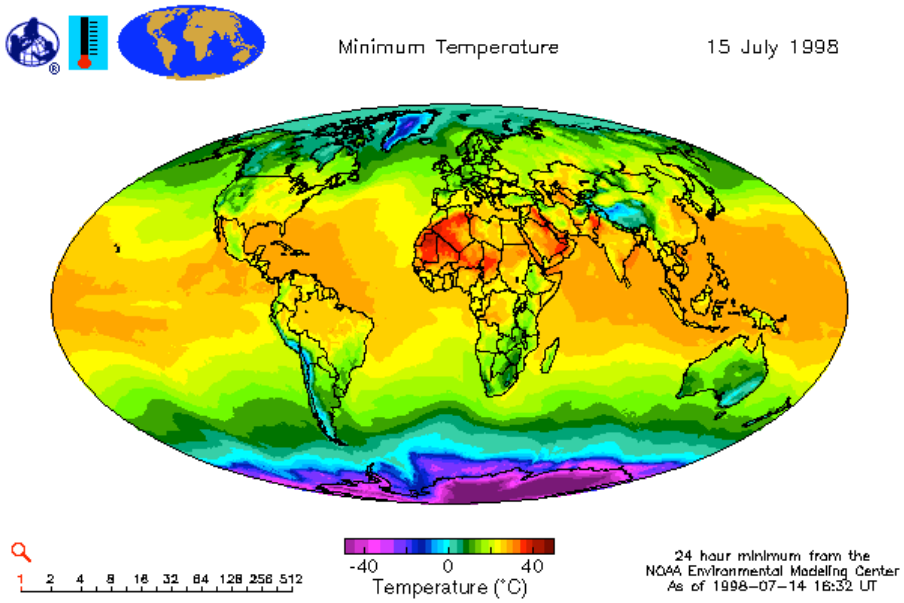
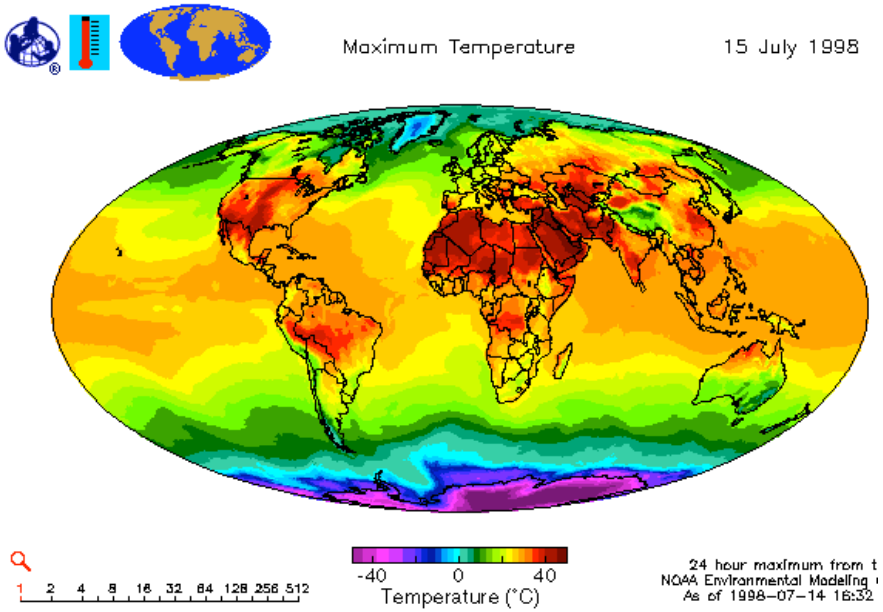
GLOBE VISUALIZATIONS
SAMPLE STUDENT ASSESSMENT TOOL - HIGH SCHOOL

(Given visualizations from the GLOBE data archives)





(Present problem requiring use of GLOBE visualizations)
During a recent web chat with other GLOBE schools, a student was confused as to why you have to take minimum and maximum temperature measurements each day. "Why not just take the temperature a few times on a given day and average them together?", the student asked. One of the GLOBE scientists who was part of the chat thought it was an excellent question. "We should make an activity about this!", she exclaimed.

In this activity your goal is to analyze several GLOBE visualizations and to report your findings on why maximum and minimum temperature are part of the GLOBE database.

The GLOBE visualizations contain many sub-elements that together form a useful tool for uncovering patterns in GLOBE data. Above are two visualizations generated for the same day. One is for the minimum temperature and the other is for the maximum temperature.

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1) **(Plan Investigations: Pose relevant questions)** Pick one of the GLOBE visualizations shown on the previous page. Think of two questions you might ask regarding the visualization. A sample question might be "What regions of the world have the highest temperatures?"

2) **(Plan Investigations: Pose relevant questions)** From previous visualizations you have studied in your class, you've noticed that the colors change as you go from one location on the visualization to the other. Choosing one of the visualizations given and starting at the bottom of it, what trend(s) do you see regarding temperature as you move to the top of the visualization?

3) **(Take GLOBE Measurements: Use quality assurance procedures)** A student in your science class, Tim, has collected GLOBE data before and has always been very careful when taking measurements. Are there any data in the images that you suspect might be due to measurement errors? How can you tell? What are some possible errors that might occur in creating a visualization?

4) **(Interpret GLOBE Data: Explain data & relationships)** In what unit is the temperature given? Do you think the color attribute that is used in the visualizations is appropriate for representing temperature? Why or why not? Pick one of the visualizations. What is the temperature range for the Southern hemisphere?

5) **(Interpret GLOBE Data: Explain data & relationships)** Pick three countries on the visualizations that are on different continents. What is the range in temperature for each of these countries? Are the temperature ranges for the countries you chose similar (within about15 degrees of each other) or are they different? Explain you answer.

6) **(Interpret GLOBE Data: Explain data & relationships)** Using your answer to the question above, how do you think the temperature range is related to its location on the planet? For example, what could you say about a country in the northern hemisphere when compared to a country in the southern hemisphere or on the equator? If you were given a visualization that had only average temperature for the same day, would it provide more or less information than having the minimum and maximum visualizations? Explain you answer.

7) **(Plan Investigations: Set up another problem)** Using the GLOBE database, choose minimum and maximum temperature visualizations for another date in 1998. Repeat questions #5 and #6 above for these new visualizations, using the same countries. How does help you support the argument that it is important to study both maximum and minimum temperature measurements?

8) **(Communicate: Compose reports to explain or persuade)** Create a 10 minute presentation that supports the collection and use of maximum and minimum temperature data. Be sure to include what a visualization is, how you read a visualization, and how you might find patterns in the data. Use specific examples that you have from this investigation to support you argument.