# The Ionosphere and Space Weather Awareness

This module uses the integrated Space Weather Awareness tool (iSWA: http://iswa.ccmc.gsfc.nasa.gov/) to explore some features of the ionosphere.

**Getting Started**

Open this link:
http://iswa.ccmc.gsfc.nasa.gov/IswaSystemWebApp/index.jsp?i_1=287&l_1=22&t_1=675&w_1=642&h_1=415&s_1=0_0_10_3&i_2=73&l_2=664&t_2=260&w_2=434&h_2=297&s_2=0_0_10_3&i_3=301&l_3=958&t_3=393&w_3=433&h_3=313&s_3=0_0_10_3&i_4=315&l_4=23&t_4=261&w_4=640&h_4=410&s_4=0_0_10_3&i_5=113&l_5=672&t_5=691&w_5=380&h_5=400&s_5=0_0_10_3

The top three cygnets show data gathered from space craft and ground based sources. You can find an explanation of the sources in the cygnet catalog under the ionosphere tab (pages 3 and 4).

The bottom two are model results (see pages 2 and 4).

**Some Things to Think About**

- **Compare the model output to the data.**
  **Are features in the data reflected in the model?**
- **What could you do in the simulation to recreate the data?**

**Looking at the Ionosphere Drivers**
Solar X-rays and particle participation drive the ionosphere.
Let's look at the data for these.

- In the cygnet catalog at the top of the page, click on the "Solar" tab and page through the cygnets. Find the "GOES X-Ray" cygnet on page 12.   Click on it and arrange it on the page.
- In the "Magnetosphere" tab, find the "Kp - Index" on page 1.
- **Are these drivers showing any activity at this time. (Notice that all cygnets should be set to the current date. If they aren't then use the green circle at the top of the page to reset them all)**

**Looking at a Storm**

- At the top of the page is the "Global Date" menu.  Set the date to somewhere between June 16th and 18th. Find the start of a storm.
- **When does the storm start?  How do you know?**
- **What ionosphere responses do you observe due to this storm?**
- **How long does the storm last?**