

Rectangular Display of Satellite Ground Tracks (Microworld Data Bank II Maps)

This *Numerit* computer program (`satplot4`) can be used to create a graphic display of satellite ground tracks on a rectangular map of the Earth. The software can use either a low or high resolution version of the Micro World Data Bank II maps to create geographic features on the display.

The software will prompt you for the initial calendar date, universal time and classical orbital elements of the satellite. It will also ask you to input a simulation duration in days, the graphics step size for plotting in minutes and the map resolution.

The following is a typical display created with this software. It illustrates the ground track of a Molniya repeating ground track orbit. Each ground track data point is plotted at the graphics step size input by the user. The separation of the points is an indication of the speed of the satellite in its orbit.

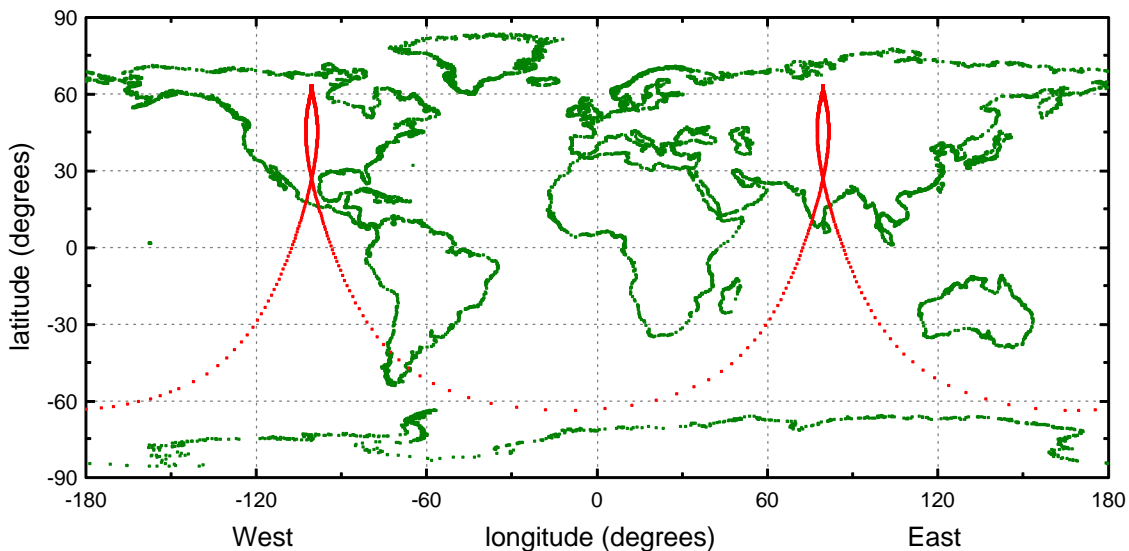


Figure 1. Rectangular View of Satellite Ground Track

You can zoom the plot by interactively changing both the physical size of the plot and the x and y -axis scales. Be sure to make the physical size compatible with the latitude and longitude scales. For example, the plot in Figure 1 covers 180 degrees in latitude and 360 degrees in longitude. The physical size of this plot is 6 inches wide and 3 inches high, a 2 to 1 scale. If you wanted to zoom in and plot from -180 to 0 degrees in longitude, you would make the physical width exactly equal to the physical height (a 1 to 1 scale), say 4 inches for both.