

- Set Q1 -> TEC, Q2 -> NmF2 (the maximum density of the F layer), and Q3 -> HmF2 (height of the F layer) [Note: all of these quantities are independent of height]
- In “Choose Plot Area” set lon1 -> 0 and lon2 -> 360, lat1 = lat2 -> [your choice]
- For a specific longitude, read the values for the three quantities plotted
- Complete the chart below for various times of the year.

Date/Day							
TEC							
NmF2							
HmF2							

- **Revisit the questions you started with given the results tabulated.**

4. Variations through Out the Solar Cycle

Throughout the solar cycle (<http://solarscience.msfc.nasa.gov/SunspotCycle.shtml>) the solar F10.7 radio wave emissions flux varies in the same way as the average sunspot number (<http://www.swpc.noaa.gov/phenomena/f107-cm-radio-emissions>). F10.7 flux is a very good proxy for the EUV flux which affects the ionosphere.

- **Why do you think we use a radio flux rather than a direct measurement of EUV?**
- **How do you think the density and height of the ionosphere various with solar cycle?**
- **At mid latitudes at noon, what time of year do you think has the largest TEC.**
Discuss in your group and make some predictions.

- From the original run list, choose a run from the solar cycle study study.
- From the Quantity —> Q1 Menu choose “TEC” to look at the “Total Electron Content”. (TEC is the integrated electron content over the column of the thermosphere/ionosphere)
- And plot the total electron content.

In a new window, choose a latitude to plot a line plot for varying longitude.

- From “Plot Mode” select “Line (1D)”
- Set Q1 -> TEC, Q2 -> NmF2 (the maximum density of the F layer), and Q3 -> HmF2 (height of the F layer) [Note: all of these quantities are independent of height]
- In “Choose Plot Area” set lon1 -> 0 and lon2 -> 360, lat1 = lat2 -> [your choice]
- For a specific longitude, read the values for the three quantities plotted
- Complete the chart below for various times of the year.

Solar Cycle Phase	Solar Min	Rising Phase	Solar Max	Declining Phase
TEC				
NmF2				
HmF2				