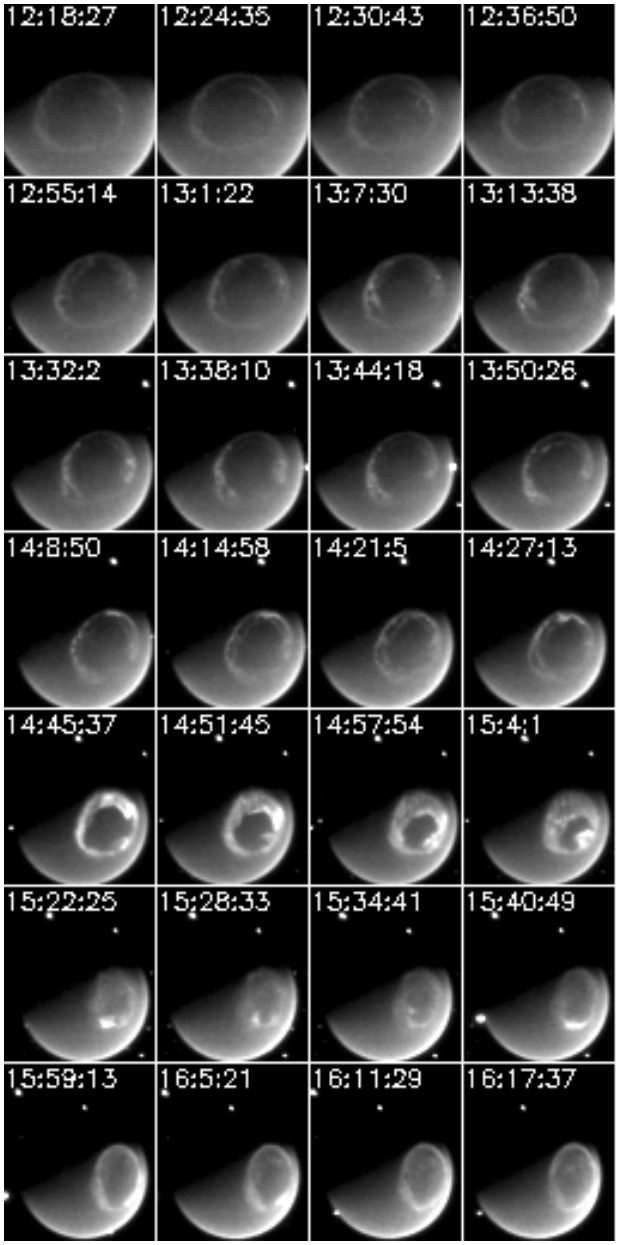
XX...Round the Clock Aurora Satellite Monitoring

Introduction:

During the 1990's, NASA has placed research satellites in orbit around the earth to keep the polar regions under almost constant surveillance for signs of auroral activity. This data helps scientists explore the connections between aurora and other phenomena in the solar and geospace environment which can cause them to brighten.

Objective:

In this activity, we will use data from the IMAGE satellite to explore how aurora are correlated with magnetic activity in the polar and equatorial regions of the earth.



Procedure:

1) Visit the IMAGE, Far Ultraviolet Camera web site archive at

http://sprg.ssl.berkeley.edu/sprite/ago96/image/wic_summary/

2)Click on the archive for the month and year of interest .Example NOV_2000/

3)Click on the file for the day of interest. Example: WIC_2000_333_02.gif is for the 333 day of the year 2000, and it is the second archive of images for that day. You will see a panel of images similar to the section to the right, obtained by the FUV instrument on July 15, 2000.

4)Measure the diameter of the Earth disk with a millimeter ruler. Measure the diameter of the auroral oval. Given that Earth's radius equals 6,378 kilometers, calculate from the ratio of diameters, a linear diameter for the oval.

5) Plot the maximum linear diameter against the Kp index recorded for that date and time. Does the area of the aurora correlate with the Kp index?