Background: The weather is a key factor in the success and survival of the scientists in Antarctica. We all pay attention to the weather every day, but on a much more casual basis. For the team in the field, it can mean a good day of gathering data or a delay in their progress. It can mean life or death in such an unforgiving environment. The team reports the daily temperature in their logs. The data is given in both Fahrenheit and Celsius. Discussing temperatures during the expedition is a good way to work with negative numbers in a real setting.

**Activity Ideas**

**Line Graph to Compare Temperatures**

Begin by asking the students what a good graph needs:

- **Title**
- **Data**
- **Labels for x and y axis**
- **Keys when necessary**
- **Consistent intervals**
- **Straight edge lines!**

1) Use a line graph to compare the daily temperatures given by the scientists in Antarctica to your local area. Using a line graph will compare changes over time. Set the graph up so the x axis is the date and the y axis is the temperature. (See fig 1) Use the entire expedition or choose just a portion to graph. Use 2 different colors for plotting and connecting the lines: one is local and one is Antarctica.

2) A good source for your local historical temperatures is [www.wunderground.com](http://www.wunderground.com) Type in your city for the fast forecast. At the bottom of the conditions box you will be able to get the historical information.
3. Ask the students to predict the range of temperatures. With some historic information, you can guide them to a reasonable range for the graph. You will need to determine the range for your graph depending upon your local temperature’s range during this period. You can expect the Antarctic temperature to go no lower than -50 degrees. In fact, last year the lowest temperature Fahrenheit was -13 and Celsius -28.

4. Next determine the interval for the $y$ axis. This will depend on the type of graph paper you use and the range that is chosen.

5. Have the students choose 2 colors for recording and make a key on the graph to show what each color represents.

6. OPTION Keep a poster sized graph on the bulletin board and have students take turns retrieving the data on-line, recording on the poster, and reporting to the class.

Comparing Celsius and Fahrenheit temperatures

1. Instead of using your local temperature as above, record the 2 temperatures given on the logs, Celsius and Fahrenheit. Follow the steps above, substituting this data instead of comparing 2 places.

2. When determining the range, consider the lows as stated above. The highest Fahrenheit temperature last year on the continent was 30 degrees and Celsius was -1.

3. There is some inconsistency in the temperatures given as well as an occasional mistake. See if the kids can catch them! For example, -16C was recorded as both 4 and 3 degrees F. Discuss why this might be so. A website for good background is: http://inspire.ospi.wednet.edu:8001/curric/weather/fahrcels.html You might want to try a lesson on converting between Celsius and Fahrenheit. A couple of web lessons available are:

   www.aamath.com Under Math Topics go to Measurement then to Temperature Conversions from the list of choices, and

   www.teachervision.com Go to Mathematics under subject area then type in Fahrenheit for the search. The lesson is “Celsius and Fahrenheit Conversions Made Simple.”

Notes: 1. The team’s first entry was on October 30. The team plans to be back at McMurdo on Jan 1 or 2.
2. The first entry from McMurdo was 11/2. The previous are from New Zealand.
3. There will be days when the team does not file a report or no weather information is given. Show this by a break in the line.
4. There is an 8\_X\_14 graph paper available that will allow the entire expedition to be graphed on one page.
5. The temperatures from Antarctica are given when the logs are written. Use a constant in your local area, such as the high or low for the day.

Figure 1

<table>
<thead>
<tr>
<th>Degrees</th>
<th>Fahrenheit</th>
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<tr>
<td></td>
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Title

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key

Dates