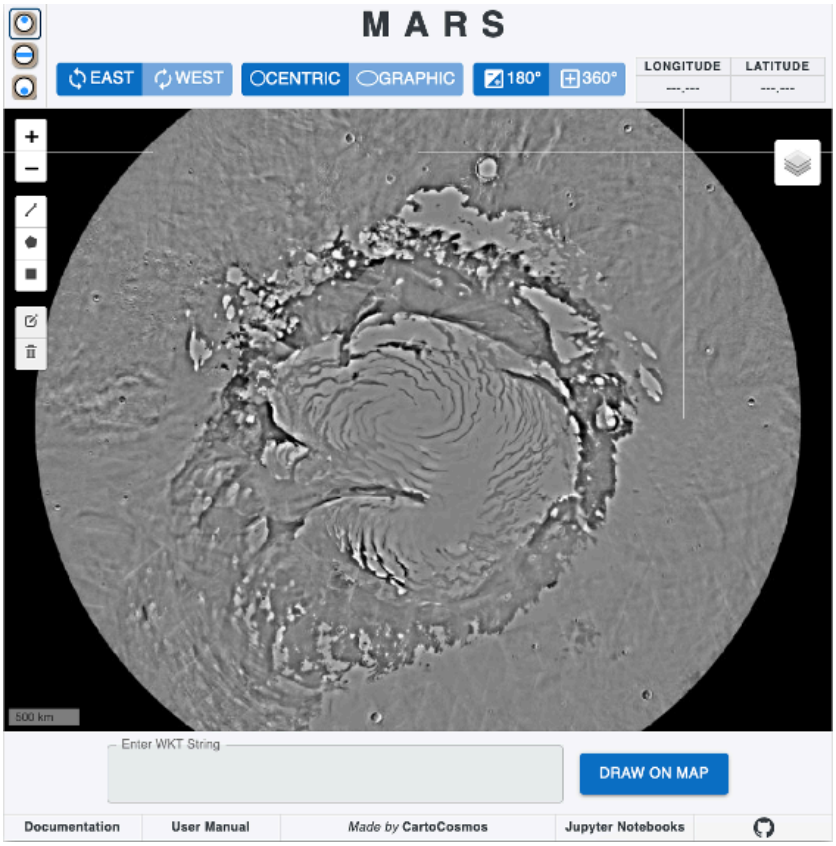


Figure: Switching to a North Polar Projection

How to Change Longitude Range:

When viewing a body, there are two options for the longitude range: -180° to 180° or 0° to 360°. To select between the two, you can toggle the buttons marked with a “+/- 180°” or “+ 360°” and observe the coordinate display adjusting accordingly.

How to Change Latitude Coordinate System to Planetographic/Planetocentric:

Depending on the target body you’re observing, you may need to change the latitude coordinate system to planetographic or planetocentric depending on your use case. To do this, find the latitude/longitude buttons in the console. The button reading “Ocentric” is for planetocentric and “Ographic” is for planetographic.

How to Change Latitude Display to Positive East/West:

To change the latitude display to present coordinate data in a positive east (increasing to the east) or positive west (increasing to the west), find the latitude/longitude buttons in the console. The button on the left reading “East” will change to positive east, and the button reading “West” will change to positive west.

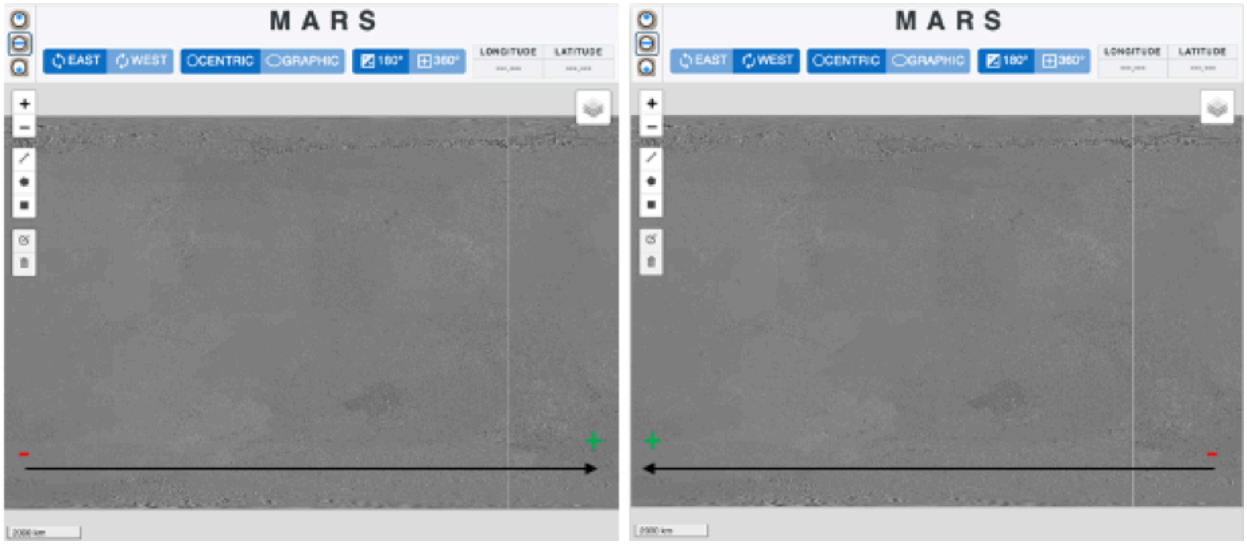


Figure: Switching the Longitude to Positive West

How to Draw Shapes on the Map:

There are two ways to draw shapes on the map. You can either use the draw control or the Well-Known text (WKT) input box. To learn more about WKT, visit the Wikipedia page. The draw control has five buttons:

- Draw a line by creating points on the map.

- Free-draw by connecting points to create a polygon.

- Draw a polygon.

- Edit selected shape.

- Delete selected shape.

- Using the draw control
  - First, click on the shape you want to draw. Then click and drag the shape onto the map. The Well-Known text string from the shape you drew on the map will show in the Well-Known input box.
  - To edit the shape, click on the edit shape button, edit the shape, and click the save button that is shown after clicking the edit button.
  - To delete a drawn shape, click on the delete shape button, click the shape you want to delete, and click the save button that is shown after clicking the delete button.
- Using Well-Known text strings
  - Enter the Well-Known text string in the input box and click the draw button.

Note: The draw control will only allow one shape on the map at a time. When drawing a shape, then trying to draw another one, the first shape will be deleted automatically.

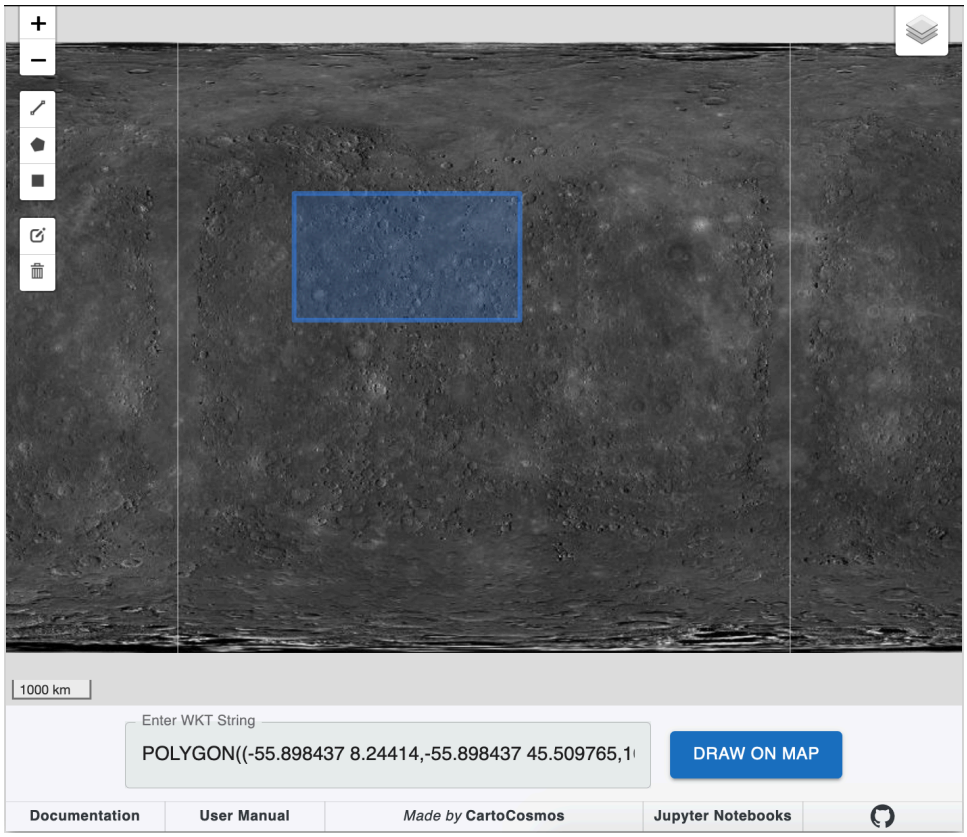


Figure: Drawing a Shape