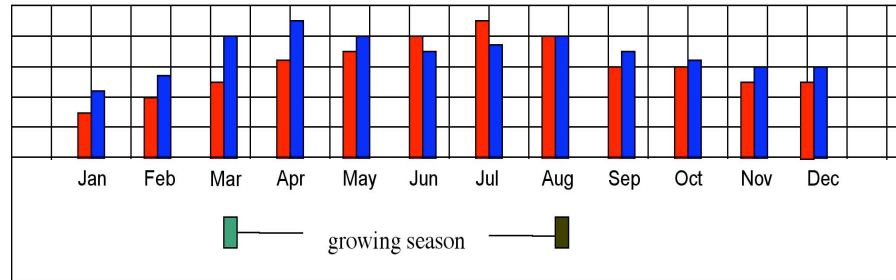


**EARTH SYSTEMS INVESTIGATION AREA - PHENOLOGY/SEASONS  
GLOBE SAMPLE STUDENT ASSESSMENT TOOL – ELEMENTARY SCHOOL**

1998 Average Air Temperature and Soil Moisture for Native Site



Key	Soil moisture	Blue square
	Air temperature	Red square

Green up	Green square
Brown down	Brown square

A group of crop scientists is studying if they can grow a food crop from one area in a different part of the world. The place where the crop grows now, is called the "native area". To begin their studies, the scientists are looking for areas that have similar growing seasons. The growing season is the time period from the plant is actively growing. The environment and climate conditions must be just right.. "Green-up" is the time when plants begin to grow. "Brown-down" is the time when plants stop growing for the season. To begin their studies on the growing season in different areas, scientists are looking at air temperature and soil moisture.

In this activity you will compare the growing season in several areas.

**EARTH SYSTEMS INVESTIGATION AREA - PHENOLOGY/SEASONS**  
**GLOBE SAMPLE STUDENT ASSESSMENT TOOL – ELEMENTARY SCHOOL**

1) **(Plan Investigations: Pose relevant questions)** Use information from the graph on page 1 to help you fill in the table below:

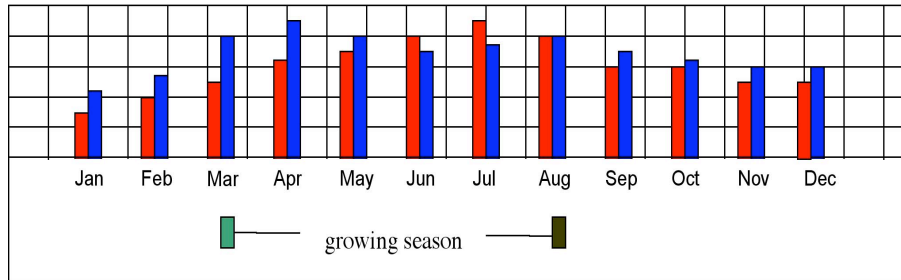
2) **(Interpret GLOBE Data: Infer patterns, trends)** Before you can look for areas with similar growing seasons, you need to study the growing season in the native area more. Look at the graph on page 1. Mark the beginning of each season on the graph. Write S for Spring, Su for Summer, F for Fall and W for Winter. What clues did you use to help you decide when each season begins?

How is this native area <b>LIKE</b> the area where you live?	How is this native area <b>UN-LIKE</b> the area where you live?
<p style="text-align: center;">•</p> <p style="text-align: center;">•</p> <p style="text-align: center;">•</p>	<p style="text-align: center;">•</p> <p style="text-align: center;">•</p> <p style="text-align: center;">•</p>

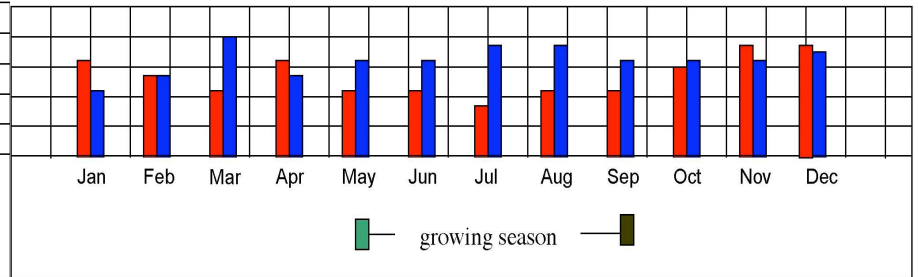
**EARTH SYSTEMS INVESTIGATION AREA - PHENOLOGY/SEASONS**  
**GLOBE SAMPLE STUDENT ASSESSMENT TOOL – ELEMENTARY SCHOOL**

The crop scientists have found three other areas they would like to study more. The growing season graphs for all of the study areas are shown below.

1998 Average Air Temperature and Soil Moisture for Native Site



1998 Average Air Temperature and Soil Moisture for Heath Region

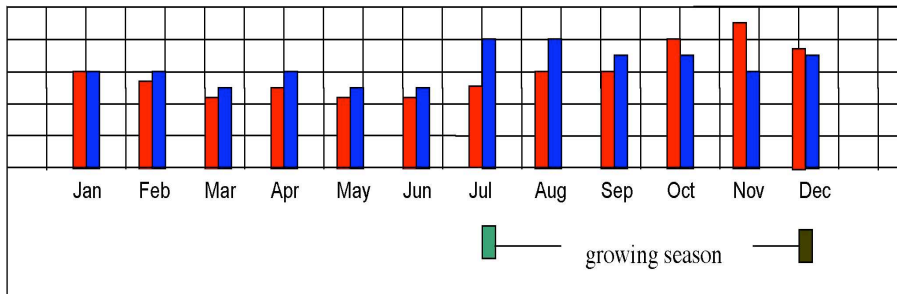


Key

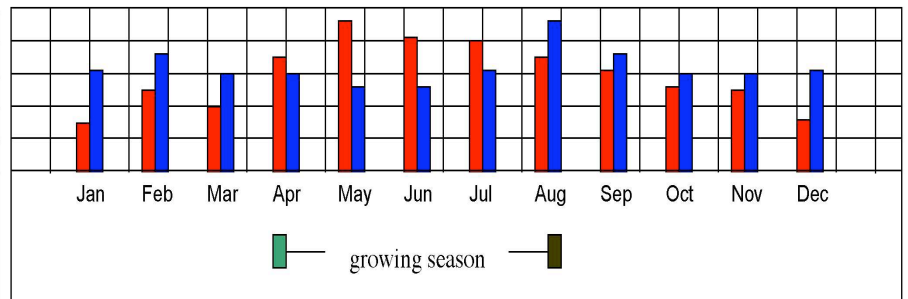
Soil moisture ■  
 Air temperature ■

Green up ■  
 Brown down ■

1998 Average Air Temperature and Soil Moisture for Barron Region



1998 Average Air Temperature and Soil Moisture for Kinninmont Region



**EARTH SYSTEMS INVESTIGATION AREA - PHENOLOGY/SEASONS  
GLOBE SAMPLE STUDENT ASSESSMENT TOOL – ELEMENTARY SCHOOL**

3) **(Interpret GLOBE Data: Infer patterns, trends)** Look at the bar graphs on page 3. Copy the season information from page 1 onto the native site graph on page 3. Then mark where you think each season begins for Heath Region, Barron Region and Kinnimont Regions.

5) **(Analyze GLOBE Data: Identify similarities and differences)** Use the information in the table you just made to help you decide which of the new sites is MOST like the native site? What information helped you decide?

4) **(Interpret GLOBE Data: Explain data and relationships)**  
Use the information in the graphs on page 3 to collect more information about the regions. You will compare the new regions to the native site. Write "+" if the measurement at the new site is more than the measurement at the native site. Write "-" if the measurement is less than the measurement at the native site.

Region	Beginning of growing season (Green-up)		End of growing season (Brown-down)	
	Temp	Soil	Temp	Soil
Heath				
Barron				
Kinnimont				

**EARTH SYSTEMS INVESTIGATION AREA - PHENOLOGY/SEASONS  
GLOBE SAMPLE STUDENT ASSESSMENT TOOL – ELEMENTARY SCHOOL**

**6) (Plan Investigations: Specify measurements to investigate)**

The graphs on page 3 all show how "green-up" and "brown-down" are related to the temperature and soil moisture. Think about and write down two other factors might affect when "green-up" and "brown-down" occur.

**7) (Communicate: Compose reports to explain or persuade)**

Write a one-page letter to the crop scientists. Include these 3 things in your letter:

- A. Use your own words to write a summary of how you analyzed the information in the graphs that they gave you. Be sure to include your conclusions also.
- B. Tell the scientists what new graphs do you suggest they get from the GLOBE databank that will help them make more comparisons of these study sites. Explain why you think each graph will give helpful comparisons.
- C. One question you would like to ask the crop scientists about this study and why you are interested in the answer