



Milestones in Meteorology



Instructional Appendix

This appendix to *Milestones in Meteorology* offers instructions and examples for the more complex script directions. The same numbering system used in the script is also used within this appendix. Please note that the Annotate, Zoom, and Layer features can only be used with the iPad, updated to SOS version 4.0. If you would like more detailed instruction on how to operate the Annotate, Zoom, and Layer features separately, refer to the tutorial videos on the SOS YouTube page.

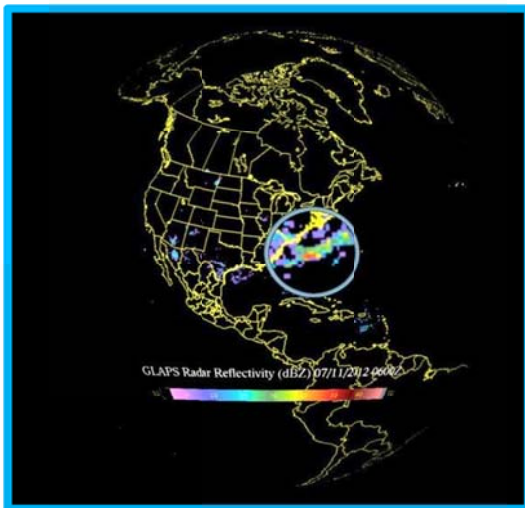
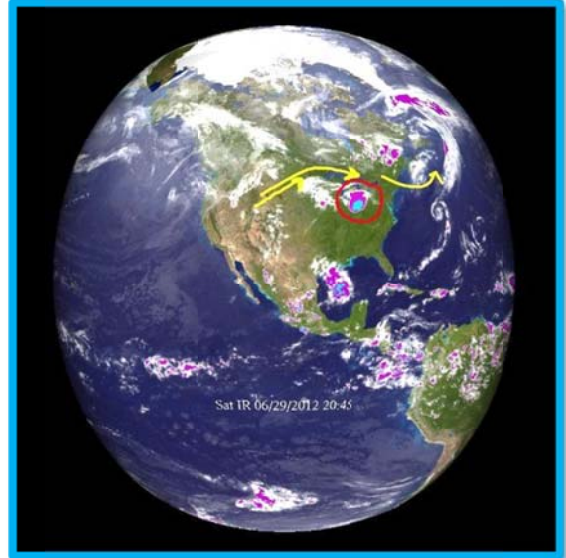
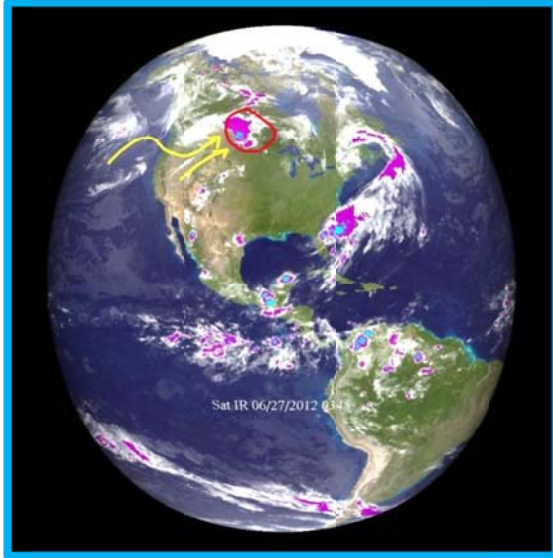
2.A.) **Draw** a circle around a geostationary satellite.

An example of how the circle should look on the sphere is shown on the right. Choose a color that will be easily noticeable, such as white in this example. To access the Draw feature, go to the Annotate interface by pressing the Annotate button along the top of the Presentation page. Within the Annotate interface, press the Draw button along the bottom. To change line color and/or width, go to the Lines button at the bottom of the Annotate interface.



3.C.) *Restart the dataset; pause it when you see a large area of clouds develop and move the **pointer** or **draw** (via **annotation**) around the clouds. You may wish to draw an arrow representing the wind direction to help the audience determine where the clouds will go.*

Included below are two separate examples of high, storm-producing clouds visible on the Enhanced IR Satellite dataset. As suggested in the script directions, a circle was drawn around the cloud patch (in red), and arrows were drawn to show wind direction (in yellow). Make sure you are familiar with the dataset and have an example chosen for this section of the script prior to your SOS demonstration.



4.C.) As you describe the meaning of the color code, pause the dataset when a good radar echo example appears. **Zoom** into the radar echo to better show the colors. Resume play after a few seconds.

On the left is an example of how the radar echo should look zoomed in. The variety of radar echo colors makes it a good example to use for this section of the script. To get to the Zoom feature, press the Zoom button at the top of the Presentation page.

5.A.) Move your **pointer/draw** (via **annotation**) around the areas of heaviest rainfall and brightest clouds.

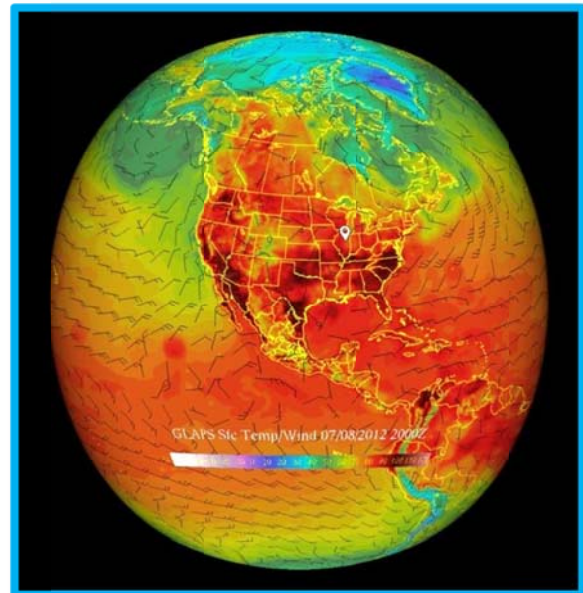
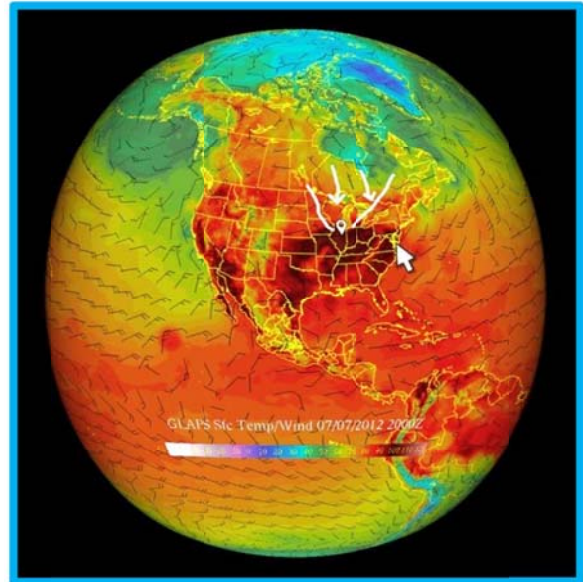
On the right is an example of an area of high clouds and heavy rain from the layered Linear IR Satellite and Radar datasets. A red circle is drawn around the patch of clouds and precipitation. If you wish to change the transparency of either dataset, go to the Layers tab on the bottom of the SOS Remote interface. Select the layer you wish to alter, and then slide the bar to reach the desired level of transparency.



6.D.) **Place a map marker icon** (📍) over the location where you want your audience to forecast the temperature. . . To give a hint to the correct answer, **draw** an arrow in the general direction of the winds around your selected location. . . Once the correct answer is given, pause the animation at the last frame of your section and use the **Pointer/Draw** (via **Annotate**) to emphasize the resulting temperatures (hotter if warm air was blown in or cooler if cold air was blown in).

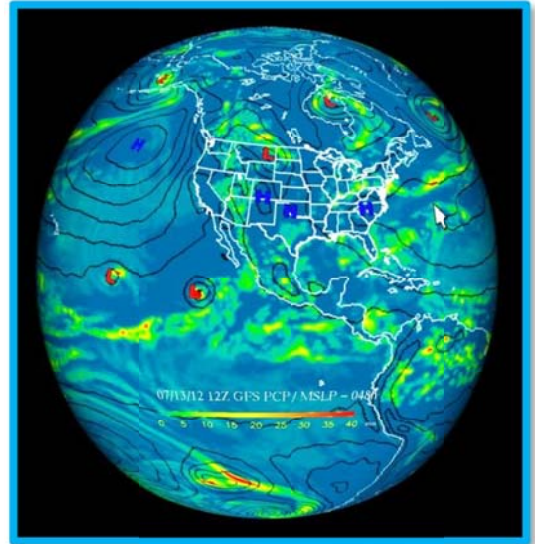
On the right is an excerpt from the GLAPS SFC Temp (F) and Wind (kt) dataset which demonstrates how wind can bring in warm or cool air and influence daily temperatures. Chicago, the city of interest for the forecasting activity, has been marked with a white map marker icon. The subsection begins on 7/7/12 at 2000Z (3pm Chicago time) and ends 24 hours later. In the initial frame (top), temperatures are very high in Chicago. However, the northerly winds—illustrated by the white arrows—are bringing in cooler air. Knowing this, the audience should predict that the next day will be cooler. Indeed, at 2000Z on the next day, Chicago is noticeably cooler, as seen in the bottom image.

When selecting a subsection of this dataset for the temperature forecasting activity, look for characteristics similar to this example: winds pointing in a fairly uniform direction (either northerly or southerly) around the city, and a noticeable difference in temperature from one day to the next. To place a map marker icon on the sphere, go to the icons button at the bottom of the Annotate interface. Select a map marker from the icon list. Press and hold one finger on the iPad screen to make the icon appear.



7.C.) *Pause the dataset as you explain what low- and high-pressure systems are. Place an **H** icon in the center of a high-pressure system and an **L** icon in the center of a low-pressure system. (Pick a low-pressure system that has a noticeable area of rainfall associated with it.)*

Select the **H** icon from the icons menu, and then place the icon over a high-pressure system on the dataset. Do the same with the **L** icon over a low-pressure system. On the right is an example of the GFS Model 6-hour precipitation and MSLP dataset with multiple high- and low-pressure systems marked.



7.D.) **Place a map marker icon** (📍) *over the location you have selected for the model forecast activity. . . Pause the dataset when it reaches hour 186 (the last frame) so that the audience can determine the GFS predictions for the location you have selected (you may wish to **zoom** into the location to show detail).*

Below is an example of predicted conditions for hour 186 of the GFS model 6-hour precipitation and MSLP. The city of interest in this example is Washington, D.C.; D.C. is marked with a white map marker icon. At hour 186, the GFS is showing an area of precipitation just to the southwest, with slight chances of precipitation around D.C.

