Name: Date:

Weather to Climate Investigation: Snow

Guiding Questions:

• What are the historical and current weather patterns or events for a location in the United States?

• What are the long-term weather (i.e. climate) patterns for this location?
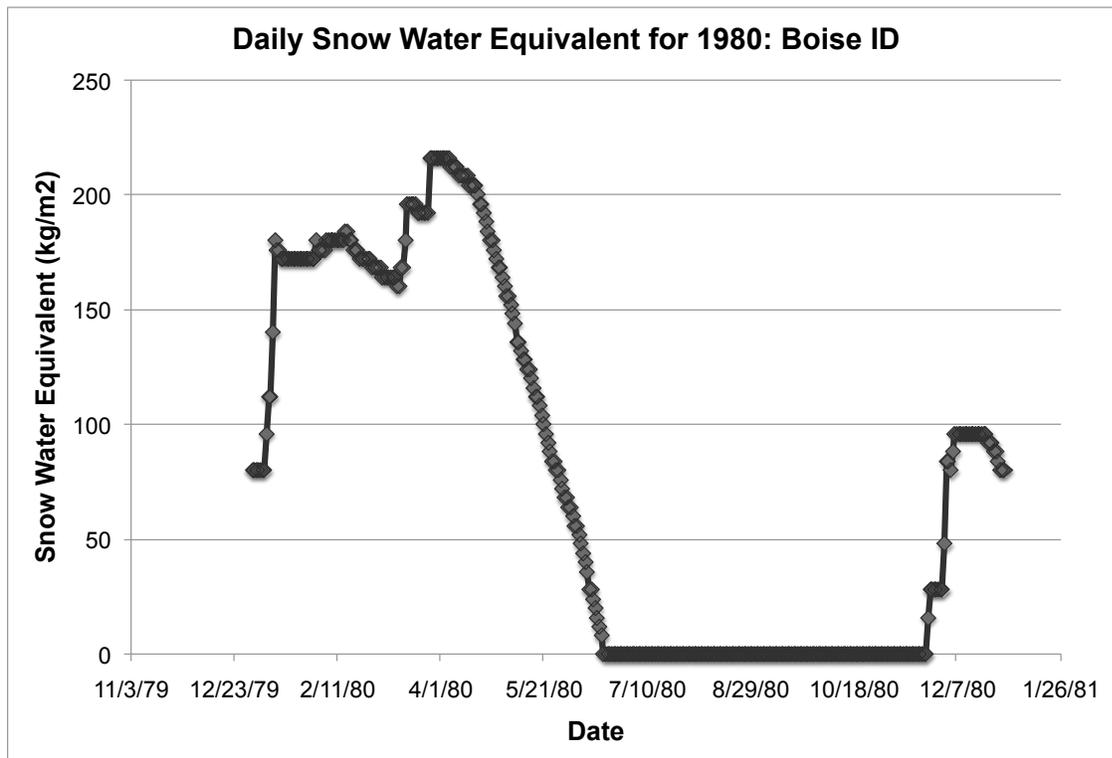
Definitions:

• ***Weather*** *is the mix of events (precipitation, humidity, temperature, etc.) that happen over a short period of time (minutes to months) in a specific location.*

• ***Climate*** *is the long-term pattern of weather in a particular area. This is often measured as the average weather over a period of time.*

• ***Snow Water Equivalent*** *is the amount of water in the snowpack. Essentially, the volume of water that would result if you melted the entire snowpack instantaneously.*
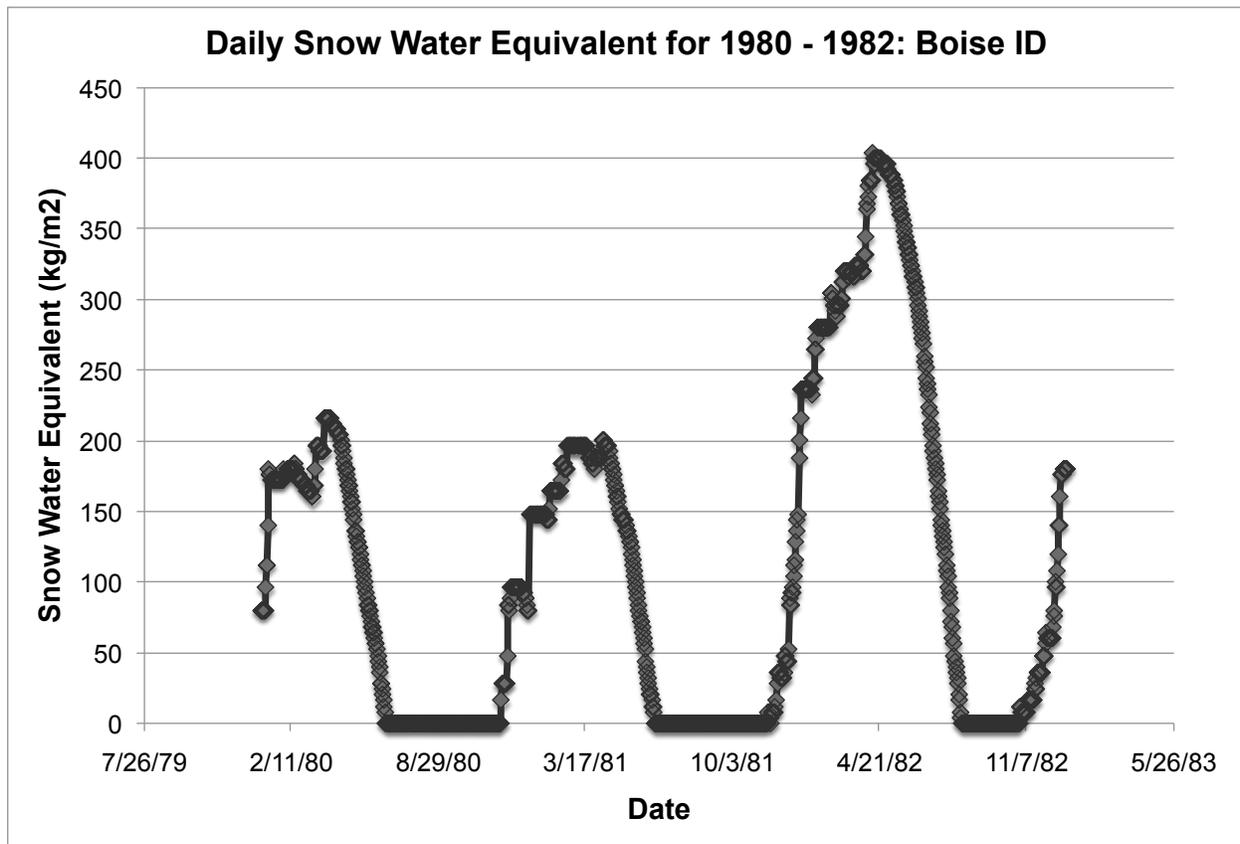
Conduct the Investigation:

Location	Latitude	Longitude
Boise, ID	*44.14*	*-115.63*

1) The graph below shows daily snow water equivalent data for the year 1980. You will use the graph to analyze and interpret data and to prepare you for a climate investigation.


Daily Snow Water Equivalent for 1980: Boise ID

2) In Boise, in 1980, which month had the maximum daily snow water equivalent? Make an estimate of the highest snow water equivalent in 1980.

3) When was the final spring snowmelt? Make an estimate of which the month has the last snow of 1980.

4) How would you describe the overall snow water equivalent pattern for 1980?

5) Make a prediction: do you think the overall snow water equivalent pattern is similar or different from year to year? (i.e. will the snow in 1981 look the same as the snow in 1980?).

6) Now look at a graph of 3 years of snow water equivalent data.

Daily Snow Water Equivalent for 1980 - 1982: Boise ID

7) Do the data support your prediction? Explain using data from the graph.

8) Will these weather patterns remain the same over time? One way to find out is to display the yearly averages (the daily weather data averaged over each year), which illustrates how the climate in an area may be changing over time. By averaging the daily weather data, an entire year's worth of daily weather data is summarized with a single number. On the next page is a graph of the yearly average temperature from 1980 to 2013.

Yearly Snow Water Equivalent: Boise ID

Average Snow Water Equivalent (kg/m2) vs **Year**
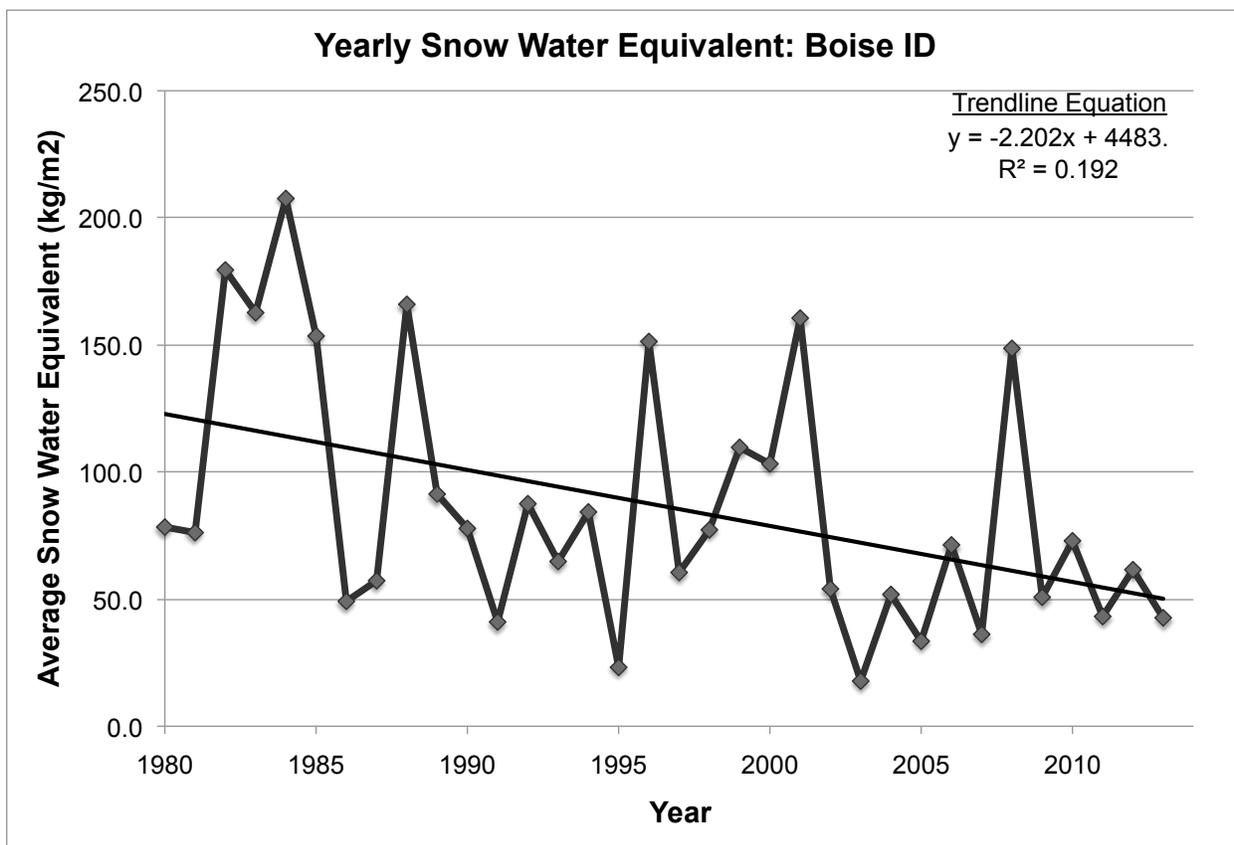
9) What is the range of yearly average snow depth from 1980 to 2013?

10) Using the trendline to help you, do you observe a trend in snow depth over time? Is the snow increasing, decreasing or remaining the same? Support your response with specific evidence displayed in the graph. (*A **trendline** is the line showing the general direction of the data, its equation is displayed on the graph*).

11) Make a prediction: Do you expect this trend to continue over time? How might the climate change in this area in 100 years? Provide some evidence that supports your prediction.

12) Ask a question: What questions do you have about weather and/or climate following an initial exploration of one site?