Method

This looks at the time that a Coms satellite can communicate with a point on the lunar surface and Earth. Coverage of points on the lunar surface used a cone of coverage with an edge to the center angle of 11 degrees. The semimajor axis was 7500 km. Contact with Earth was defined as line-of-sight with the Moon obstructing. The minimum elevation angle on the Moon was not modeled because the cone was more restrictive than the elevation angle. The minimum elevation angle would need to be larger than 34.5 degrees to be a problem. The model was run for one day with one thousand ground points

Guide to the Matlab script

The first two graphs show coverage information for the points. The first shows the 75th percentile single pass time of satellites over that point. The second shows the average number of satellites visible at a time. The points that are in the lowest 10 percent in each of these plots are displayed in the command window.

The third graph is changeable to a specific point. It plots the time that each satellite was overhead in its longest pass. Lines are shown at the 25th, 50th, and 75th percentiles. Also displayed is the latitude and longitude of the point.

Type ‘q’ to quit the script.