

The Blizzard of 1993

Task Information

Subject: Earth Science

Content:

- NYS Earth Science syllabus (1970 ed.) - Topic VII
- Earth Science syllabus (Pro. Mod.) - Unit 6-F
- Framework - Standard 4 - Science - Earth interactions among air, water, and land components.
- Middle Level Science Block E - VI Hazardous Weather - E.

Format: Paper/pencil

Purpose:

- To interpret and analyze a barograph.
- To construct a data table based on information from a barograph.
- To apply knowledge of meteorology.

Skills:

Primary: Generalizing, inferring, interpreting data
Secondary: Recording data, communicating

Time: 20 minutes

Materials:

	Teacher	per Student
none		<ul style="list-style-type: none"> • barograph from March 13-19, 1993 • ruler or straight edge

Preparation: N/A

Safety: N/A

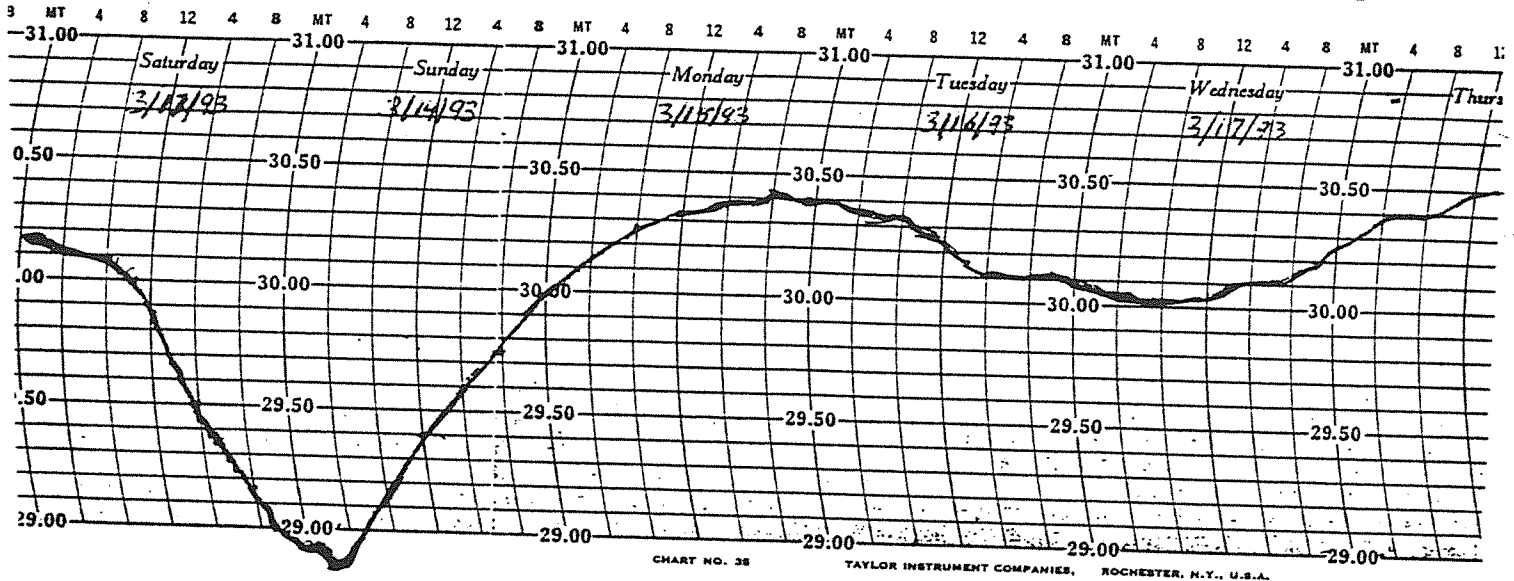
Extensions/Modifications: Students could examine other barographs from other blizzards.

The Blizzard of 1993

Task: In this activity, you will be reading and interpreting the information from a barograph from a major winter storm.

Background:

Over the Weekend of March 13 & 14, 1993 over two (2) feet of snow fell over much of New York State. A barograph continuously recorded the air pressure during the storm. The chart shows the air pressures as recorded by that barograph.



- In the space below, make a table of the barometric pressures from the barograph at four hour intervals. Start the table at 8:00 am on Saturday and end with 8:00 am on Sunday. Record the barometric pressures to the nearest tenth of an inch.

- A very distinct front passed through this region. On which day and time did it arrive?

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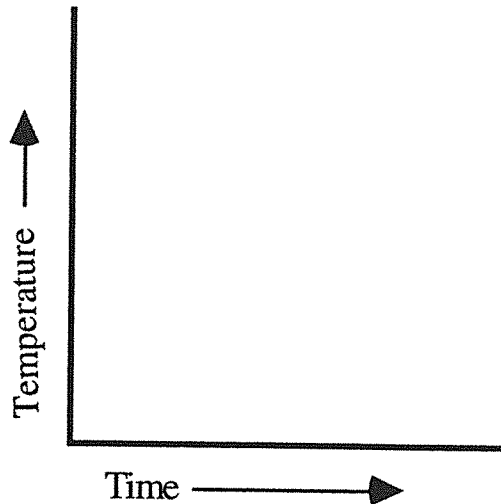
3. What observations from the graph led you to your conclusion in question #2?

4. During which four hour period was the wind velocity the greatest?

5. Using complete sentences, describe how you used the barograph to determine your answer to question #4.

6. Using complete sentences, describe the relationship between air pressure and air temperature between 8:00 PM on Saturday and 8:00 am on Sunday.

7. Draw a line graph of the likely temperature pattern during the time period described in question #6.



The Blizzard of 1993 - Scoring Rubric

Maximum Score 11 Points

1. Data Table 4 points total

Standard: The Student will construct a data table from the information on the barograph.

Criteria:

- Allow 1 point for setting up an accurate and usable data table
- Allow 2 points for 5, 6 or 7 correct values entered in the table from the barograph information
- Allow 1 point for 3 or 4 correct values entered in the table from the barograph information

Time	8 am	12 pm	4 pm	8 pm	MT	4 am	8 am
Pressure (mb)	30.1	29.9	29.4	29.1	28.9	28.9	29.1

- Allow 0 points for poorly constructed table or less than two correct values entered in the data table
- Allow 1 point for ALL values entered in the table are given to the nearest tenth

2. Cold Front Data 1 point total

Standard: The student will accurately pinpoint the date and time of the major cold front

Criteria:

- Allow 1 point for indicating that the cold front arrived between 12:00 am and 4:00 am on Sunday, March 14

3. Evidence of Passing Front 1 point total

Standard: The student will cite evidence from the barograph that explains the passing of the cold front

Criteria:

- Allow 1 point for indicating a sharp change in direction of the barograph line or the "spike" in the pressure line

4. Wind Velocity Data 1 point total

Standard: The student will accurately pinpoint the data and time of the greatest wind velocity during the storm.

Criteria:

- Allow 1 point for indicating that the period of the greatest wind velocity was Sunday 2:00 am to 8:00 am

5. Evidence of Wind Velocity**2 point total**

Standard: The student will cite evidence from the barograph that indicates high wind velocity.

Criteria:

- Allow 2 points for indicating that the period of greatest wind velocity will be the area on the graph that has the steepest slope, using a complete sentence.
- Allow 1 point for a correct answer, but not in a complete sentence.
- Allow 0 points for an incorrect answer even if it is in a complete sentence.

6. Temperature and Air Pressure**2 point total**

Standard: The student will explain the relationship between air pressure and air temperature.

Criteria:

Allow 2 points for indicating:

- Air pressure and temperature show an inverse relationship in a complete sentence
- Allow 1 point for a correct answer, but not in a complete sentence.
- Allow 0 points for an incorrect answer even if it is in a complete sentence.

Allow 1 point for indicating one of the variables correctly.

7. Graph**1 point total**

Standard: The student will sketch a graph showing the change in temperature during the blizzard.

Criteria:

- Allow 1 point for a line drawn on the graph that shows the temperature rising or steady and then falling sharply

Highest possible score - 12 points

Student ID _____ Scoring Form - The Blizzard of 1993
Male or Female (circle one)

Circle the Student's score for each question. Add the points for each question and write the total score at the bottom of the scoring form.

- | | | | |
|---------------------------------|---|---|---|
| 1. Data Table | | | |
| Usable and accurate table | 0 | 1 | |
| Correct values entered | 0 | 1 | 2 |
| Values to the nearest tenth | 0 | 1 | |
| 2. Cold Front Data | 0 | 1 | |
| 3. Evidence of Passing Front | 0 | 1 | |
| 4. Wind Velocity Data | 0 | 1 | |
| 5. Evidence of Wind Velocity | 0 | 1 | 2 |
| 6. Temperature and Air Pressure | 0 | 1 | 2 |
| 7 Graph | 0 | 1 | |

Total Score _____
Total possible score - 12 points

Student ID _____ Scoring Form - The Blizzard of 1993
Male or Female (circle one)

Circle the Student's score for each question. Add the points for each question and write the total score at the bottom of the scoring form.

- | | | | |
|---------------------------------|---|---|---|
| 1. Data Table | | | |
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| 5. Evidence of Wind Velocity | 0 | 1 | 2 |
| 6. Temperature and Air Pressure | 0 | 1 | 2 |
| 7 Graph | 0 | 1 | |

Total Score _____
Total possible score - 12 points