

## Using This Flip Chart

By following the steps in this flip chart you will soon be able to answer the big question, “**Have auroras been seen within the last 24 hours due to a solar storm?**”

In the flipchart you will find **INSTRUCTION CARDS** followed by **INFORMATION CARDS**.

- **INSTRUCTION CARDS** contain every step necessary to obtain, analyze and record all required online data.
- **INFORMATION CARDS** contain a variety of sample images and helpful tips when interpreting and analyzing the data.

Don't forget to keep your **Data Collection Sheets** nearby in order to collect all of the information you will need to complete your Space Weather News Report!



**Space Weather Data**  
[sunearthday.nasa.gov/swac/data.php](http://sunearthday.nasa.gov/swac/data.php)

## Using The Resources

### COLOR CODING

We have divided all of the Space Weather Action Center resources into four 'color-coded' categories: Sunspot Regions (orange), Storm Signals (green), Magnetosphere (blue) and Aurora (purple). The same color code scheme is used in the flipchart, the data collection sheets and on the Live Data and Tutorials webpage. You can always know which section you're in with one quick glance!

### SPACE WEATHER DATA

All of the data links required to make your space weather observations are located on this single webpage. Beside each of the '**live data**' links you will also find '**tutorial**' links containing easy to read tutorials that that will help you when interpreting the data. You can always find your place by returning to this page!

### THE SPACE WEATHER MEDIA VIEWER

The Space Weather Media Viewer is one of the main observation tools that you will be using. Once the Viewer is open, we recommend that you simply keep it open in a separate browser tab or window for faster data access when needed.



**Space Weather Data**  
[sunearthday.nasa.gov/swac/data.php](http://sunearthday.nasa.gov/swac/data.php)

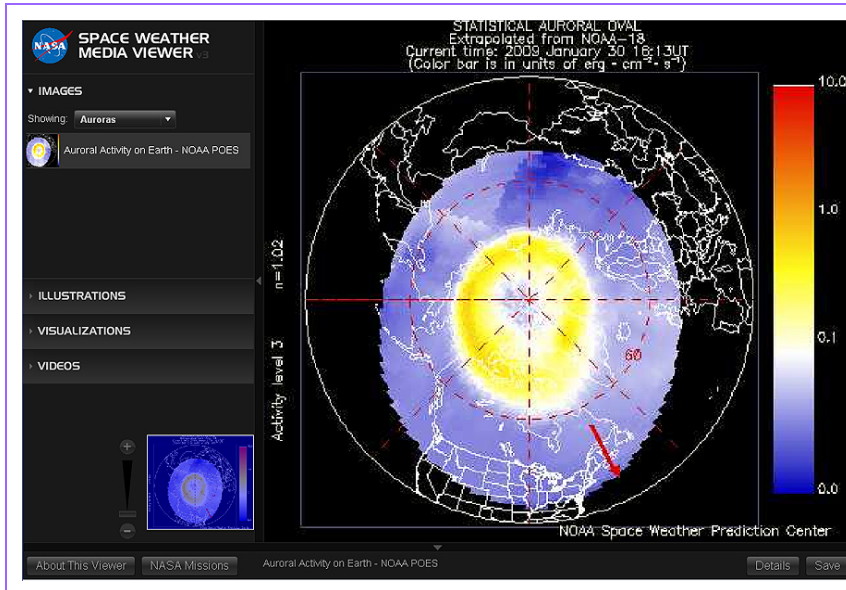
## Auroral Activity on Earth – NOAA POES

1. Open “**Space Weather Data**” and select “**Auroral Activity on Earth (Live Data)**”. The Space Weather Media Viewer will open. Under the ‘**IMAGES**’ section of the Viewer select “**Showing: Auroras**” from the small drop-down menu. Select the image called, “**Auroral Activity on Earth – NOAA POES**”.
2. Using the Pan and Zoom controls in the lower left side of the Viewer. Zoom in on the oval image to determine the intensity of the auroral activity.
3. Locate the southern most extent of auroral activity.
4. Refer to your ‘Aurora Data Collection’ sheet to answer questions **(a)** through **(c)**.
5. Close the current window and return to “**Space Weather Data**” .

## Auroral Activity on Earth – NOAA POES

### ABOUT THE DATA:

This image provides an estimate of the location, extent, and intensity of aurora. If the red--orange extends down into the northern most states of the United States, you can expect to see auroras in these states. If there is a severe magnetic storm, you could expect to see aurora extend into the middle of the United States. If there is a severe geo-magnetic storm you can expect to see aurora as far south as Texas and Florida.



### ANALYSIS TIPS:

The image shows the current extent and position of the auroral oval in the northern hemisphere.

- The red arrow in the plot points toward noon
- Red and orange indicate intense auroral activity
- Yellow indicates moderate activity
- Blue indicates low auroral activity



**Space Weather Data**  
[sunearthday.nasa.gov/swac/data.php](http://sunearthday.nasa.gov/swac/data.php)

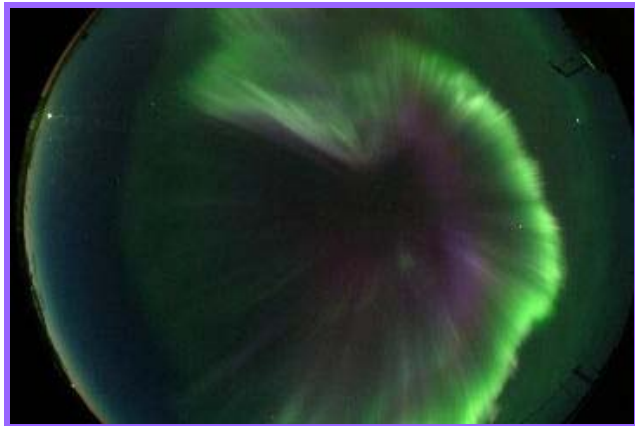
## Kiruna All-Sky Camera

1. Open '**Space Weather Data**' and select "**Kiruna All-Sky camera (Live Data)**". The 'Kiruna All-sky Camera' web page refreshes automatically every minute.
2. Observe the image for any signs of auroral activity. Don't forget to check the date and time of the image found at the top of the webpage.
3. Refer to your 'Aurora Data Collection' sheet to answer questions **(d)** through **(f)** and the **(Comprehension Question)**.
4. Close the current window and return to '**Space Weather Data**' .

## Kiruna All-Sky Camera

### ABOUT THE DATA:

An all-sky camera has been operating in Kiruna since the International Geophysical Year in 1957 (Stoffregen, 1962). In 1977 the camera was replaced with a new more automated type. The camera is controlled by a camera control computer and the image data is transferred to an archiving computer, where it is made available to the world-wide web. (a 1 -2 day delay)



### ANALYSIS TIP:

Use the data from the Kp index and the ACE satellite to determine the best possibility of seeing aurora. The POES satellite will show the location and intensity of the storm from space.



**Space Weather Data**  
[sunearthday.nasa.gov/swac/data.php](http://sunearthday.nasa.gov/swac/data.php)



## Kiruna All-Sky Camera

### AURORA VIEWING TIPS:

- Aurora viewing is affected by a variety of other factors, such as cloud cover, moonlight, and urban light pollution.
- During the northern summer, sunlight prevents viewing the aurora at high northern latitudes. As the sun climbs in the sky until June 21st and then descends, the nights are too light to see the aurora
- The most active auroras form near local midnight and come in waves, these are referred to as sub-storms. It is not unusual even during an active storm to have a lull in activity that becomes intense within an hour.

### AURORA FORECASTING TIP:

For more information on Aurora forecasting and the best times to view Aurora in the Northern Summer, visit <http://www.gedds.alaska.edu/AuroraForecast/>. The forecasts deal with the average level of activity expected within the prediction period. The sun occasionally produces bursts of unforeseen intensity, so the most spectacular auroral displays can come with little warning.



**Space Weather Data**  
[sunearthday.nasa.gov/swac/data.php](http://sunearthday.nasa.gov/swac/data.php)