

## Project Element 1: Topic and Data Source (URL)

### Instructions

Make sure you have reviewed all of the details on the Project Overview page, including the links to data sources and the list of previous topics.

Choose a topic and find a data source online. Be careful when researching online sources because not all are trustworthy. In general, government, academic, and professional web sites are the most reliable.

Your data must include at least 50 points, and later you will input the data to a spreadsheet.

For this assignment, type the following information in the box below:

1. Submit a URL that leads directly to a web page with the numbers you intend to use.
2. Explain exactly what you will plot in your graph: what variable goes on the X-axis and what is on the Y-axis.

Please note: One type of graph is forbidden. You may not plot earthquake magnitude vs. year. There is no relationship between these two quantities, so you cannot draw any conclusions from graphing them.

Contact the instructor if you have questions.

**Due Date:** Wednesday March 4 by 11:55 PM CT

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## Project Element 2: Excel Spreadsheet with Table and Chart

### Instructions

Make sure you have reviewed all of the details on the Project Overview page.

Input the data from your source (URL from Project Element 1: Topic and Data) into an Excel spreadsheet. There are several ways to do this:

#### Tab-Separated Data

Select (highlight) all numbers, and copy. Then paste into cell A1 of a new Excel spreadsheet. Sometimes, when you do this, the data is automatically arranged in separate columns. Other times, all data may be pasted into column A. If this happens, you will need to highlight column A, click on the Data tab in the ribbon, then select Text to Columns. Contact one of the instructors if you have questions.

agency_cd	site_no	datetime	tz_cd	04_00060	04_00060_cd	17_00065
5s	15s	20d	6s	14n	10s	
USGS	05576000	2012-12-24 00:00	CST	2.6	P	4.81
USGS	05576000	2012-12-24 00:15	CST	2.6	P	4.81
USGS	05576000	2012-12-24 00:30	CST	2.6	P	4.81
USGS	05576000	2012-12-24 00:45	CST	2.6	P	4.81
USGS	05576000	2012-12-24 01:00	CST	2.6	P	4.81
USGS	05576000	2012-12-24 01:15	CST	2.6	P	4.81
USGS	05576000	2012-12-24 01:30	CST	2.6	P	4.81
USGS	05576000	2012-12-24 01:45	CST	2.6	P	4.81
USGS	05576000	2012-12-24 02:00	CST	2.7	P	4.82
USGS	05576000	2012-12-24 02:15	CST	2.6	P	4.81
USGS	05576000	2012-12-24 02:30	CST	2.7	P	4.82
USGS	05576000	2012-12-24 02:45	CST	2.7	P	4.82
USGS	05576000	2012-12-24 03:00	CST	2.7	P	4.82
USGS	05576000	2012-12-24 03:15	CST	2.7	P	4.82
USGS	05576000	2012-12-24 03:30	CST	2.7	P	4.82
USGS	05576000	2012-12-24 03:45	CST	2.7	P	4.82
USGS	05576000	2012-12-24 04:00	CST	2.7	P	4.82
USGS	05576000	2012-12-24 04:15	CST	2.7	P	4.82
USGS	05576000	2012-12-24 04:30	CST	2.7	P	4.82
USGS	05576000	2012-12-24 04:45	CST	2.7	P	4.82

## Table of Data

Select (highlight) the entire table, and copy. Then paste into cell A1 of a new Excel spreadsheet.

Date / Time	Dis-charge, ft <sup>3</sup> /s,	Gage height, feet,
12/24/2012 00:00 CST	2.6 <sup>P</sup>	4.81 <sup>P</sup>
12/24/2012 00:15 CST	2.6 <sup>P</sup>	4.81 <sup>P</sup>
12/24/2012 00:30 CST	2.6 <sup>P</sup>	4.81 <sup>P</sup>
12/24/2012 00:45 CST	2.6 <sup>P</sup>	4.81 <sup>P</sup>

## Downloadable Data

Some data websites provide a link for downloading data into Excel. Look for a link either above or below the table. Download the file, then open it in Excel.

Production	Graph Clear	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	View History
U.S.	<input type="checkbox"/>	195,416	187,033	197,056	194,786	194,509	211,434	<a href="#">1920-2012</a>
PADD 1	<input type="checkbox"/>	706	693	701	723	722	902	<a href="#">1981-2012</a>
Florida	<input type="checkbox"/>	171	179	189	173	179	199	<a href="#">1981-2012</a>
New York	<input type="checkbox"/>	31	30	31	31	30	31	<a href="#">1981-2012</a>
Pennsylvania	<input type="checkbox"/>	313	303	313	313	303	422	<a href="#">1981-2012</a>
Virginia	<input type="checkbox"/>	1	1	1	1	1	1	<a href="#">1981-2012</a>
West Virginia	<input type="checkbox"/>	191	181	167	205	209	250	<a href="#">1981-2012</a>

If none of these methods work, you can always type the data into Excel by hand. You may have to do it this way if your numbers come from more than one website, or if you find data in a print publication.

## For this assignment:

1. Use one of the methods above to create an Excel file with your data.
  - If your table does not automatically have column headings in row 1, then insert a row and type in headings.
2. Make a graph
  - Choose the scales on both X-axis and Y-axis so that your data points spread across the entire chart area.
  - Include labels on the axes, and add a title to each axis.
  - If your graph has more than one data series, then include a legend to explain.
3. Save your file, and upload it to Moodle by clicking on the button below.

Contact one of the instructors if you have questions.

**Due Date:** Wednesday March 18 by 11:55 PM CT

## Project Element 3: Summary (First Draft)

### Instructions

Make sure you have reviewed all of the details on the Project Overview page.

Submit a draft of the summary section of your poster. The summary should:

- Mention the organization, agency, or scientist that collected the data.
- State where the numbers came from and when they were collected.
- Be mostly a discussion of the graph:
  - What the graph shows
  - Why this is valuable information
  - Whether it suggests a direction for future study
  - **Discussion of your graph is the most important part of the summary!**
- Not contain any errors in spelling or grammar. Run a spell-checker!
- Be approximately 300 words in length.
- Fit on a single sheet of paper and fill the entire sheet.
  - On the poster itself, your summary should be in 18-point font.
  - The summary should fill an entire sheet of paper.
  - You may need to play around with margins, font type, and font size to satisfy both of these requirements.

**For this assignment**, save your summary as a Word or text document; then upload it to Moodle by clicking on the button below. Contact one of the instructors if you have questions.

**Due Date:** Wednesday April 15 by 11:55 PM CT

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## Project Element 4: References

### Instructions

Make sure you have reviewed all of the details on the Project Overview page.

Submit your complete reference list, including data, background information, pictures, maps, etc. No particular format is required for references, but readers must be able to understand what each reference is and where to find it.

Three references are required, but you will receive a higher score for your poster if you have more.

Websites are acceptable references, but use them carefully. Some websites are more reliable than others. Contact an instructor if you have questions about a specific site. Also, you will receive a higher score if you include printed resources such as textbooks or journals.

**For this assignment**, copy and paste (or type directly) your references in the box below. Contact one of the instructors if you have questions.

**Due Date:** Wednesday April 8 by 11:55 PM CT

## Project Sample Quiz 1: Introduction (answers in bold)

- Which choices make up the purpose of a poster session?  
**To review others' work**      To cover a topic in depth  
**To present material concisely**      To compete for the top grade
- What qualities make a good title?  
Long      Short      **Informative**      **Catchy**
- Name two possible topics for a Geology 103 poster.  
**(Short answer question with any answer accepted)**
- How many data points should you have for your project?  
30      **50**      60      75
- Which two elements are the most important parts of the poster?  
Picture      Map      Table      **Graph**      **Summary**
- Which statement is true about the graph(s) on a poster?  
A legend is necessary even if there is only one data set.  
**Both axes should be clearly labeled.**  
No labels are needed on the graph if the summary explains everything.  
The graph should be formatted entirely in black and white.
- How long should the summary be?  
**Exactly 1 page**      < 1 page      1-2 pages      > 2 pages
- Which sources would be acceptable references?  
Any random website that pops up in a web search  
**Scientific journals and their websites**  
**Government agencies and their websites**  
**Textbooks and publishers' websites**
- When will the Poster Review Session be held?  
On the last day of classes  
On the Thursday before finals begin (Reading Day)  
During the last lab meeting  
**During the scheduled final exam time**
- Which elements contribute to your overall grade?  
**Review of other people's posters**  
**Intermediate submission of Poster Elements (topic, graph, references, and summary)**  
**Submission of your poster**  
**Completion of Poster Sample quizzes (such as this one)**

**Project Sample Quiz 2: Titles (answers in bold)**

1. Which of these titles is more interesting or intriguing? Which catches your attention better?

Title A



Title B



2. What is wrong with this title?

- Handwritten
- Too short
- Misspelled
- Too long



3. Which title is easier to read?

Title A



Title B



4. Both of these titles are written by hand. Most of the text on your poster should be printed by computer, but you may be artistic with the title. If you choose to write your title, you should work carefully and neatly. Note: Some of the irregularities on the images are due to the scanning process, not the original work. Which of these titles is more attractive?

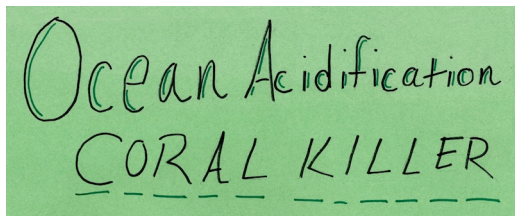
Title B is more attractive.

Both titles are excellent and need no changes to receive full credit.

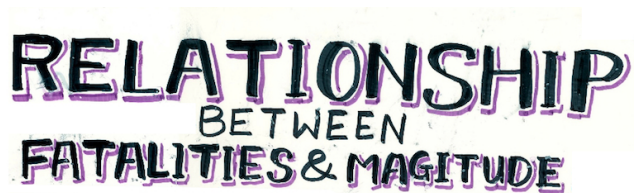
Title A is more attractive.

**Both titles have flaws that reduce their effectiveness.**

Title A

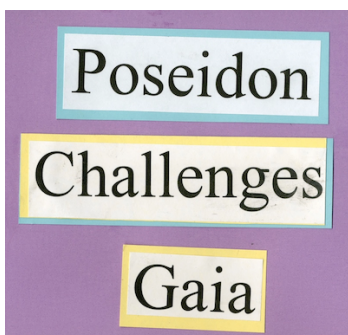


Title B



5. Which of these titles is more informative?

Title A



Title B



6. What is wrong with this title?

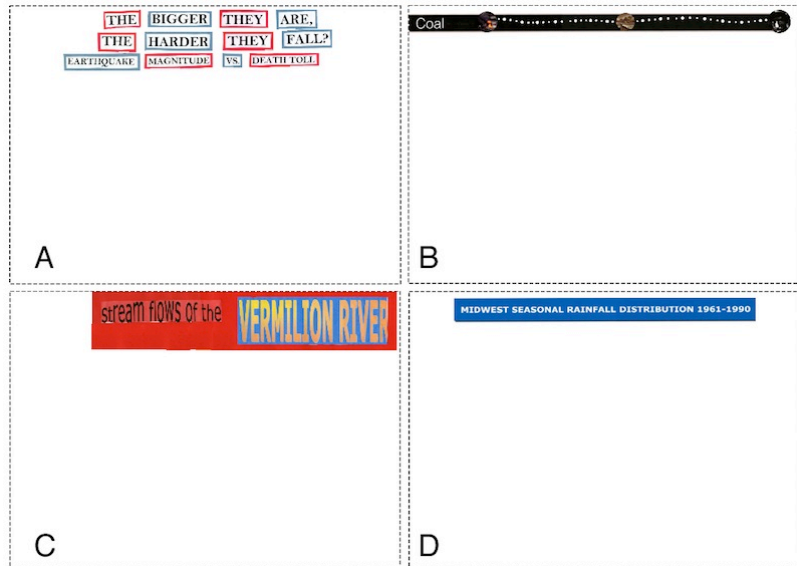
- Too short
- Too long
- Uneven**
- Not informative



7. The poster title should be large enough to see and long enough to inform. However, most of the area of the poster should be occupied by the table, graph, and summary.

In the figure, rectangles represent poster board; and titles are placed within the rectangles as they were on the posters. Which two posters show a good use of space in sizing the title?

- Poster A
- Poster B**
- Poster C
- Poster D**

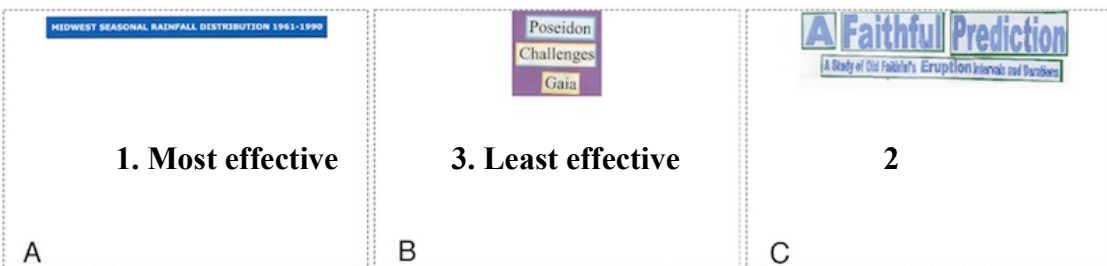


8. In the figure, rectangles represent poster board; and titles are placed within the rectangles as they were on the posters. An effective title catches the reader's interest, provides information about the topic, and uses space well.

Rate these three titles according to their overall effectiveness, with 1 = best and 3 = worst.



9. Rate these three titles according to their overall effectiveness, with 1 = best and 3 = worst.



**Project Sample Quiz 3: Data Tables (answers in bold)**  
**(tables cropped so not all 50 points show)**

1. This table is missing a figure number, but looking only at the information that is present, what single change would improve the table?

Data should be labeled with the proper units.  
 Columns and rows should be separated by solid lines.

**Column headings should be centered above data.**

The title does not explain what the acronym "BATS" means.

pH LEVELS PER YEAR (BATS)				
YEAR	pH		YEAR	pH
1990	8.08		1995	8.13
1990	8.04		1995	8.13
1990	8.13		1995	8.13
1991	8.13		1995	8.07
1991	8.07		1995	8.06
1991	8.04		1995	8.1
1992	8.07		1996	8.13
1992	8.13		1996	8.095
1992	8.13		1996	8.03
1992	8.135		1996	8.07
1992	8.11		1997	8.12
1992	8.12		1997	8.07
1992	8.07		1997	8.03
1993	8.04		1998	8.11
1993	8.11		1998	8.12
1993	8.04		1998	8.12
1993	8.06		1998	8.12
1993	8.08		1998	8.03
1994	8.06		1999	8.12
1994	8.13		2000	8.12
1994	8.132		2000	8.07

Date	Place	Death toll	Magnitude
10/10/86	El Salvador	1000	5.5
5/25/23	Iran	2200	5.7
5/28/03	Turkey	1000	5.8
8/2/51	Nicaragua	1000	5.8
5/31/46	Turkey	1300	5.9
2/4/98	Afghanistan	2323	5.9
7/26/63	Macedonia	1100	6
1/25/99	Colombia	1185	6.1
3/25/02	Afghanistan	1000	6.1
1/14/07	Jamaica	1000	6.5
5/6/76	Italy	1000	6.5
7/23/30	Italy	1404	6.5
9/6/75	Turkey	2300	6.7
8/20/88	India	1000	6.8
3/16/06	Taiwan	1250	6.8
9/9/54	Algeria	1250	6.8
5/21/03	Algeria	2266	6.8
3/28/70	Turkey	1086	6.9
3/22/66	China	1000	5.7

2. What is missing from this table? Select as many as apply.

Units used for data

**Figure number**

Font size that is easy to read

**Table title**

3. What problem(s) do you see in this table? Select as many as apply.

No units are given for data.

**The table is mounted unevenly on the poster.**

**Column headings are written by hand.**

**The table has no title or figure number.**

**Column widths need to be adjusted.**

Date	Temperature (F)	Inches of Snow
Jan. 2008	23.5	12.7
Feb. 2008	22.9	21.8
Mar. 2008	34.9	7.9
Apr. 2008	49.5	0
May. 2008	55.5	0
Jun. 2008	70.8	0
Jul. 2008	74	0
Aug. 2008	72.7	0
Sep. 2008	66.2	0
Oct. 2008	52.7	0
Nov. 2008	39.3	0.6
Dec. 2008	22.9	21.9
Jan. 2009	15.8	21.5
Feb. 2009	28.2	4.5
Mar. 2009	39.6	2.1
Apr. 2009	47.2	2.1
May. 2009	59.9	0
Jun. 2009	67.6	0
May. 2010	61.7	0
Jun. 2010	71.2	0
Jul. 2010	77.6	0
Aug. 2010	78.7	0
Sep. 2010	65.1	0
Oct. 2010	56	0
Nov. 2010	41.5	0
Dec. 2010	22.5	16.2
Jan. 2011	20.6	11.1
Feb. 2011	26.2	29
Mar. 2011	36.3	1
Apr. 2011	47.7	0.6
May. 2011	57.9	0
Jun. 2011	69.4	0
Jul. 2011	79	0
Aug. 2011	73.5	0
Sep. 2011	62.2	0
Oct. 2011	54.9	0

4. There are several problems with this table. Match each phrase below to the correct description of a mistake.

The data set ... includes too many points.

Pairs of columns ... overlap in a disorderly arrangement

Data for number of deaths ... vary so widely that they would be difficult to graph.

The title ... is hard to read against a black background.

Rows and columns ... are mounted unevenly on the posterboard.

Mag	Date/Time (UTC)	Depth (km)
0.87	10/07/2013 14:13:36	4.6
1.12	10/07/2013 04:13:40	6.97
0.95	10/05/2013 20:38:55	4.86
1.27	10/05/2013 17:13:14	4.42
0.4	10/05/2013 16:24:13	3.62
1.36	10/05/2013 15:48:39	2.17
1.27	10/05/2013 15:45:59	11.02
2.48	10/05/2013 15:26:02	6.51
1.3	10/05/2013 15:18:21	4.83
1.11	10/05/2013 15:12:55	4.87
0.66	10/05/2013 15:08:08	4.49
1.43	10/05/2013 15:04:01	4.61
0	10/05/2013 15:03:43	2.16
1.14	10/05/2013 15:03:12	0.74
1.49	10/05/2013 15:00:16	1.55
0	10/05/2013 14:59:56	3.83
1.04	10/05/2013 14:59:44	4.88
1.44	10/05/2013 14:58:28	2
0.84	10/05/2013 14:58:09	2.04
0.56	10/05/2013 14:56:51	2.1
1.09	10/05/2013 14:54:54	2.14
0.91	10/05/2013 14:54:27	1.68
0.82	10/05/2013 14:54:09	2.24
1.13	10/05/2013 14:52:29	4.78
1.57	10/05/2013 14:51:21	4.43
1.12	10/05/2013 14:50:27	4.98
0	10/05/2013 14:48:26	2.17
0.79	10/05/2013 14:48:08	4.26
1.04	10/05/2013 14:46:59	2.06
1.51	10/05/2013 14:46:15	0.97
0	10/05/2013 14:46:04	2.02
1.88	10/05/2013 14:42:52	4.35
1.37	10/05/2013 14:38:05	4.3
0.88	10/05/2013 14:25:01	5.97
2.82	10/05/2013 14:09:23	7.45
		2.06
1.15	10/05/2013 14:06:13	
1.06	10/05/2013 13:49:20	4.98
0.55	10/05/2013 13:49:02	2
0.9	10/05/2013 13:38:48	4.75
2.2	10/05/2013 13:34:55	6.44

### Earthquakes with 1000+ Deaths Since 1900

Deaths	Magnitude	Deaths	Magnitude	Deaths	Magnitude	Deaths	Magnitude
316000	7	10000	7.5	2800	7.4	1362	8.1
242769	7.5	9748	6.2	2800	5.7	1342	6.9
227898	9.1	9500	8	2800	6	1313	8.6
200000	7.8	9300	7.5	2790	7.4	1300	5.9
142800	7.9	8000	7.4	2740	6.5	1250	6.8
110000	7.3	8000	7.9	2735	6.5	1250	6.8
87587	7.9	6000	7.3	2529	6.8	1200	7.1
86000	7.6	5800	7	2500	7.2	1190	7.4
72000	7.2	5749	6.3	2500	6	1185	6.1
70000	7.9	5502	6.9	2500	7.5	1130	7.1
50000	7.4	5300	6.2	2400	7.6	1117	7.5
40900	7.6	5054	7.1	2323	5.9	1100	7.3
32700	7.8	5050	6.8	2300	6.7	1100	6
32610	7	5000	6.2	2266	6.8	1086	6.9
31000	6.6	5000	7.3	2200	5.7	1070	7.3
30000	7.6	5000	7.7	2200	6.9	1000	5.8
28000	7.8	4700	6.4	2183	7	1000	8.8
25000	6.8	4000	7	2000	7.5	1000	6.5
23000	7.5	4000	7.6	2000	7	1000	7.4
20896	9	4000	8	2000	7	1000	7.3
20085	7.6	4000	6.6	1989	7.5	1000	5.8
20000	6.8	3882	8.2	1961	7.1	1000	7
19000	7.5	3800	7.2	1800	7.5	1000	6.9
17118	7.6	3769	7.3	1655	9.5	1000	6.9
15000	5.7	3500	7	1621	7.7	1000	6.5
15000	7.8	3500	7.3	1567	7.3	1000	5.5
12225	7.1	3270	7.1	1526	8.6	1000	7
12000	8	3020	7.6	1500		1000	6.8
12000	7.5	3000	7.8	1500	7.2	1000	6.1
12000	7.3	3000	8.4	1500	7.3		
10700	8.1	3000	5.9	1404	6.5		
10000	8	3000	6.9	1400	7.3		

Data taken from U.S. Geological Survey

5. This data set was downloaded as a .xls file, and it was not reformatted properly for the poster. Which choice(s) below identify problems with the way this table is formatted?

**One row of the table is twice as high as all the others.**

**The table does not give a location.**

**Date and time should be in separate columns.**

**All earthquakes occurred on only three days, so the Date/Time column is not needed.**

The table has a title, but it also needs a figure number.



Project Sample Quiz 3: Data Tables, page 3

6. Which table do you think is easier to read? Briefly explain your answer. Note: Both tables have been shortened for this question, so not all data is shown.

(Short answer question with any answer accepted)

Date	Lake Gage Height (ft)	Date	Lake Gage Height (ft)
1964	1411	1990	1423
1965	1411	1991	1423
1966	1411	1992	1423
1967	1413	1993	1422
1968	1413	1994	1427
1969	1411	1995	1431
1970	1412	1996	1435
1971	1416	1997	1440
1972	1422	1998	1442

**Table A**

Deaths	Magnitude	Deaths	Magnitude	Deaths	Magnitude
316000	7	25000	6.8	9500	8
242769	7.5	23000	7.5	9300	7.5
227898	9.1	20896	9	8000	7.4
200000	7.8	20085	7.6	8000	7.9
142800	7.9	20000	6.8	6000	7.3
110000	7.3	19000	7.5	5800	7
87587	7.9	17118	7.6	5749	6.3
86000	7.6	15000	5.7	5502	6.9
72000	7.2	15000	7.8	5300	6.2
70000	7.9	12225	7.1	5054	7.1
50000	7.4	12000	8	5050	6.8
40900	7.6	12000	7.5	5000	6.2
32700	7.8	12000	7.3	5000	7.3
32610	7	10700	8.1	5000	7.7
31000	5.6	10000	8	4700	6.4
30000	7.6	10000	7.5	4000	7
28000	7.8	9748	6.2	4000	7.6

**Table B**

7. Which of these two tables do you think looks better? Briefly explain your answer.

(Short answer question with any answer accepted)

Year	Index of Snowfall
1969	47.1
1969	48.6
1981	44.2
1962	45.7
1963	45.5
1964	41.5
1965	51.2
1966	27.3
1967	71.4
1968	32.8
1969	40.7
1970	61.1
1971	40.5
1972	41.6
1973	42.6
1974	56.4
1975	53.3
1976	36.1
1977	64.3
1978	101.6
1979	56.9
1980	37
1981	30
1982	51
1983	37.1
1984	39.7
1985	35.1
1986	36.5
1987	38.4
1988	38.4
1989	34.4
1990	21.8
1991	30.8
1992	24
1993	42.9
1994	41.5
1995	22.5
1996	28.6
1997	42.7
1998	24.4
1999	56
2000	68
2001	13.5
2002	45
2003	25
2004	25.6
2005	54.5
2006	16.3
2007	46.9
2008	57.8
2009	45.9
2010	43.1
2011	40.8
2012	20.9

**Table A**

Year	Magnitude	Number of Fatalities
1969	9	20896
1970	8.8	507
1971	8.1	192
1972	7.9	87587
1973	8.5	25
1974	8.3	0
1975	8.6	1313
1976	9.1	227898
1977	8.3	0
1978	7.9	0
1979	8.4	138
1980	8	2
1981	7.7	2297
1982	8.1	0
1983	7.8	0
1984	7.8	0
1985	8.2	166
1986	8	3
1987	8.3	49
1988	7.8	11
1989	7.8	0
1990	7.8	0
1991	7.8	2519
1992	7.6	75
1993	7.6	0
1994	7.7	1621

**Table B**

8. Which of these two tables do you think is better overall? Briefly explain your answer.

(Short answer question with any answer accepted)

STATE	ANNUAL RAINFALL	WINTER (%)	SPRING (%)	SUMMER (%)	FALL (%)
ILLINOIS	38.69	16.7	29.1	29.8	24.3
INDIANA	40.59	18.8	28.9	29.1	23.1
IOWA	33.08	9.2	28.2	38.1	24.6
KENTUCKY	48.15	23.6	28.6	25.9	22
MICHIGAN	32.17	17.4	24	30	28.6
MINNESOTA	26.63	8.7	25.1	41.8	24.5
MISSOURI	41.15	15.8	29.4	28.5	26.2
OHIO	38.14	19.1	28.1	29.8	23
WISCONSIN	31.68	11.1	25.4	36.6	26.9
MIDWEST	36.7	15.6	27.4	32.2	24.8

**Table A**

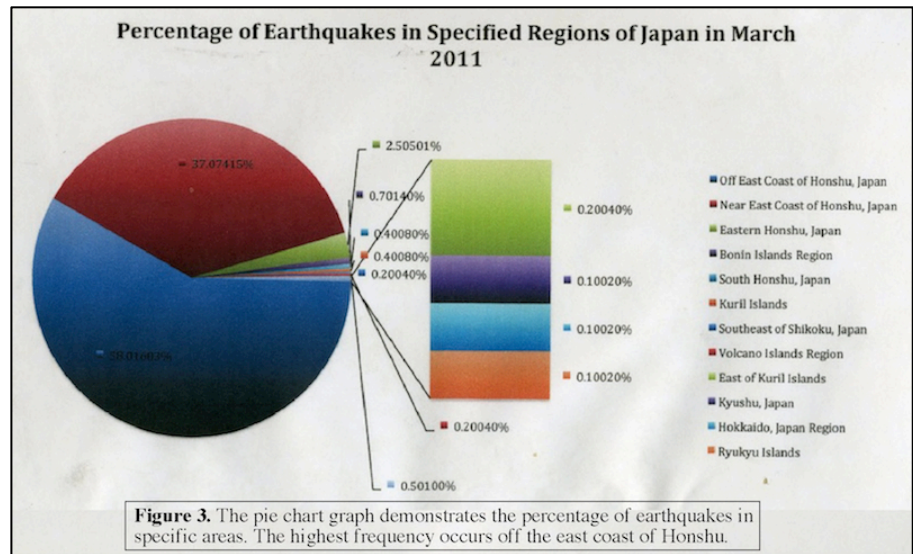
Data: Percentages of rainfall collected from 1961-1990 in the Huff and Angel study.

INTENSITY OF LARGEST EARTHQUAKE IN U.S. BY STATE & REGION									
Regions in the U.S.									
West		Southwest		Mid-West		Southeast		Northeast	
State	Intensity	State	Intensity	State	Intensity	State	Intensity	State	Intensity
WA	9	TX	8	ND	(N/A)	KY	7	ME	7
OR	7	OK	(N/A)	SD	5	TN	7	NH	7
CA	11	AR	11	NE	7	MS	12	VT	5
ID	9	LA	6	KS	7	AL	7	MA	8
NV	10			MN	6	WV	6	RI	8
MT	10			IA	5	VA	8	CT	7
UT	8			MO	10	NC	7	NY	8
AZ	6			WI	5	SC	10	NJ	6
WY	(N/A)			IL	7	GA	5		
CO	7			MI	6	FL	6		
NM	7			IN	7	DE	7		
AK	10			OH	8	MD	4		
HI	10								
Average	8.6667	Average	8.3333	Average	6.6364	Average	7.1667	Average	7

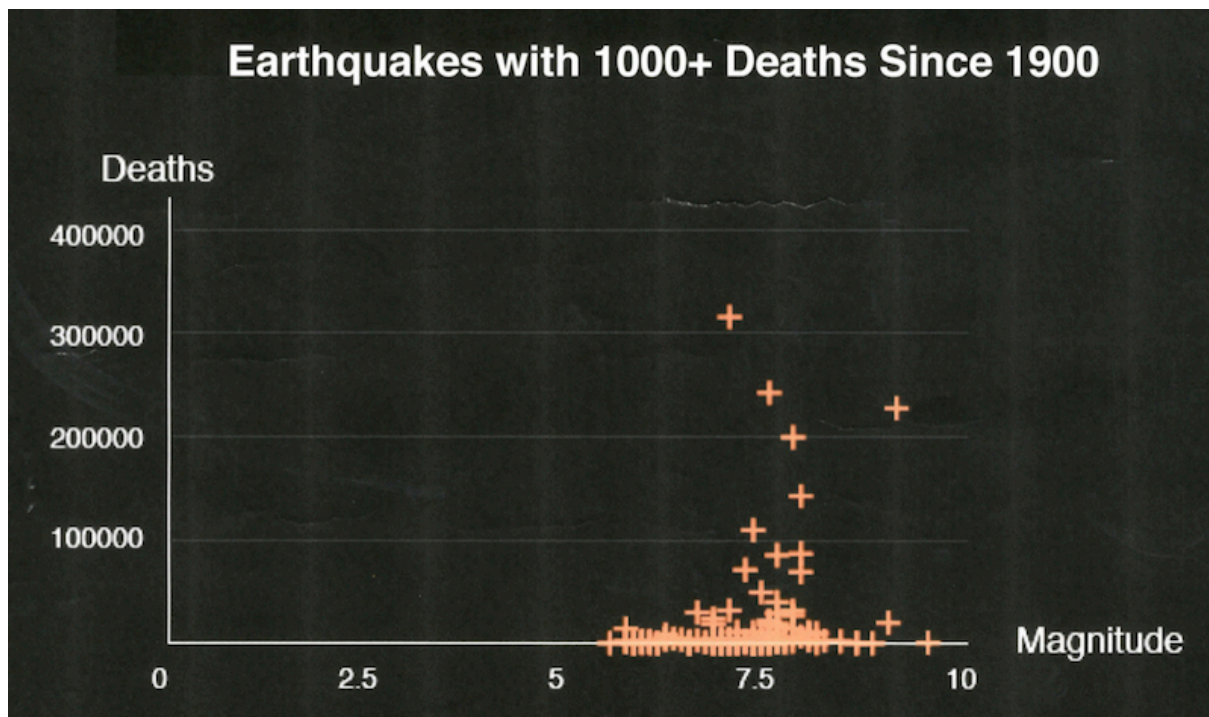
**Table B**

## Project Sample Quiz 4: Graphs (answers in bold)

1. This graph presents interesting information in a confusing way. The point of the poster is to look at aftershocks of the 2011 earthquake in various parts of Japan. Match the selections below to describe some problems with this graph. Values for the smallest wedges are hard to read because ... the lines overlap. It would be better to make another graph ... showing the smaller frequencies. Font color in the large red and blue wedges ... is too dark to read easily. Percentage values should be ... rounded to two significant figures.



2. Which of the choices below identify errors in this graph? Select as many as apply.
- A dark colored background with light colored points, lines, and letters is hard to read.**
  - The Y-axis should be formatted with a logarithmic scale, so that most points do not cluster at the bottom of the graph.**
  - The title for the X-axis should be under the graph, and the title for the Y-axis should be to the left of the graph.
  - The X-axis should be rescaled so that the minimum value is 5, instead of 0.**



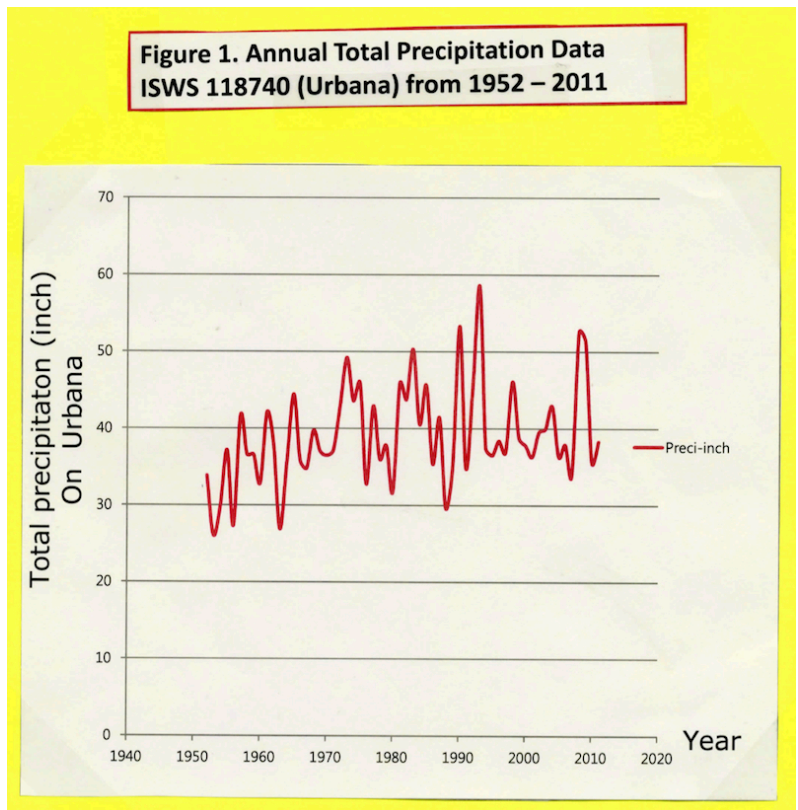
3. There are several changes in formatting that would improve this graph. Select as many changes as needed from the list below.

**Delete the legend.**

**Change the X-axis scale so that the minimum = 1950.**

**Change the Y-axis scale so that the minimum = 20 and the maximum = 60.**

**Align the caption evenly with the graph.**



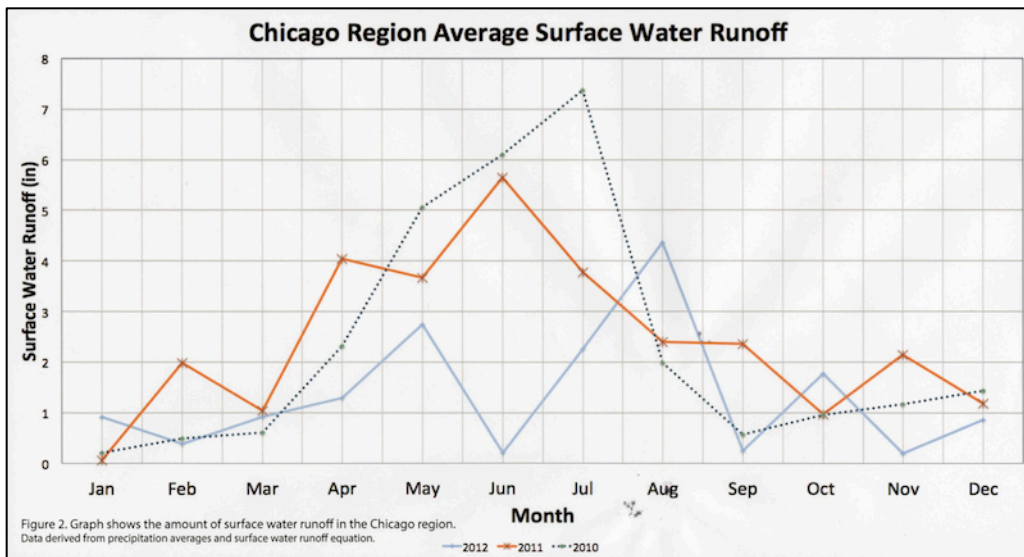
4. Look closely at the X-axis of this graph. What aspect of the X-axis is confusing?

Names of months should be written out in full.

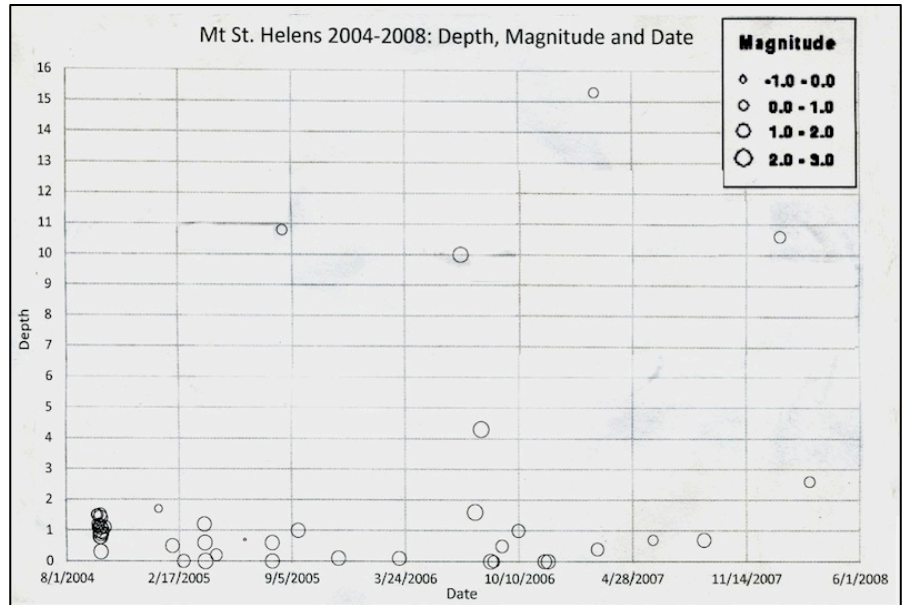
**Months are spaced evenly across the graph, even though their actual lengths differ.**

June runoff varies widely from year to year.

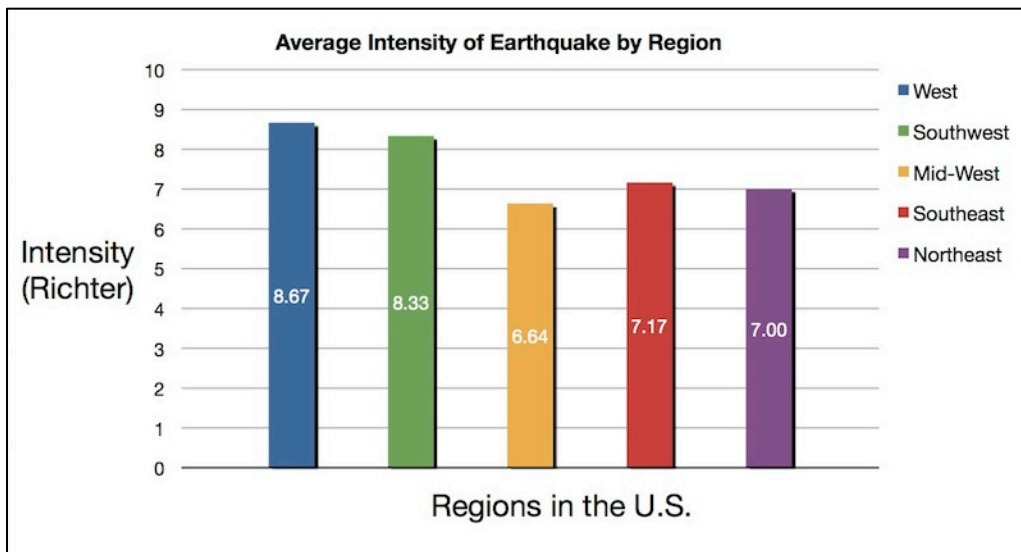
X-values should be daily measurements, not monthly averages.



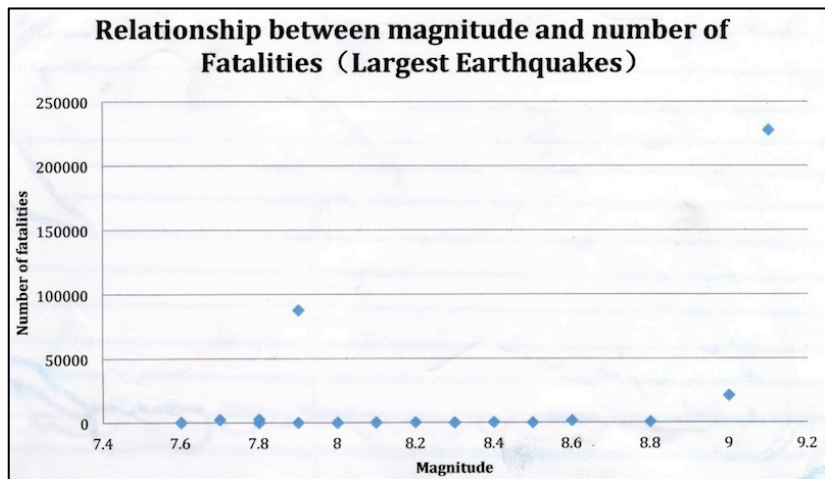
5. There is one fatal mistake in this graph. What is it?  
 The legend is blurry and hard to read.  
 Font size along both axes is too small.  
 Units used on the Y-axis are not defined.  
**The graph was not made using Excel.**



6. This graph is mostly well done. What one error needs fixing?  
 There are not 50 data points.  
 It needs a figure number and caption.  
 The chart should have lines along both right and left sides.  
**The chart and Y-axis titles say "Intensity" but the axis title includes "Richter."**

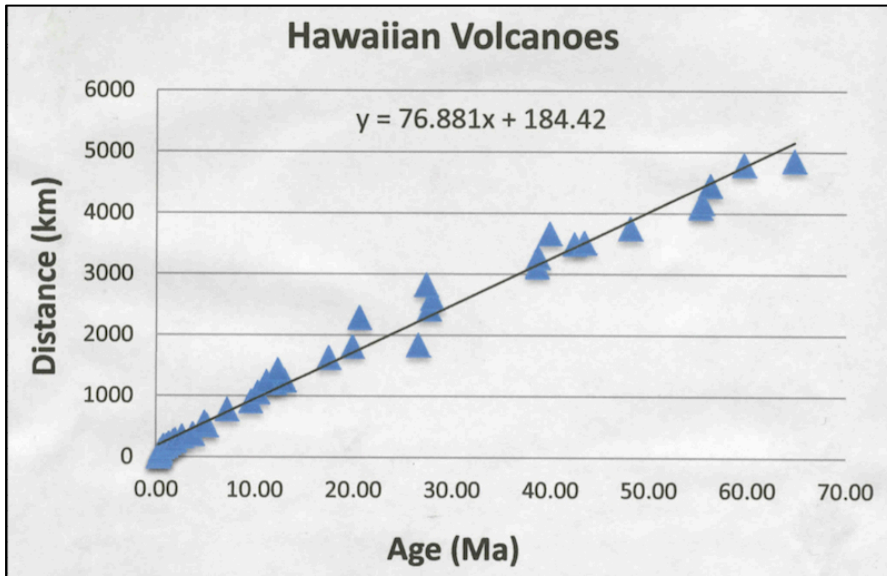


7. Do you think that this graph is informative? Does it really show the relationship between magnitude and death toll for the largest earthquakes? Briefly explain your answer.  
**(Short answer question with any answer accepted)**



8. The Y-axis here represents the distance between successive volcanoes and the Hawaii hot spot itself. Comment on the overall effectiveness of this graph. Is it well formatted? Does it have all necessary information? Is it informative? Is it easy to read? Answer with 30-50 words.

**(Short answer question with any answer accepted)**



9. Comment on the overall effectiveness of this set of graphs. Are they well formatted? Do they have all necessary information? Are they informative? Are they easy to read? Answer with 30-50 words.

**(Short answer question with any answer accepted)**

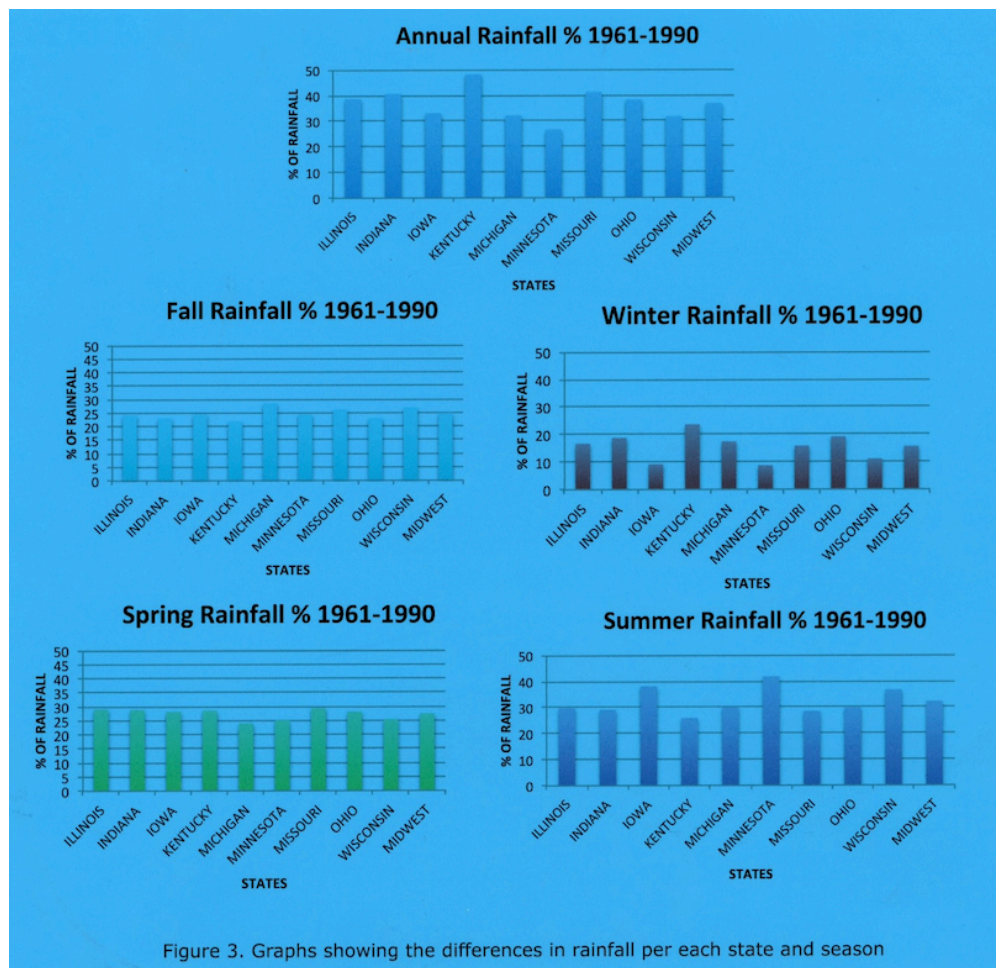


Figure 3. Graphs showing the differences in rainfall per each state and season

# Project Sample Quiz 5: Summaries (answers in bold)

1. Technical requirements for the Poster Summary are as follows:

- 200–300 words
- 1 page long
- 18-point font (readable from arm's length)

For the three summaries shown below, the dashed rectangle outlines a sheet of paper that is US letter size (8.5 x 11 inches). Scan the appearance of these summaries—you do NOT have to try to read them.

Which summary seems to best satisfy the technical requirements?

**Summary A**

**Summary**

The data table and graph shown above illustrates the relationship between the normal daily maximum temperature and the highest annual temperature recorded, across cities on the east coast of the United States of America. The purpose of analyzing this data is to see if the pattern in differences between normal daily maximum temperature and highest annual temperature recorded is consistent across the east coast, or if certain areas show more fluctuation than others. During graph analysis, rather than looking at the trend of each line, we are comparing one line's trend to the trend of the second line. This data suggests which areas have more predictable and reliable weather compared to others. Later, this data can be compared with other weather-related events, such as hurricane patterns, to make conclusions.

The graph shows that there is a positive correlation, for the most part, between the highest annual temperature recorded and the normal daily maximum temperature, Fahrenheit. The highest. This is especially evident when a sharp drop in one curve matches a sharp drop in the same location of the second curve. The table and graph contain temperature data from multiple cities in fourteen different east coast states, including Florida, Georgia, Massachusetts, Maryland, New York, Vermont, Virginia, Maine, North Carolina, Rhode Island, South Carolina, North Carolina, New Jersey, and Pennsylvania. The "highest annual temperature recorded" section consisted of recorded temperatures up until 2012.

It's important to study high temperatures because heat waves can be very dangerous. One Nature Climate Change study predicted "oppressive summer temperatures would exact an increasingly heavy toll on people living in metropolitan areas such as Manhattan in the coming decades," according to Suzanne Goldenberg, a US environment specialist. New York City has more deaths due to extreme heat than to extreme cold every year. Studying heat trends could help to predict when and where heat waves will occur, and therefore warn people.

**Summary B**

**Discussion: Water Crisis in the Urbana Region**

The following data shown in figure 1 and figure 2 comes from Illinois State Climatologist data base. These data are provisional when first posted online, and then 4-5 months later, they are finalized.

According to data, the total precipitation in Urbana (inches) sharply decreasing during 2005-2011. The reader can deduce that precipitation in Urbana has been tending to decrease in recent years compared to pre-2005 and will likely decrease in future. This is important for agriculture in Illinois, because amount of water available for agriculture decreases significantly due to lack of precipitation in years. Dry year become important problem to the state farmer who needs to protect crop yields.

Although drought monitoring (figure 3) shows that there are no significant drought problem in Urbana region, farmers need to prepare for the isolation against dry weather condition in Illinois since dry weather condition can be longer than expected.

**Summary C**

**The Expanding Monster Lake**

Devil's Lake in North Dakota is a massive lake that has been significantly expanding in size over the last few decades. Devil's Lake is a remnant of a massive ancient lake, Lake Agassiz which covered the area about 13,000 years ago. According to the data collected by the American Scientist magazine, Lake Agassiz may be "recharging itself" to its former size.

The graph depicts the elevation above sea level of Devil's Lake in the time frame of about the last 50 years. As shown, Devil's Lake has rapidly expanded over the last 50 years. In that time, it has overflowed to another lake, Stamp Lake, and has submerged two towns under its relentlessly rising waters. The lake is rising above the 443-meter elevation. Scientists estimate this will still continue for the next decade or so.

The lake is increasing so quickly because the water has nowhere to go. There is no natural river or stream to transport rain and melted ice away from the area, which results in flooding. We can clearly see firsthand the important role natural rivers. Also, this area of North Dakota is experiencing a wetter climate than normal, and according to the U.S. Geological Survey, this trend will most likely continue for the next decade.

Scientists are looking for a way to solve North Dakota's problem. Ideas such as creating a flood channel have been proposed, but contaminants, fish and other organisms from Devils Lake could ruin the drinking water and ecosystems of nearby waterways. This is a problem that cannot be ignored. As shown on the graph, water levels are at record heights and continue to rise with every passing year. Geologists need to find a solution that will lower the water level [and] while keeping the nearby water free from contamination.

2. This summary was separated into several pieces that were placed in various places on the poster. The black dashed line shows the edges of the poster board, and the blank spaces were filled by other poster elements.

Scan this arrangement of the summary. You do NOT have to try to read the text. Evaluate the overall effectiveness of presenting the summary in this way. Your answer should contain 15–20 words.

**(Short answer question with any answer accepted)**

The information for the graph was gathered from volcanoes.usgs.gov, specifically the Yellowstone monitoring section. The information on this website is updated daily. These geologists use cameras, GPS receiver, seismic stations, tiltmeter, and water gauge to gather information. On the monitoring page is an option for number of days of information to be displayed, so I picked the past 25 days (Sept 26<sup>th</sup> through October 20<sup>th</sup>).

The graph is displaying the earthquake activity in the Yellowstone Volcanic area. The x-axis illustrates the magnitude of the earthquakes. The y-axis shows the depth in kilometers of the earthquakes.

It is important to note how accurate the volcano is to another eruption. Earthquake activity beneath a volcano will most likely increase right before an eruption. Because magma and volcanic gases move upward prior to an eruption, they will cause rocks to break and produce high frequency earthquakes. Since these geologists are constantly monitoring the activity level of these earthquakes, they will know when activity is high and will be able to make better predictions for a possible eruption. From this information, scientists and others can put in place emergency measures to deal with an eruption, if one happens. Earthquake activity underneath volcanoes has become one of the bests for monitoring the likelihood of a volcanic eruption.

In the graph, there is a cluster of earthquake activity between 0.5-1.5 magnitude. This could have been a warning to scientists to be on the lookout for more activity in order to predict if a volcano was coming. Because the cluster quickly died down again, it showed them that there was no need to be alert for continued high activity.

3. What is the most serious error in this summary?

Verb tenses are mixed: Some are present tense, while others are past tense.

Pronouns are used inconsistently, changing from first person (I) to third person (the user).

The word "data" is plural, so the first sentence should say "The data ... were..." instead of "The data ... was..."

**Font color changes back and forth between black and underlined gray.**

The data utilized for researching the correlation of an earthquake's depth with its magnitude was obtained from the Incorporated Research Institutions for Seismology. I obtained the data from an interactive map (Figure 3) that allows users to zoom in on a specific area as earthquakes appear where I collected data on 50 earthquakes with various depths and magnitudes spread throughout Indonesia.

Since I am evaluating whether any relationship exists between an earthquake's magnitude and its depth, I used these values as the variables. I arranged depth values on the yaxis in reverse order to display the deepest earthquakes at the bottom.

At first it was difficult to pinpoint an exact relationship, because data seemed to be scattered throughout the graph. Secondly, fifty EQs is a very small data set, so an accurate correlation cannot be made. There may indeed be a slight correlation between depth and magnitude on figure 2, yet it's not sufficient to apply to the world. Usually, large-magnitude quakes occur within the lithosphere (above 100 km), and smaller-magnitude quakes may occur at any depth.

4. The sentence below, taken from the first draft of a summary, contains several errors. Match each part of the quotation to the error it contains.

"More research could be done to see where the state's that produce more coal than they use send the leftovers, this would most likely correlate very well with the information found in the graph."

"the state's that produce more coal" ... Incorrect plural form for a noun

"most likely correlate very well" ... Too emphatic

"that produce more coal than they use send the leftovers" ... Awkward phrasing

"send the leftovers, this would" ... Incorrect punctuation

"the leftovers" ... Strange way to refer to a valuable resource

5. The following passage is part of the summary for a poster on the topic of temperature and snowfall. Read through the excerpt and identify the major error it contains.

"I decided to look into whether the temperature correlates with the inches of snow. I got all my data from the Illinois State Water Survey at Chicago, Illinois. The graph shows the mean temperature for each month from January 2008 to May 2013 and the total inches of snowfall for each month. The temperature starts low in winter, then goes up to a summer peak, and decreases again toward the next winter. Snow is the exact opposite: it starts at a peak, then decreases and bottoms out in summer, then increases back to the peak. All in all, you can see that the temperature and total snowfall are correlated. As the snowfall goes up, the temperature goes down..."

This is valuable information because it could help scientists predict the inches of snow from predicted temperature. This could also be another way of tracking global warming. This is interesting because some would think that after the temperature goes below 32o F, the amount of snow would not be affected. This isn't the case according to my graph, because the lower the temperature, the greater the snowfall.

The passage does not refer to the graph or explain what it shows.

**The topic is weather, but the last paragraph brings up global warming.**

The analysis includes summer months; therefore its conclusion is skewed.

The first paragraph merely states the obvious.

6. Read through this Poster Summary.

From the information given, match each figure number to its description

Figure 1 ... Unknown

Figure 2 ... Unknown

Figure 3 ... Graph of magnitude vs. death toll

Figure 4 ... Graph of earthquakes in different regions

The largest earthquake ever recorded happened in the year 1960 in southern Chile, with a magnitude of 9.5 on the Richer scale (Figures 1 and 2). However, it was not the most deadly. The earthquake with the highest death toll was in Taiwan in 1999 with a death toll of 2,400. In the data I have recorded from U.S. Geological Survey, I compare the magnitude of the earthquake to the number of deaths recorded and show the region of where the earthquake occurred. The data are from the earthquakes that have happened in the past 100 years with 1,000 or more deaths and are updated every January.

There are two tables that I made to show the data collected and I have made two graphs to show illustrate the comparison. The first (Figure 3) shows a plot of magnitude vs. death toll. From the graph you can see that there is no real pattern or correlation between the two variables. The highest death toll earthquake was one with a magnitude of 7.5. The largest earthquake (Chile; 9.5 magnitude) had a death toll of 1,655. There is no connection.

The second graph (Figure 4) shows the region in the world of which the earthquake took place and the number of earthquakes that occurred there. We see more of a pattern here, because most of the earthquakes recorded were in the Middle East and East Asia, both areas have many faults. The Middle East lies between the converging African Plate and the Eurasian Plate. It is being squeezed and broken by them, making it a complex region. East Asia is complex as well; geologists have been studying it and believe that it consists of a number of small plates caught in the convergence zones along the Indian, Australian, Philippine, and Eurasian Plates.

Limestone is a sedimentary rock formed from crystalized calcium carbonate. Its crystals can form out of the calcium carbonate shells of corals and other marine animals, or through inorganic precipitation of calcite. It is by far the most abundant rock in Illinois. In fact, most of the bedrock of Illinois is limestone. Its abundance equates to its use for gravel, building material and foundation rock. It is put into paint, paper, and toothpaste as a color additive. Limestone can be mixed with sand or gravel to make cement. Limestone is also added to bread as a source of calcium. Very finely ground limestone is used by farmers to neutralize the PH of the soil. The rock is also used as an additive for crop fertilizers. All in All, Limestone is very important to those living in Illinois.

Limestone is not always pure calcium carbonate. The rock often has other minerals and Chemicals incorporated into its composition. For instance it might have copper or iron. Or it might contain sodium, potassium or barium. These other metals are called trace elements. Trace elements are largely responsible for how easily limestone will weather and erode away. As these trace elements dissolve very well in water and can pull electrons away from the carbonate structure of the limestone, allowing more of the limestone to be lost to the forces of water and air. Trace elements also determine how well limestone can be used for building material, food additives, and agriculture products; as trace elements are able to strengthen or weaken limestone's physical properties

My graph and table show amounts of the trace element sodium in Illinois limestone. I have selected different quarries from all around the state to see if there was a pattern to the amount of sodium in limestone from north to south. There was not a recognizable pattern of amounts of sodium in limestone from north to south. And for the most part, all quarries produced limestone with relatively small masses of sodium. Limestone low in sodium is ideal, for low sodium limestone erodes less and displays the chemistry that is crucial to Illinois agriculture and industry. All in all, the bedrock of our state is in a good chemical state and it gives a solid foundation for agriculture, industry and way of life we now enjoy.

7. Read through the complete Poster Summary to the left, then rate each aspect as Excellent, Good, Fair, or Poor.

Discussion of graph ... Fair

Grammar ... Good

Background information ... Excellent

Reference to figures ... Poor

Overall appearance ... Good



## Project Sample Quiz 6: Pictures (answers in bold)

1. Proper formatting for pictures on the poster includes the following:
- Each picture should have a figure number.
  - Each picture should have an explanatory caption.
  - All text on the poster, for pictures and other elements, should be computer-generated, not hand-written.
  - Pictures should be carefully mounted on poster board.

Which formatting requirements does this picture satisfy? Check as many as apply.

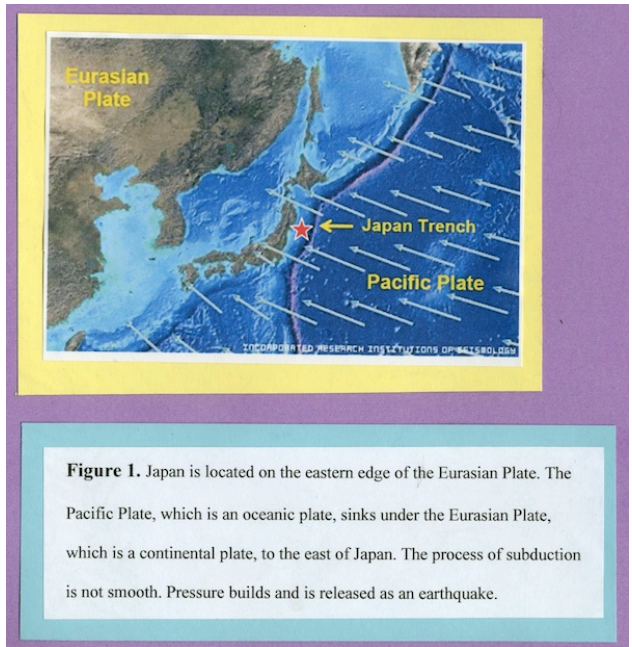
**Has a caption.**

Mounted neatly on posterboard.

**Edge is even.**

**Information is printed by computer.**

**Has a figure number.**



2. Proper formatting for pictures on the poster includes the following:
- Each picture should have a figure number.
  - Each picture should have an explanatory caption.
  - All text on the poster, for pictures and other elements, should be computer-generated, not hand-written.
  - Pictures should be carefully mounted on poster board.

Which formatting requirements does this picture satisfy? Check as many as apply.

**Has a caption.**

Mounted neatly on posterboard.

**Edge is even.**

Information is printed by computer.

Has a figure number.



3. Which formatting requirements does this picture satisfy? Check as many as apply.

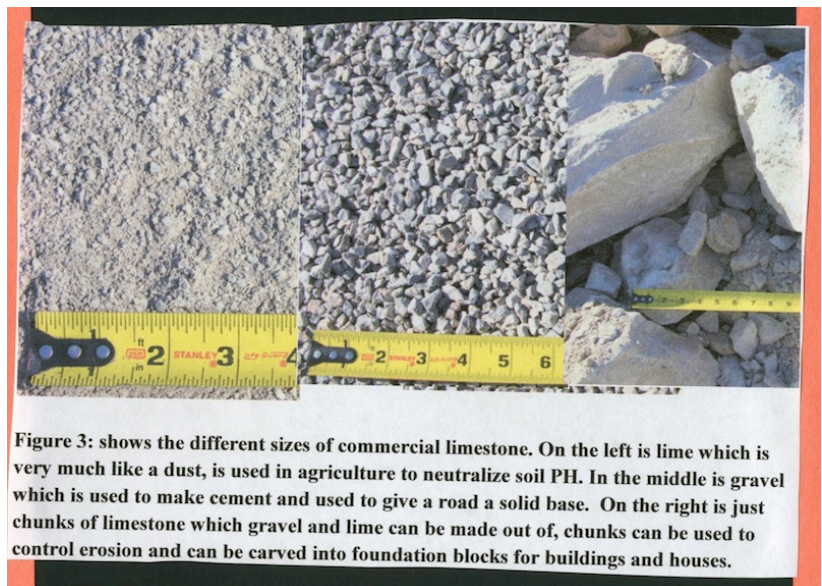
**Has a caption.**

Mounted neatly on posterboard.

Edge is even.

**Information is printed by computer.**

**Has a figure number.**



4. Which formatting requirements does this picture satisfy? Check as many as apply.

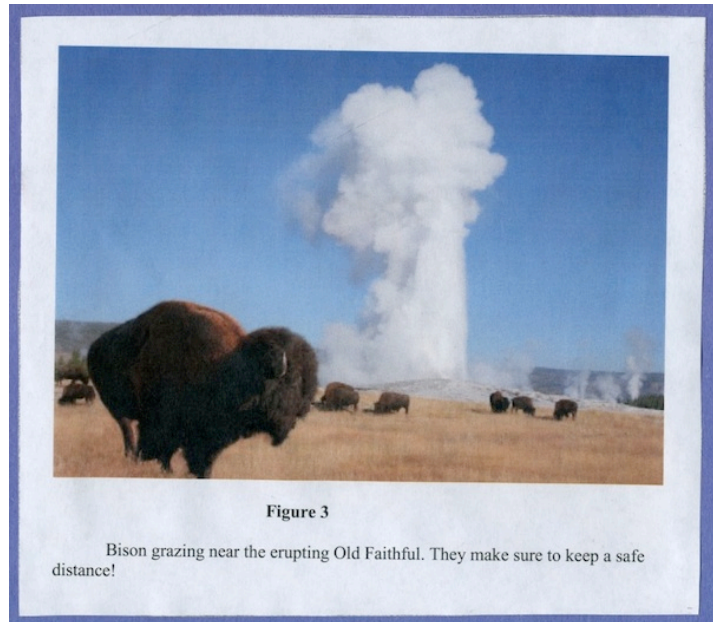
**Has a caption.**

Mounted neatly on posterboard.

**Edge is even.**

**Information is printed by computer.**

**Has a figure number.**



5. Which formatting requirements does this picture satisfy? Check as many as apply.

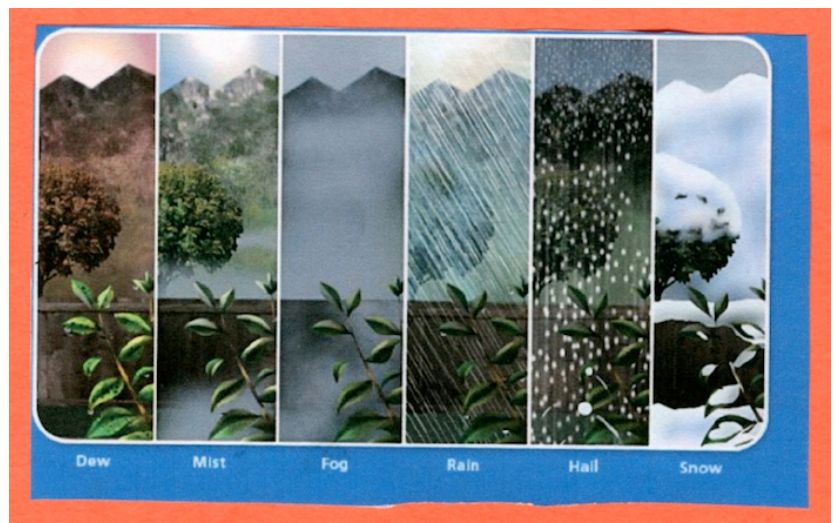
Has a caption.

Mounted neatly on posterboard.

Edge is even.

**Information is printed by computer.**

Has a figure number.



6. The purpose of a caption is to explain what the picture illustrates. Details could include the location, date, and which part or parts of the picture to focus on. For this picture, how informative is the caption?

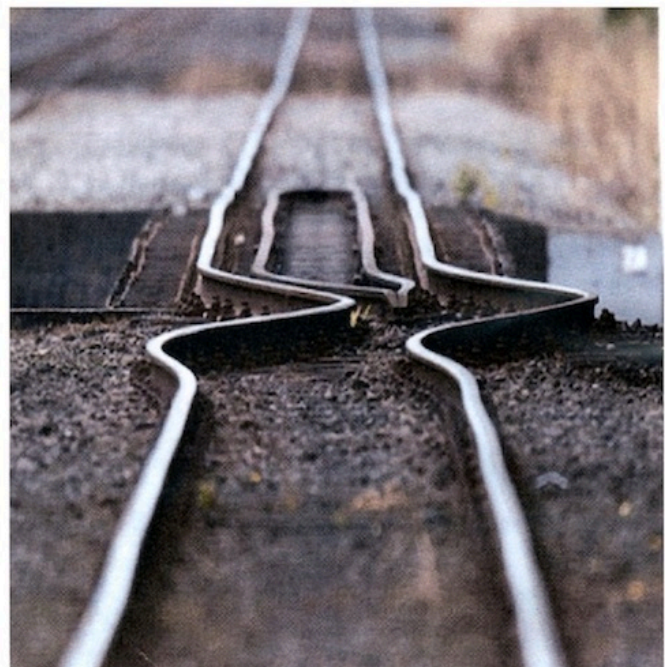
Does not explain the picture.

Explains some details of the picture.

Gives the location.

Gives the date.

**Explains most of the details of the picture**



The effect of an earthquake on railroad tracks.

7. Which choice below would be the best improvement for the existing caption on this picture?

Results of coal mining in Centralia, PA.

This is what happens to the land and people where coal is mined.

Underground coal mining is the most dangerous occupation in the United States.

**Coal mining in Centralia PA. a) Miner (year); b) Ground subsidence (year); c)**

**Underground explosion (year).**

## Centralia, PA



8. Which choice states the best comparison between these two pictures and their captions?

B is better because the caption is more detailed.

**A is better, because it has many labels and the caption is brief and clear.**

A is better because it was drawn by a student, not downloaded from the internet.

B is better, because it uses photographs from the real world.

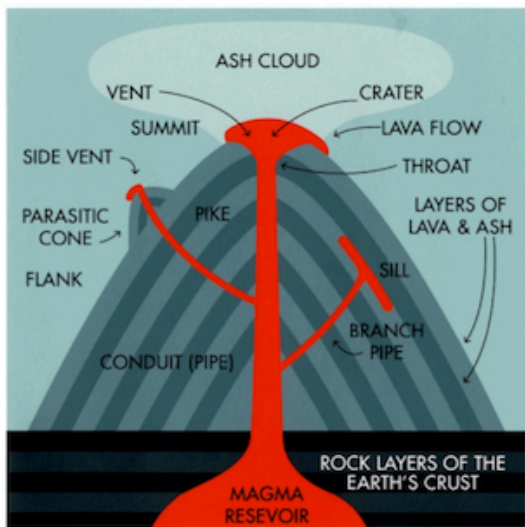


Figure 4. An illustration of all the parts of a volcano

## Picture A



## Picture B

Figure 3: shows the different sizes of commercial limestone. On the left is lime which is very much like a dust, is used in agriculture to neutralize soil PH. In the middle is gravel which is used to make cement and used to give a road a solid base. On the right is just chunks of limestone which gravel and lime can be made out of, chunks can be used to control erosion and can be carved into foundation blocks for buildings and houses.

9. Which choice best describes the caption to this picture?

This is a good caption. It needs only minor editing to make it an excellent one.

The caption contains errors in spelling and capitalization.

The caption should not be so much wider than the picture.

The caption needs a figure number.



10. The choices below rewrite this caption. Which new caption is best?

Example of an NWS station from 1979 when computers were first used (Peoria IL).

An example of a weather office in Peoria IL, when the National Weather Service began to use computerized monitoring in 1979.

This picture shows a common example of a weather monitoring station back in the 1970s.

**National Weather Service office at Peoria IL in 1979.**



Figure 1. Inside one of the National Weather Service offices (Peoria, IL, 1979). Conversion to a computer network had just begun at many of the National Weather Service stations.

## Project Sample Quiz 7: Maps (answers in bold)

1. Proper formatting for maps on the poster includes the following:

- Each map should have a figure number.
- Each map should have an explanatory caption.
- All text on the poster, for maps and other elements, should be computer-generated, not hand-written.
- Maps should be carefully mounted on poster board.

Which formatting requirements does this map satisfy? Check as many as apply.

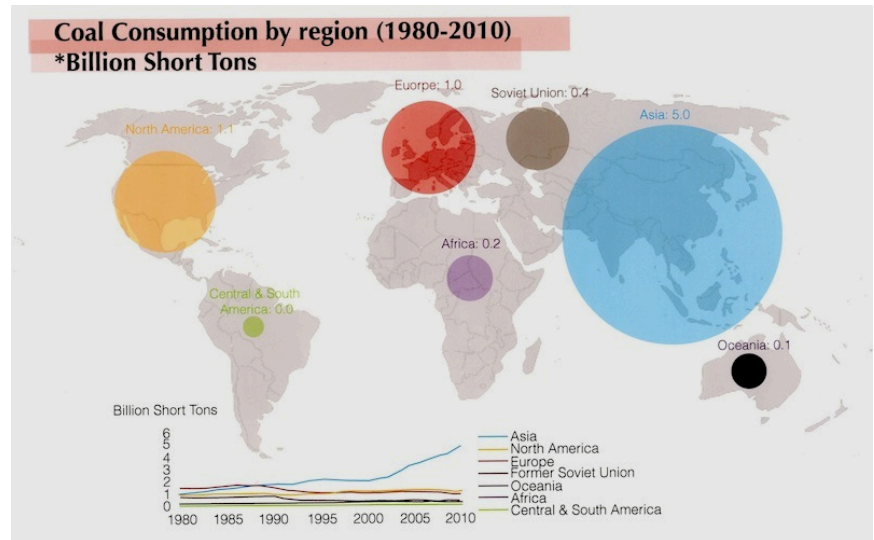
**Has a caption.**

Has a figure number.

**Edge is even.**

**Information is printed by computer.**

**Mounted neatly on posterboard.**



2. Proper formatting for maps on the poster includes the following:

- Each map should have a figure number.
- Each map should have an explanatory caption.
- All text on the poster, for maps and other elements, should be computer-generated, not hand-written.
- Maps should be carefully mounted on poster board.

Which formatting requirements does this map satisfy? Check as many as apply.

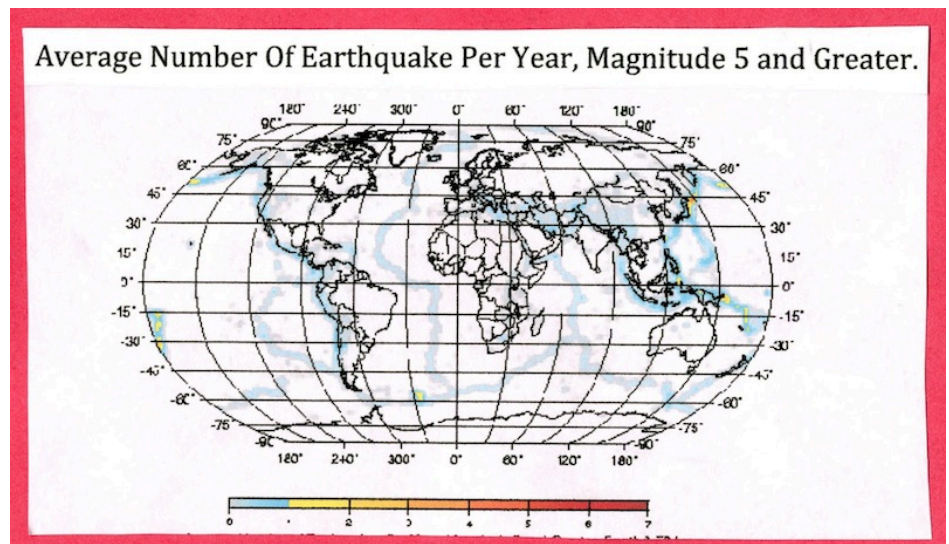
**Has a caption.**

Has a figure number.

**Edge is even.**

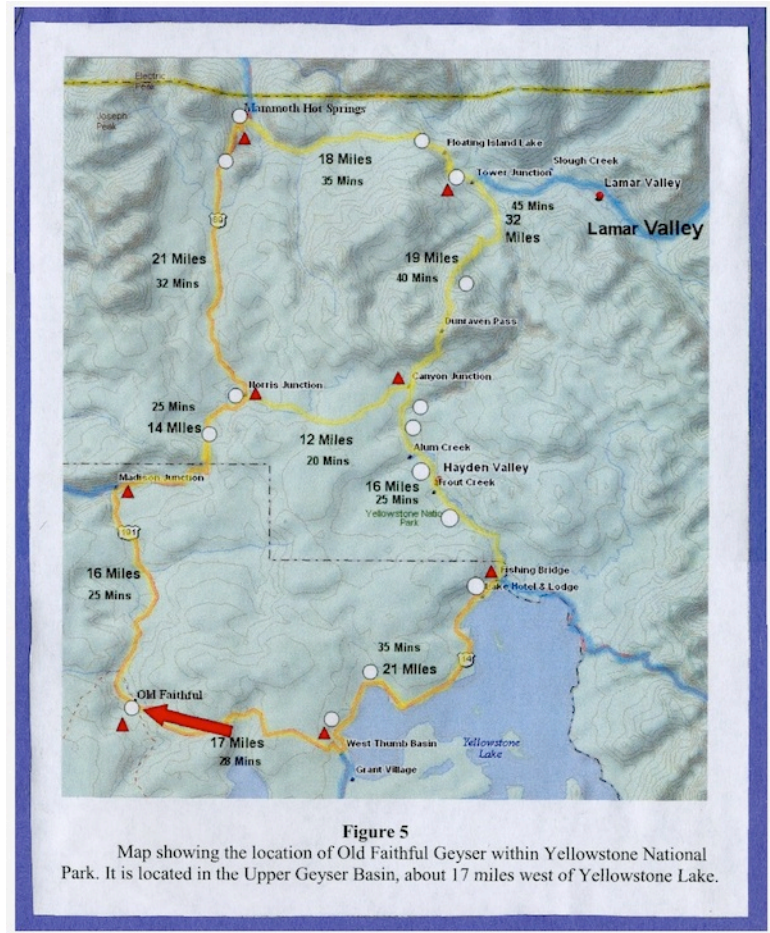
**Information is printed by computer.**

**Mounted neatly on posterboard.**



3. Which formatting requirements are satisfied by this map? Check as many as apply.

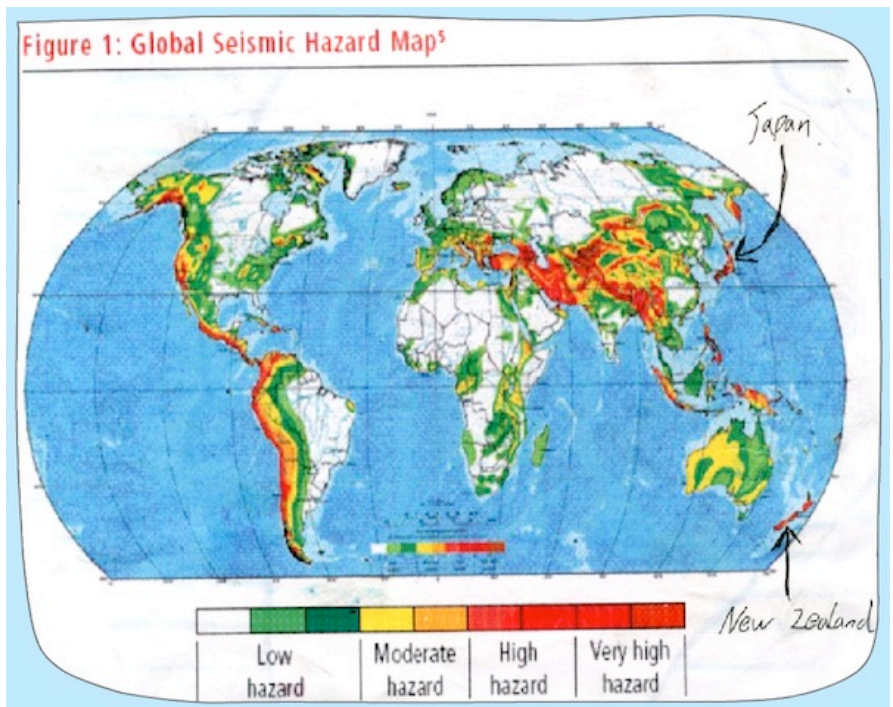
- Has a caption.**
- Has a figure number.**
- Edge is even.
- Information is printed by computer.
- Mounted neatly on posterboard.**



**Figure 5**  
Map showing the location of Old Faithful Geyser within Yellowstone National Park. It is located in the Upper Geyser Basin, about 17 miles west of Yellowstone Lake.

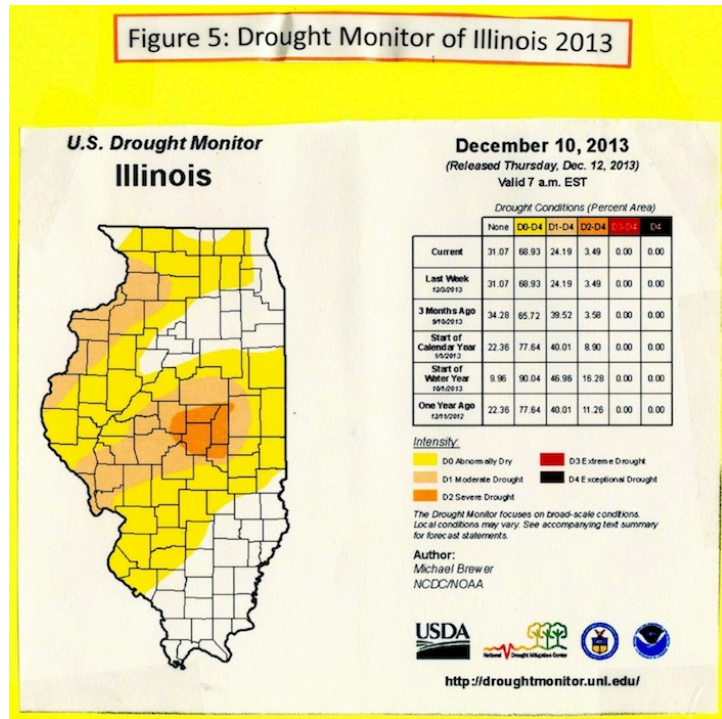
4. Which formatting requirements are satisfied by this map? Check as many as apply.

- Has a caption.**
- Has a figure number.**
- Edge is even.
- Information is printed by computer.
- Mounted neatly on posterboard.**



5. Which formatting requirements are satisfied by this map? Check as many as apply.

- Has a caption.
- Has a figure number.
- Edge is even.
- Information is printed by computer.
- Mounted neatly on posterboard.



6. These maps are formatted correctly, but they are difficult to interpret. The topic of this poster is the increase in surface elevation of Devil's Lake over the past decade or so. Do the maps clearly show the difference in the water elevation (or lake depth) between 1994 and 2012?

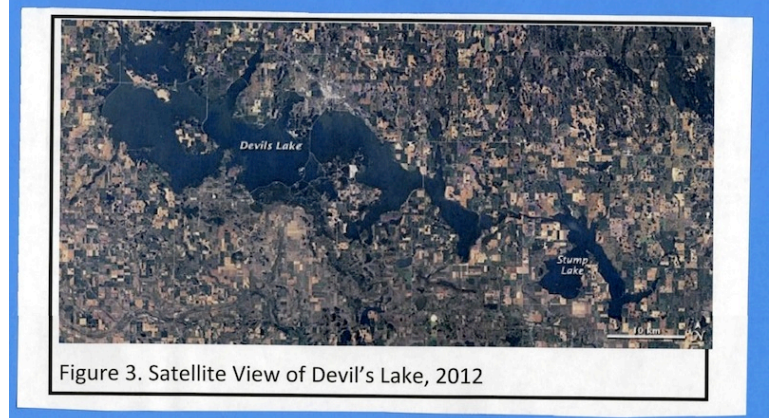
- Yes, the maps clearly show that the lake surface was higher in 2012 than in 1994.
- No, it is not really possible to see a difference in elevation in a map view.

7. This question refers to the same two maps as the previous question. Part of the problem with the maps is their captions. Which choice would be the best way to edit the captions, in order to draw a clearer contrast between the maps?

Figure 2. Satellite view of Devil's Lake in 1994, when the water surface was ~435 m above sea level and the lake area was ~200 km<sup>2</sup>.

Figure 3. By 2012, the water surface was ~442 m above sea level and the lake area was ~350 km<sup>2</sup>.

**Combine the maps into one figure.**  
**Caption: Satellite views of Devil's Lake in 1994 (top) and 2012 (bottom).** As the water surface elevation increased by ~7 m, lake area increased by over 50%.



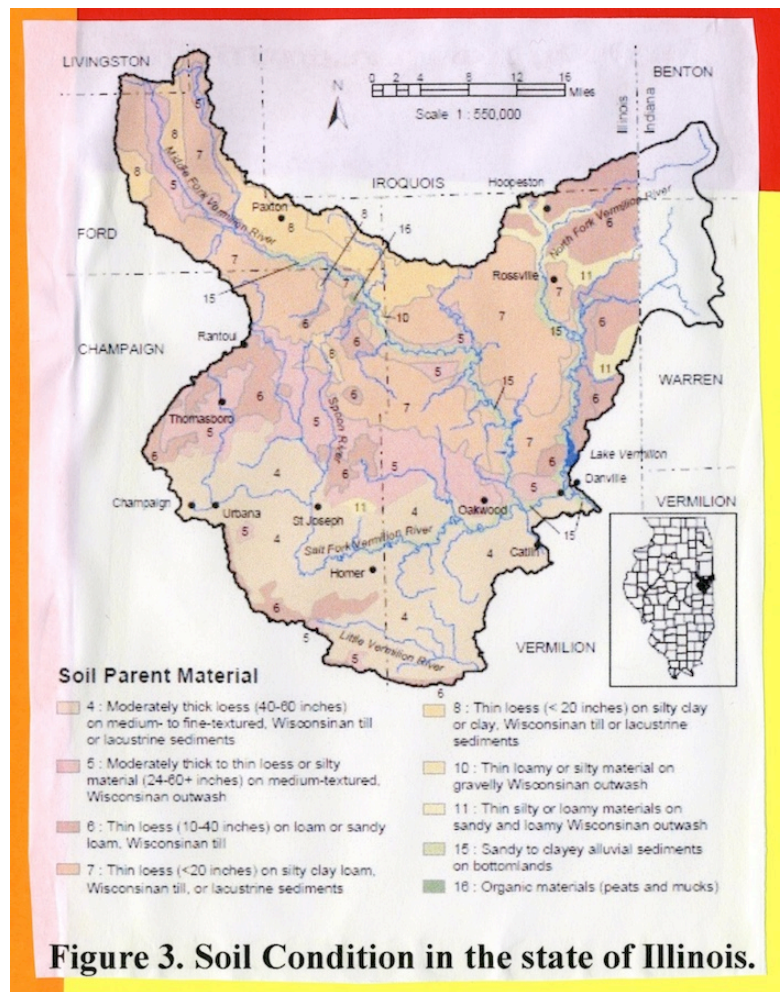
8. The topic of the poster with this map is “Discharge along the Vermilion River in Illinois.” What is the most important error illustrated by this map?

The background colors show through the paper, which is distracting.

The text in the key is blurry and hard to read.

**The map shows soil conditions in the drainage basin.**

The word "condition" should not be capitalized in the caption.



**Figure 3. Soil Condition in the state of Illinois.**

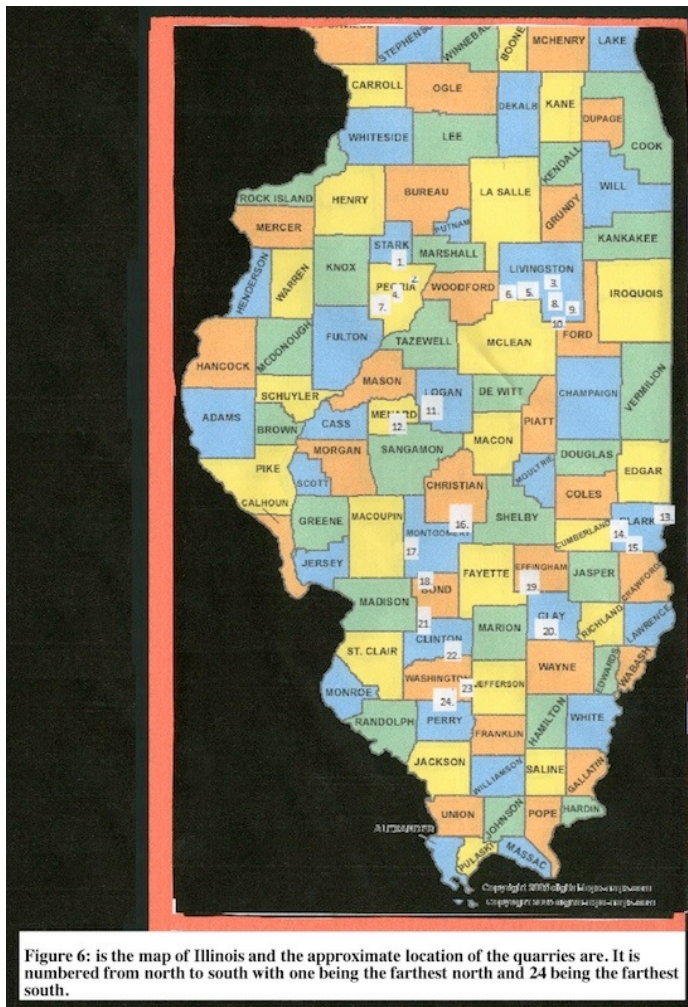


Figure 6: is the map of Illinois and the approximate location of the quarries are. It is numbered from north to south with one being the farthest north and 24 being the farthest south.

9. The caption on this map has awkward word arrangement and several grammatical errors. Which new caption is the best, in terms of its length and the amount of information presented?

Map of Illinois with approximate locations of quarries, which are numbered from 1 (farthest north) to 24 (farthest south).

Quarries considered in this project are shown in their approximate positions by labels numbered starting from the north.

**Locations of quarries 1–24, numbered from north to south.**

Locations of quarries included in this project. Quarries are numbered from north (1) to south (24).

Figure 6: is the map of Illinois and the approximate location of the quarries are. It is numbered from north to south with one being the farthest north and 24 being the farthest south.



10. The poster with this map analyzes measurements of sea level at Key West over the past 100 years. Evaluate this map, based on the requirements illustrated in previous questions.

**(Short answer question with any answer accepted)**



Figure 1. Florida Keys map

## Poster Sample Quiz 8: References (answers in bold)

1. Proper formatting for references on the poster includes the following:

- A complete Internet reference includes a brief title and the entire URL. Enough information must be provided for the reader to access the website.
- Article references should include title, author, journal name, volume number, and page(s).
- Three references are required for a rating of "Good" on this section of the poster.
- All text on the poster, for references and other elements, should be computer-generated not hand-written.

The reference list should be carefully mounted on poster board.

Which formatting requirements does this reference list satisfy? Check as many as apply.

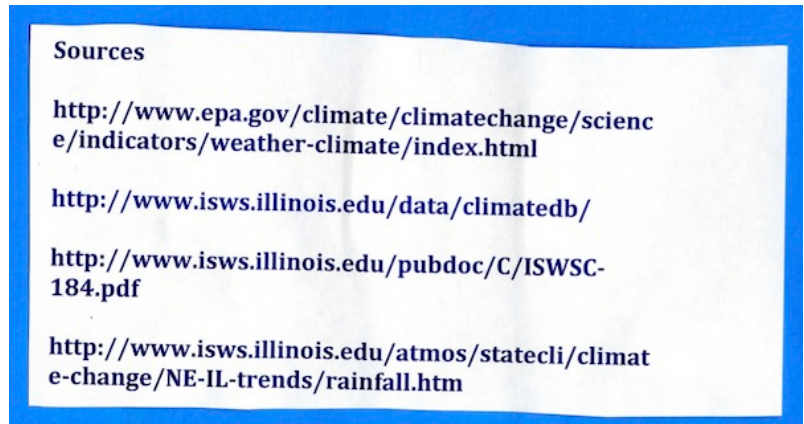
All references provide complete information.

Reference list is mounted neatly on poster board.

**At least three references are included.**

**Information is printed by computer.**

List includes both Internet and printed resources.



2. Proper formatting for references on the poster includes the following:

- A complete Internet reference includes a brief title and the entire URL. Enough information must be provided for the reader to access the website.
- Article references should include title, author, journal name, volume number, and page(s).
- Three references are required for a rating of "Good" on this section of the poster.
- All text on the poster, for references and other elements, should be computer-generated not hand-written.

The reference list should be carefully mounted on poster board.

Which formatting requirements does this reference list satisfy? Check as many as apply.

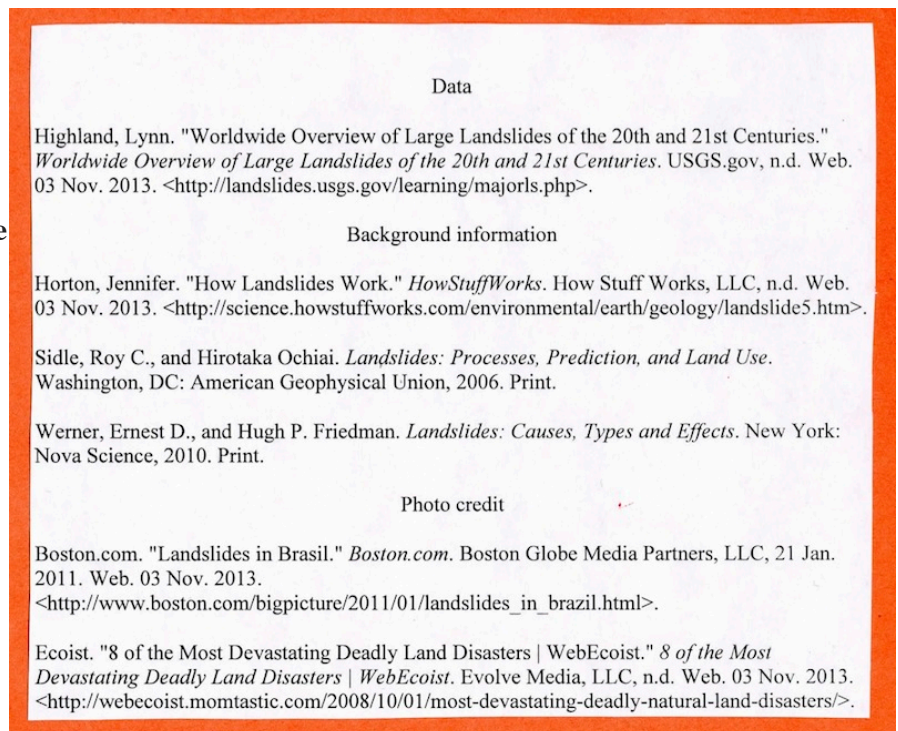
**All references provide complete information.**

**Reference list is mounted neatly on poster board.**

**At least three references are included.**

**Information is printed by computer.**

**List includes both Internet and printed resources.**



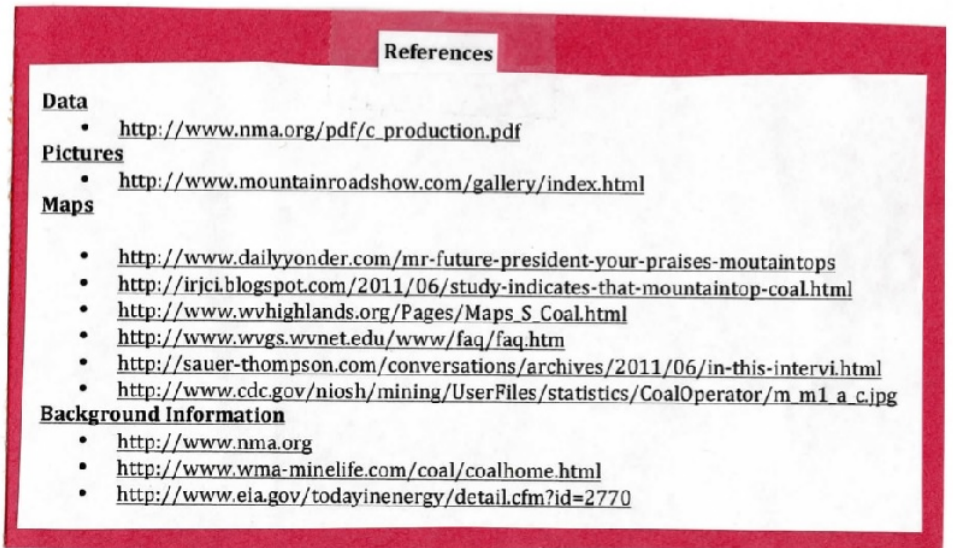
3. Proper formatting for references on the poster includes the following:

- A complete Internet reference includes a brief title and the entire URL. Enough information must be provided for the reader to access the website.
- Article references should include title, author, journal name, volume number, and page(s).
- Three references are required for a rating of "Good" on this section of the poster.
- All text on the poster, for references and other elements, should be computer-generated not hand-written.

The reference list should be carefully mounted on poster board.

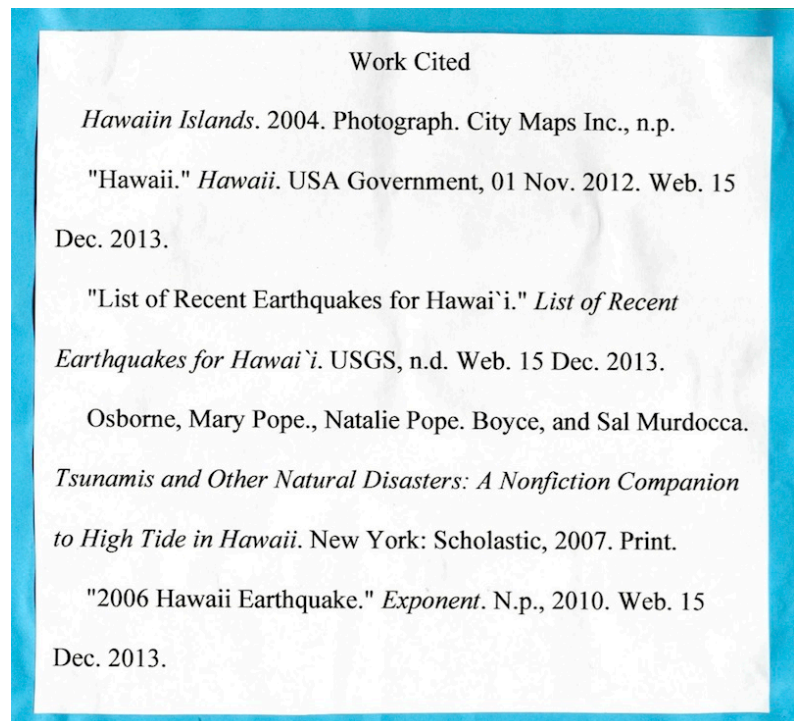
Which formatting requirements does this reference list satisfy? Check as many as apply.

- All references provide complete information.
- Reference list is mounted neatly on poster board.
- At least three references are included.**
- Information is printed by computer.**
- List includes both Internet and printed resources.



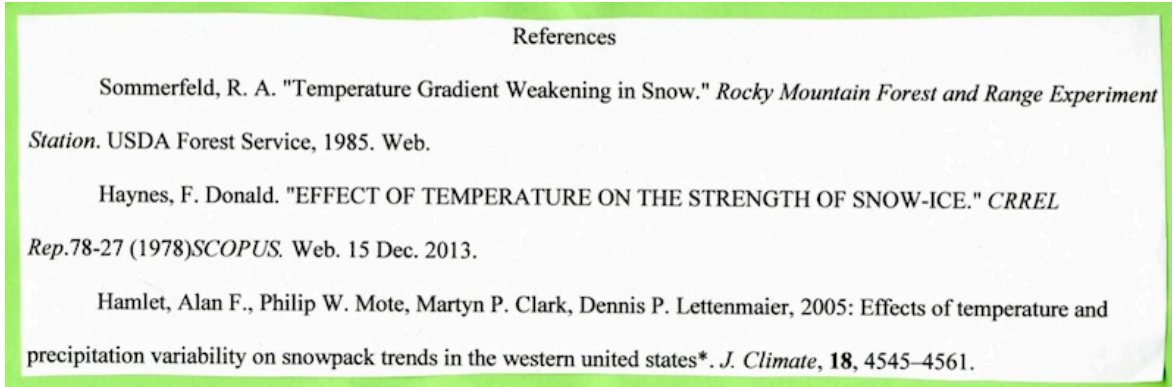
4. Which formatting requirements does this reference list satisfy? Check as many as apply.

- All references provide complete information.
- Reference list is mounted neatly on poster board.**
- At least three references are included.**
- Information is printed by computer.**
- List includes both Internet and printed resources.



Project Sample Quiz 8: References, page 3

5. Which formatting requirements does this reference list satisfy? Check as many as apply.
- All references provide complete information.
  - Reference list is mounted neatly on poster board.**
  - At least three references are included.**
  - Information is printed by computer.**
  - List includes both Internet and printed resources.**



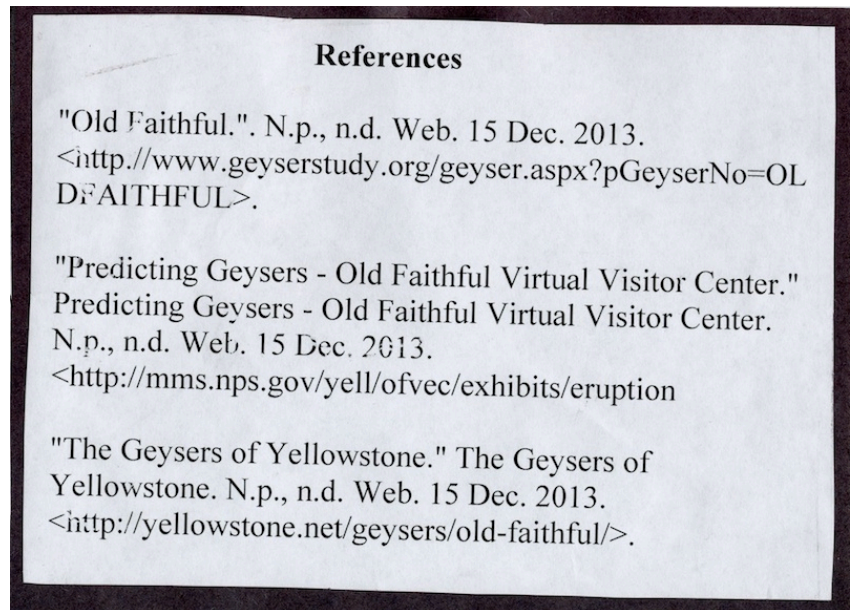
6. Which of the following criticisms is the most serious flaw for this reference list?

The list should specify which sources are for data, pictures, or other information.

**There are only three references, and they all come from the Internet.**

No website title is given for the online references.

It is hard to see which reference is the data source.



7. This reference list would be scored as "Poor." What are the reasons for this rating?

**There is no data source listed.**  
**World Almanac is too old.**  
**References are not primary sources.**  
**The list is poorly formatted.**

References:

The World Almanac, 1989.

Visual Photos. N.p., n.d. Web. 16 Nov. 2013.

"HowStuffWorks "Maps of United States Annual Rainfall"  
HowStuffWorks. N.p., n.d. Web. 18 Nov. 2013.

8. This reference list would be rated as "Excellent." Which choices help explain why it is rated so highly?

All sources are reliable: governmental, academic, or professional.  
Each reference is complete with title and URL.  
There are more than three references.  
References are grouped according to type: data, images, information.

**Sources:**

**Picture-** [http://www.underwatertimes.com/news.php?article\\_id=73910624051](http://www.underwatertimes.com/news.php?article_id=73910624051)

**Picture-** <http://ga.water.usgs.gov/edu/acidrain.html>

**Data-**

[http://epp.eurostat.ec.europa.eu/statistics\\_explained/index.php/Air\\_pollution\\_statistics](http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Air_pollution_statistics)

**Map-** <http://ces.iisc.ernet.in/energy/HC270799/SOE/soeno97/acidrain/state.htm>

**Background information (Journal)**

Patt, A. (1999). Separating Analysis From Politics: Acid Rain in Europe. *Policy Studies Review*, 16(3), 104.

<http://web.ebscohost.com/ehost/pdfviewer/pdfviewer?sid=dc606c48-6c8b-4369-8260-858d041c82c4%40sessionmgr110&vid=2&hid=112>

**Background Information (Website)**

<http://www.sciencemag.org/content/338/6111/1153.full>

**Background Information (Journal)**

Prinz, B. (1987). Causes of Forest Damage in Europe. *Environment*, 29(9), 10.

<http://web.ebscohost.com/ehost/pdfviewer/pdfviewer?vid=4&sid=46901388-a00f-4953-8e9a-e161647d0d29%40sessionmgr111&hid=112>

## Poster Sample Quiz 9: Practice Evaluations (answers in bold)

1. Which required elements are present in this poster? Check as many as apply. Note: The dashed line marks the edge of the poster board. Click here for a larger image (opens in new window).

An informative title

Table with 50 data points

A 1-page summary

Reference list with at least 3 sources

At least one picture

At least one map

At least one graph

Uses standard poster board (22x28 inches, 56x71 cm)

**Future Concern about Desiccation of Groundwater on Urbana**

Figure 2: Total precipitation on Urbana between 1952 to 2011

Date	Total Precipitation (inch)	Date	Total Precipitation (inch)
1952	33.86	1982	43.75
1953	26.09	1983	50.28
1954	29.7	1984	40.55
1955	37.17	1985	45.64
1956	27.3	1986	35.38
1957	41.64	1987	41.39
1958	36.63	1988	29.61
1959	36.58	1989	34.84
1960	32.86	1990	53.31
1961	42.1	1991	34.87
1962	37.98	1992	45.15
1963	26.89	1993	58.54
1964	35.48	1994	37.49
1965	44.44	1995	36.49
1966	35.84	1996	38.39
1967	34.8	1997	36.9
1968	39.72	1998	46.11
1969	37.05	1999	38.8
1970	36.48	2000	37.8
1971	37.15	2001	36.31
1972	42.95	2002	39.48
1973	49.2	2003	39.98
1974	43.58	2004	42.91
1975	45.89	2005	36.38
1976	32.77	2006	37.88
1977	42.9	2007	33.94
1978	36.05	2008	52.58
1979	37.76	2009	51.25
1980	31.73	2010	35.67
1981	45.87	2011	38.31

#Illinois State Climatologist Data

Figure 3: Area of Mahomet aquifer and its surrounding region. Where major source of water in Urbana

Figure 4: Farmers in Illinois are becoming more concerned over the increasing dry weather pattern.

Figure 1: Annual Total Precipitation Data (ISWS 118740 (Urbana) from 1952 - 2011)

Figure 5: Drought Monitor of Illinois 2013

Discussion: Water Crisis in the Urbana Region

The following data shown in figure 1 and figure 2 comes from Illinois State Climatologist data base. These data are provisional when first posted online, and then 4-5 months later, they are finalized.

According to data, the total precipitation in Urbana (inches) sharply decreasing during 2005-2011. The reader can deduce that precipitation in Urbana has been tending to decrease in most years compared to pre-2005 and will likely decreasing in future. This is important for agriculture in Illinois, because amount of water available for agriculture decreases significantly due to lack of precipitation in years. Dry year become important problem to the state farmer who needs to protect crop yields.

Although drought monitoring (figure 5) shows that there are no significant drought problem in Urbana region, farmers need to prepare for the relation against dry weather conditions in Illinois since dry weather conditions can be longer than expected.

Reference:

Data  
<http://www.isws.uiuc.edu/atmos/stateloc/data.htm>  
 Other  
<http://www.isws.uiuc.edu/pas/archives/mahom.asp>  
<http://www.crh.noaa.gov/lv/?n=drought>

2. What is the major error on this poster?

Separate pieces are not mounted evenly on the poster board.

**There is too much blank space.**

**The graph is not well formatted.**

The summary is too short.

There are no figure numbers

3. Which required elements are present in this poster? Check as many as apply. Note: The dashed line marks the edge of the poster board. Click here for a larger image (opens in new window).

**An informative title**

**Table with 50 data points**

**A 1-page summary**

**Reference list with at least 3 sources**

**At least one picture**

**At least one map**

**At least one graph**

**Uses standard poster board (22x28 inches, 56x71 cm)**

## Annual Expansion of Devil's Lake, N.D.




Figure 1. Submerged Trees at Devil's Lake

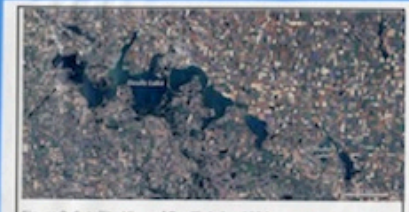


Figure 2. Satellite View of Devil's Lake, 1994

Annual Lake Height of Devil's Lake, North Dakota.

Date	Lake Gage Height (ft)	Date	Lake Gage Height (ft)
1964	1411	1990	1423
1965	1411	1991	1423
1966	1411	1992	1423
1967	1413	1993	1422
1968	1413	1994	1427
1969	1411	1995	1431
1970	1412	1996	1435
1971	1416	1997	1440
1972	1422	1998	1442
1973	1419	1999	1445
1974	1424	2000	1446
1975	1423	2001	1446
1976	1425	2002	1448
1977	1421	2003	1447
1978	1423	2004	1447
1979	1427	2005	1448
1980	1426	2006	1448
1981	1428	2007	1449
1982	1427	2008	1447
1983	1428	2009	1446
1984	1426	2010	1447
1985	1426	2011	1452
1986	1426	2012	1450
1987	1428	2013	1450
1988	1427		
1989	1426		

\*Runaway Devils Lake.\* » American Scientist. Scientific Research Society, Jan. 2012. Web. 16 Nov. 2013.

The Expanding Monster Lake

Devil's Lake in North Dakota is a massive lake that has been significantly expanding in size over the last few decades. Devil's Lake is a remnant of a massive ancient lake: Lake Agassiz which covered the area about 13,000 years ago. According to the data collected by the *American Scientist* magazine, Lake Agassiz may be "recharging itself" to its former size.

The graph depicts the elevation above sea level of Devil's Lake in the time frame of about the last 50 years. As shown, Devil's Lake has rapidly expanded over the last 50 years. In that time, it has overflowed to another lake, Stump Lake, and has submerged two towns under its relentlessly rising waters. The lake is rising above the 443-meter elevation. Scientists estimate this will still continue for the next decade or so.

The lake is increasing so quickly because the water has nowhere to go. There is no natural river or stream to transport rain and melted ice away from the area, which results in flooding. We can clearly see firsthand the important role natural rivers. Also, this area of North Dakota is experiencing a wetter climate than normal, and according to the U.S. Geological Survey, this trend will most likely continue for the next decade.

Scientists are looking for a way to solve North Dakota's problem. Ideas such as creating a flood channel have been proposed, but contaminants, fish and other organisms from Devils Lake could ruin the drinking water and ecosystems of nearby waterways. This is a problem that cannot be ignored. As shown on the graph, water levels are at record heights and continue to rise with every passing year. Geologists need to find a solution that will lower the water level [and] whisking up the nearby water live from contaminants.

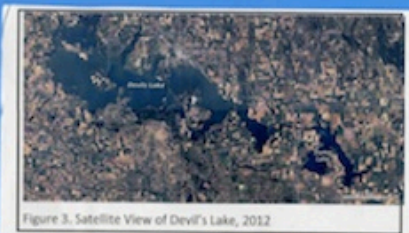
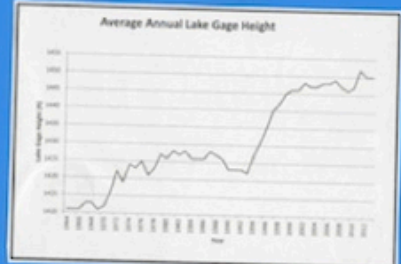


Figure 3. Satellite View of Devil's Lake, 2012

**Sources**

- "Runaway Devils Lake." » American Scientist. Scientific Research Society, Jan. 2012. Web. 16 Nov. 2013
- Figure 1. North Dakota Gov
- Figure 2 and 3. "Devil's Lake Continues to Grow." The Watchers. N.p., 27 Apr. 2011. Web. 16 Nov. 2013.



Average Annual Lake Gage Height

The graph shows a line representing the average annual lake gage height from 1964 to 2013. The y-axis is labeled 'Lake Gage Height (ft)' and ranges from 1400 to 1450. The x-axis is labeled 'Year' and ranges from 1964 to 2013. The line shows a general upward trend with some fluctuations, starting around 1411 in 1964 and ending at 1450 in 2013.

4. What is the major error on this poster?

The graph should use separate data markers, not connected by a smoothed line.

Information is not well organized.

Individual pieces are mounted unevenly on the poster board.

**There is no location map.**

There are no figure numbers.

5. Which required elements are present in this poster? Check as many as apply. Note: The dashed line marks the edge of the poster board. Click here for a larger image (opens in new window).

An informative title

Table with 50 data points

A 1-page summary

Reference list with at least 3 sources

At least one picture

At least one map

At least one graph

Uses standard poster board (22x28 inches, 56x71 cm)

**Coal** Coal 101 Spring '12

**Coal Production by State (2010-2011)**  
\*Thousand Short Tons

The U.S. Energy Information Administration (EIA) is a statistical and analytical agency within the U.S. Department of Energy; it collects and analyzes independent and impartial energy information to promote sound policymaking, efficient markets, and public understanding of energy and its interaction with the economy and the environment.

The data in the table and the first graph, show coal production in different states within the U.S. between 2010 and 2011 in thousand short tons. This information is important because EIA forecasts that coal production will decline by 10.2 percent in 2012 as domestic consumption and exports fall, which means that new ways for producing energy are vital.

The map, however, shows the distribution of coal production throughout the U.S. Coal resources are generally located in the Rocky Mountains, the Appalachian Mountains, parts of the Midwest, and in extreme northern Alaska. Coal generally co-exists with coal-bed methane, which is a potential source of natural gas that is under development.

**Coal-Producing Region and State**

State	2010	2011	Percent Change
Alabama	19,080	18,919	-0.8
Alaska	2,148	2,151	0.1
Arizona	9,111	7,792	-14.8
Arkansas	132	132	0.0
California	27,204	25,782	-5.2
Colorado	37,441	33,241	-11.5
Connecticut	37,432	34,862	-7.1
Delaware	37	33	-11.8
District of Columbia	107,852	104,962	-2.6
Florida	87,234	86,382	-1.0
Georgia	45,828	46,827	2.2
Idaho	1,000	1,000	0.0
Illinois	2,388	2,388	0.0
Indiana	2,747	4,024	46.5
Iowa	488	458	-6.1
Kansas	41,830	44,732	7.0
Kentucky	31,832	30,842	-3.1
Louisiana	28,214	29,349	4.0
Maine	38,712	38,712	0.0
Maryland	1,143	1,012	-12.3
Massachusetts	98,717	98,500	-0.2
Michigan	2,174	1,738	-20.1
Minnesota	87,832	86,888	-1.1
Mississippi	1,284	1,192	-7.7
Missouri	45,772	43,982	-4.1
Montana	19,482	19,201	-1.4
Nebraska	22,858	22,858	0.0
Nevada	134,028	135,222	0.9
New Hampshire	30,891	31,274	1.2
New Jersey	108,161	102,522	-5.2
New Mexico	235,127	235,248	0.0
New York	169,882	170,882	0.6
North Carolina	387,124	381,811	-1.4
North Dakota	453,034	444,340	-2.0
Ohio	538,340	538,171	-0.0
Oklahoma	1,980,084	1,980,011	-0.0
Oregon	2,241	1,867	-16.7
Pennsylvania	1,084,228	1,084,228	0.0
Rhode Island	0	0	0.0
South Carolina	0	0	0.0
South Dakota	0	0	0.0
Tennessee	0	0	0.0
Texas	0	0	0.0
Utah	0	0	0.0
Vermont	0	0	0.0
Virginia	0	0	0.0
Washington	0	0	0.0
West Virginia	0	0	0.0
Wisconsin	0	0	0.0
Wyoming	0	0	0.0
U.S. Total	1,980,084	1,980,011	-0.0

**2011 Coal Production by Region in Million of Short Tons**

**Coal Consumption by region (1980-2010)**  
\*Billion Short Tons

**Coal Mining Disasters**  
Number of injuries and illnesses, total coal mining industries, 2005

Category	Number of injuries and illnesses
Coal mining, total	2,640
Bituminous coal and lignite surface mining	570
Bituminous coal underground mining	2,070
Anthraxite mining	0

**Centralia, PA**

It all started around 1960 by the outskirts of the town where household debris had accumulated atop the coal seam at the base of the pit. The burning trash caught the exposed vein of coal fire. People tried to extinguish the fire that had started, they thought they had, but they were wrong, the fire erupted in the pit a few days later. From then on, all efforts failed to save the village and by the 1980's, residents had to evacuate the area and relocate somewhere else. Thousands of tons of anthracite still lie wedged in the seams underneath Centralia and the hills that surround it... The place has basically turned into a ghost town and served as an inspiration for the movie *Silent Hill*.

**Global coal demand has almost doubled since 1980, driven by increases in Asia, where demand is up over 400% from 1980-2010. In turn, Asian demand is dominated by China, demand in China increased almost five-fold between 1980-2010 and accounted for 73% of Asia's consumption and almost half of coal consumption globally in 2010.**

**A mine disaster was a term applied to mine accidents that included the loss of five or more lives. Around 1907, 18 coalmine disasters happened throughout the U.S. Among these, disasters in 1907 was the history's worst: The Monongah coalmine explosion in which about 3,500 people died. This caused the Congress to create the Bureau of Mines.**

**Sources of information:**

- <http://www.eia.doe.gov/coal/production/coalprod.html>
- <http://www.eia.doe.gov/coal/consumption/coalcons.html>
- <http://www.eia.doe.gov/coal/production/coalprod.html>
- <http://www.eia.doe.gov/coal/consumption/coalcons.html>
- <http://www.eia.doe.gov/coal/production/coalprod.html>
- <http://www.eia.doe.gov/coal/consumption/coalcons.html>

6. What is the major error on this poster?

There are no figure numbers.

Information is not well organized.

**There is not much color contrast, so it is hard to read.**

Individual pieces are mounted unevenly on the poster board.

Sources are cited as part of the figure captions, instead of on a single list.



7. Which required elements are present in this poster? Check as many as apply. Note: The dashed line marks the edge of the poster board. Click here for a larger image (opens in new window).

**An informative title**

**Table with 50 data points**

**A 1-page summary**

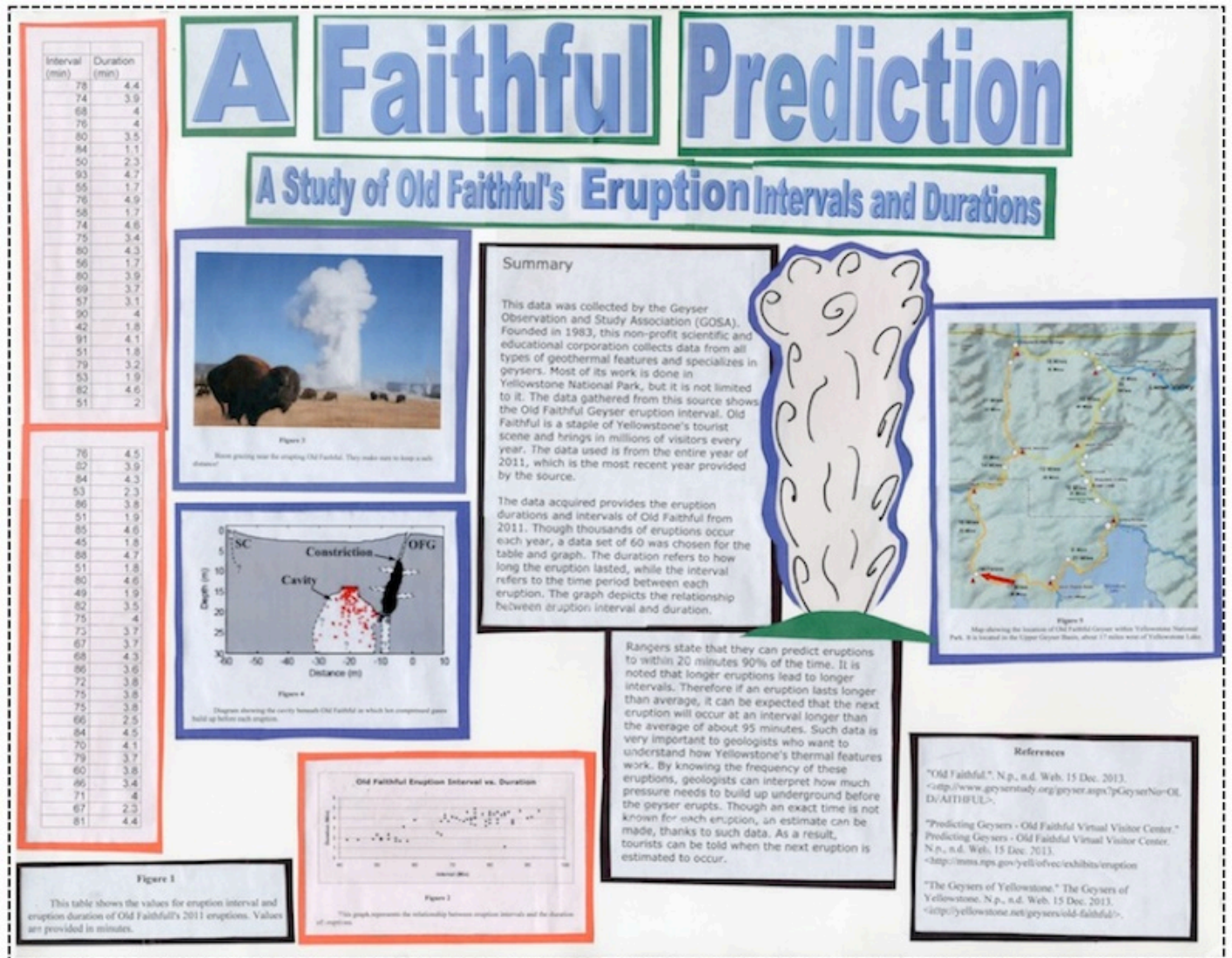
**Reference list with at least 3 sources**

**At least one picture**

**At least one map**

**At least one graph**

**Uses standard poster board (22x28 inches, 56x71 cm)**



8. What is the main error on this poster?

The summary does not refer to each figure.

The title is too large.

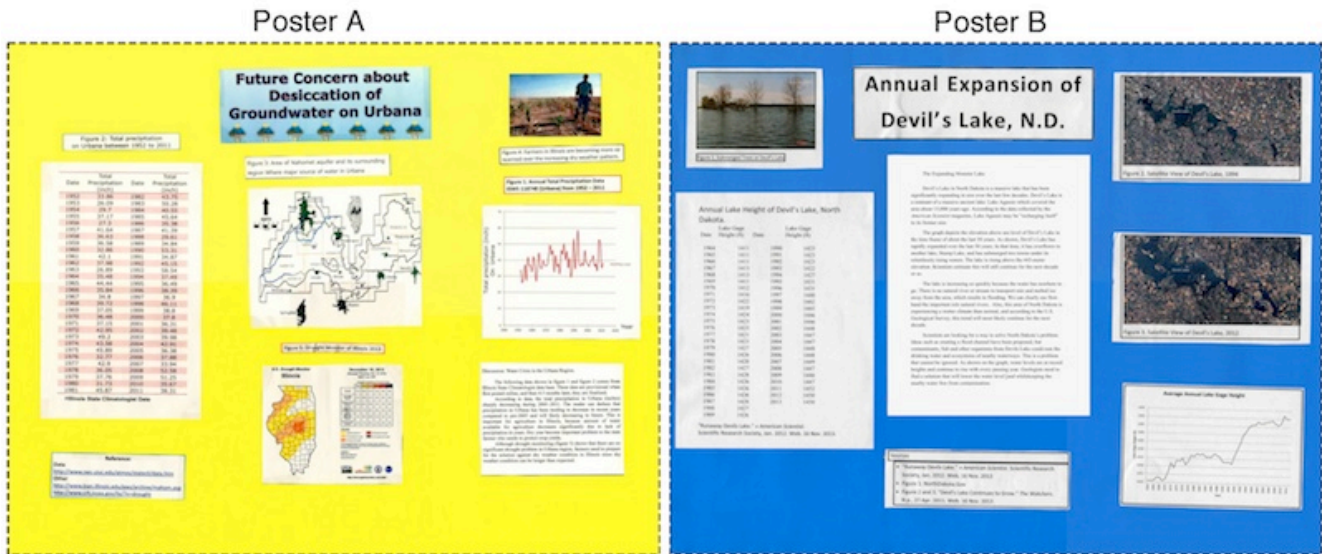
The table should not be in two separate pieces.

Individual pieces are mounted unevenly on the poster board.

**Information is not well organized.**

9. Which of these two posters do you think is better overall? Note: The dashed lines indicate the edge of the poster board.

(Either answer is acceptable.)

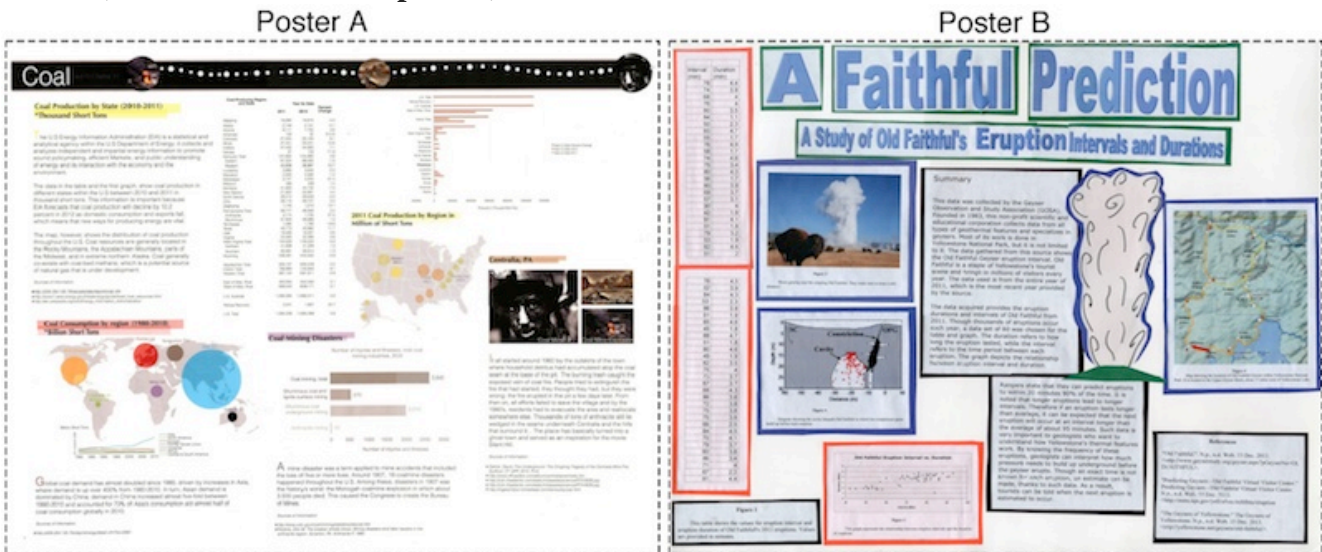


10. Briefly explain your choice from question #9.

(Short answer question with any answer accepted)

11. Which of these two posters do you think is better overall? Note: The dashed lines indicate the edge of the poster board.

(Either answer is acceptable.)



12. Briefly explain your choice from question #11.

(Short answer question with any answer accepted)



3. Which required elements are present in this poster? Check as many as apply. Note: The dashed line marks the edge of the poster board. Click here for a larger image (opens in new window).

An informative title

Table with 50 data points

A 1-page summary

Reference list with at least 3 sources

At least one picture

At least one map

At least one graph

Uses standard poster board (22x28 inches, 56x71 cm)

**ANNUAL SNOWFALL IN CHICAGO**

**Figure 1: Annual snowfall data for Chicago**

Year	Inches of snowfall
1919	47.7
1920	48.4
1921	26.1
1922	45.2
1923	40.5
1924	45.5
1925	51.2
1926	27.8
1927	71.4
1928	32.4
1929	40.7
1930	61.1
1931	42.8
1932	36.4
1933	53.3
1934	26.1
1935	44.5
1936	102.4
1937	26.7
1938	17
1939	30
1940	10
1941	17.1
1942	38.7
1943	26.1
1944	28.5
1945	38.4
1946	34.8
1947	34.8
1948	34.8
1949	34.8
1950	34.8
1951	34.8
1952	26
1953	43.8
1954	43.5
1955	32.5
1956	28.8
1957	42.2
1958	34.8
1959	36
1960	38
1961	13.5
1962	45
1963	25
1964	23.8
1965	54.5
1966	34.5
1967	45.9
1968	32.8
1969	45.8
1970	43.1
1971	44.8
1972	36.5

**Figure 2: An impossible Chicago intersection in the January 1964 blizzard**

**Figure 3: A temperature graph of the Chicago area, demonstrating how temperatures get cooler closer to Lake Michigan**

**References**

1) "Illinois State Water Survey - Climate Data, University of Illinois at Urbana-Champaign." Web. 05 Nov. 2013. <http://www.isws.uiowa.edu/infocenter/climate/climate.asp>

2) "National Weather Service Weather Forecast Office." Chicago Historical Snowfall. Web. 05 Nov. 2013. [http://www.nws.gov/forecast/office\\_chi\\_snow\\_fall](http://www.nws.gov/forecast/office_chi_snow_fall)

3) "1964 Chicago." The New York Times. <http://www.nytimes.com/1964/01/15/archives/1964-chicago.html>

4) "Chicago 'Blizzard' - The Blizzard of '67." Web. 05 Nov. 2013. <http://www.chicagotribune.com/news/2013/01/05/130105chicago-blizzard/>

5) Large scale effects of seasonal snow cover - percentage of an international temperature field during the 1958 General Assembly of the International Union of Geodesy and Geophysics. British Columbia, Canada, Wallingford, (Geophysical Research Paper, 1967)

6) Survey of frozen precipitation in urban areas as related to climatic conditions of the Midwest. U.S. Weather Bureau, 1967

**Summary**

The data used for this project came from the Illinois State Water Survey website. The measurements of annual snowfall were taken at Midway Airport in Chicago from 1919 to 2012. Figure 1 shows annual snowfall in Chicago. This is valuable information because it demonstrates how snowfall in Chicago has changed from year to year, and more broadly, over the course of the last 50 years. It also displays how apparently erratic and unpredictable the snowfall can be from year to year. Years with extraordinarily high snowfall, such as the blizzard year of 1967 (Figure 2) are often followed by several years of simply average snowfall. Yet, there is a noticeable trend of less snowfall in the more recent years.

The cause of this decreasing annual snowfall could be attributed to the effects of climate change. In the past, changes in climate were caused by natural factors such as changes in solar radiation, dust from volcanic eruptions, and natural cycles of the earth-atmosphere system. However, the Intergovernmental Panel on Climate Change has concluded that the increase in temperatures observed in the last 50 years is due to greenhouse gas emissions from human activity. Since snow can only fall when the temperature is below 0°C, an overall increase in temperature would mean a lower chance of snowfall in Chicago or anywhere. However, climate change also causes extreme precipitation events, so there is an increasing likelihood of intense blizzards that increase annual snowfall in spite of shorter winters. Global temperatures are expected to continue to rise from 1.5 to 6°C over the next century in response to greenhouse gas emissions. It remains to be seen in coming years just by how much this will affect snowfall in Chicago. Moreover, it is also important to note that Chicago's climate is distinct from the surrounding areas of Illinois and other parts of the Midwest, due to its location by Lake Michigan. The lake breeze causes a microclimate in Chicago that makes its average temperature slightly lower than surrounding areas farther from the lake.

4. What is the major error on this poster?

There is too much empty space.

There are no figure numbers.

The graph was not created in Excel by the student.

Elements of the project are mounted unevenly on the poster board.

**The title is too large.**

5. Which required elements are present in this poster? Check as many as apply. Note: The dashed line marks the edge of the poster board. Click here for a larger image (opens in new window).

**An informative title**

**Table with 50 data points**

**A 1-page summary**

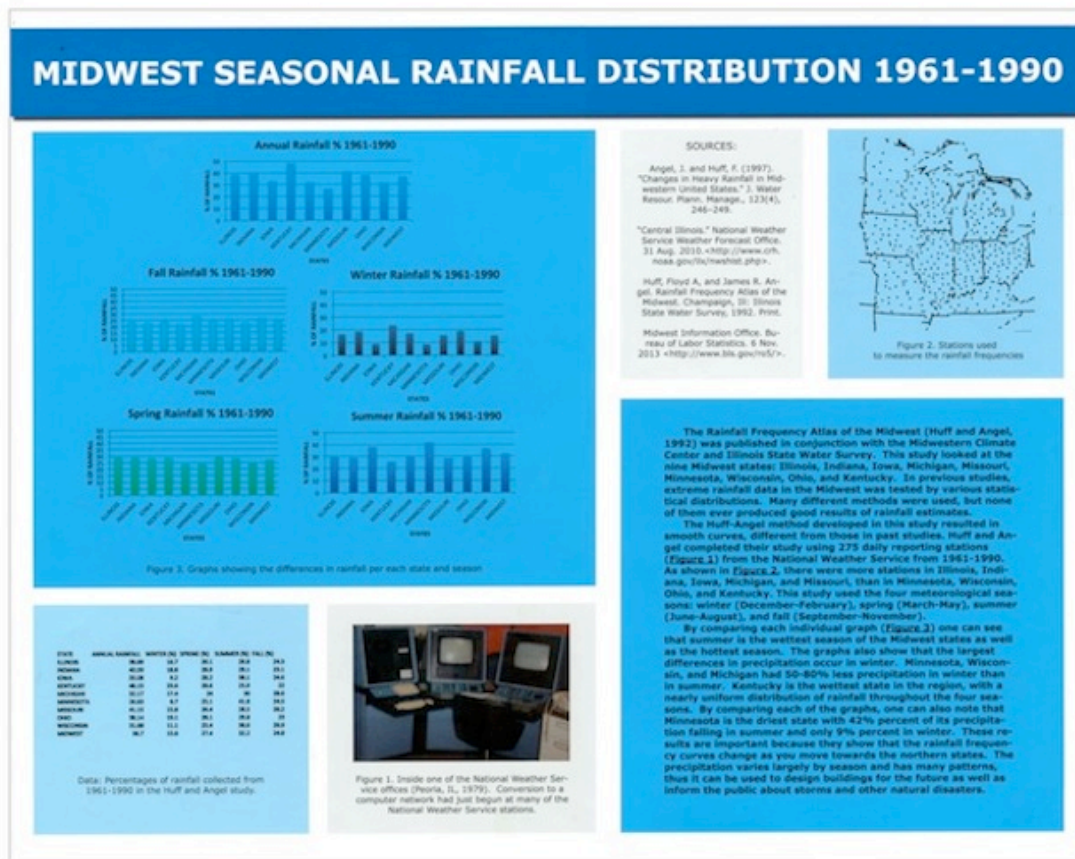
**Reference list with at least 3 sources**

**At least one picture**

**At least one map**

**At least one graph**

**Uses standard poster board (22x28 inches, 56x71 cm)**



6. What is the major error in this poster?

**Text and graphs are hard to read against the background colors.**

The title is not informative.

**It does not use standard poster board (22x28 inches, 56x71 cm)**

Summary and other parts are mounted crookedly on the poster board.

The first graph should be total inches, not percentage.

7. Which required elements are present in this poster? Check as many as apply. Note: The dashed line marks the edge of the poster board. Click here for a larger image (opens in new window).

**An informative title**

**Table with 50 data points**

**A 1-page summary**

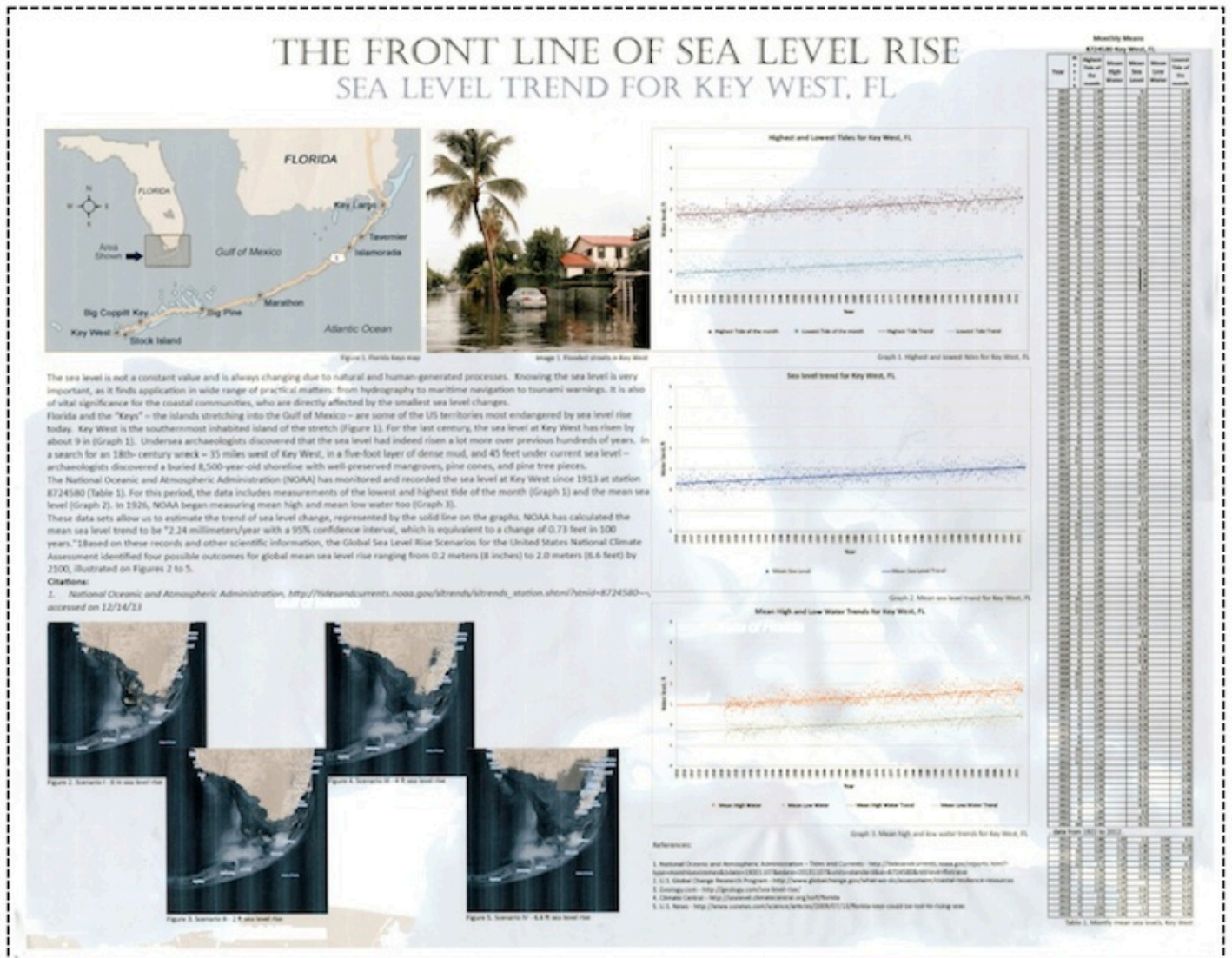
**Reference list with at least 3 sources**

**At least one picture**

**At least one map**

**At least one graph**

**Uses standard poster board (22x28 inches, 56x71 cm)**



8. What are the major errors on this poster?

**Font sizes are too small to read easily.**

The summary does not mention any of the figures.

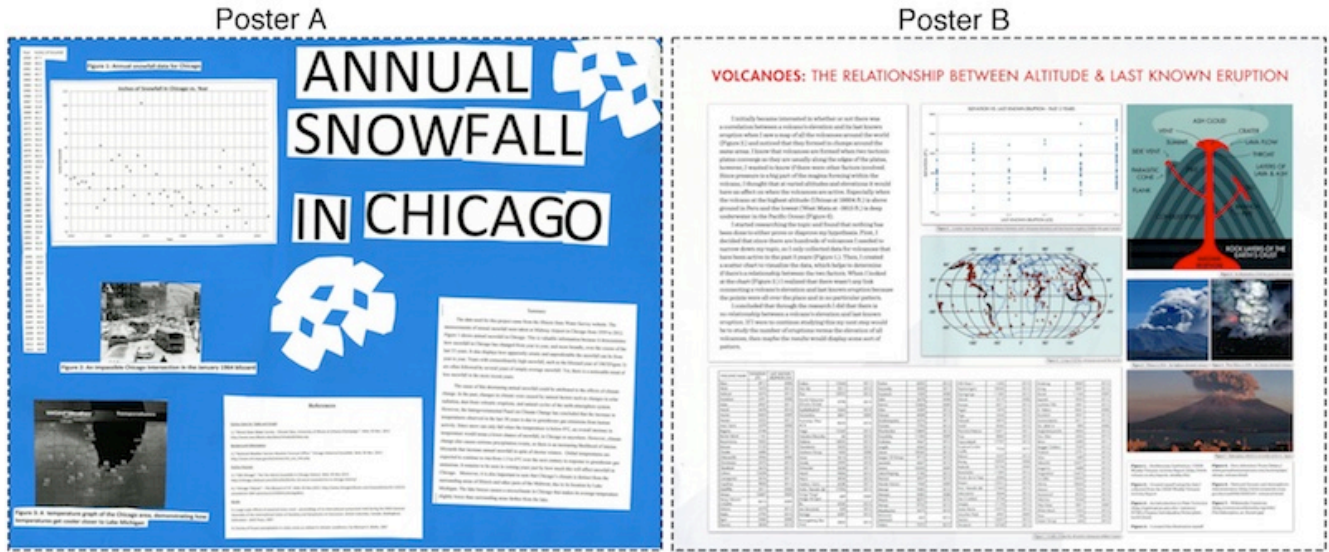
**Text and images are blurry when you zoom in.**

**There is not enough contrast between the content and background.**

Poster elements are crowded together and not straight.

9. Which of these two posters do you think is better overall? Note: The dashed lines indicate the edge of the poster board.

(Either answer is acceptable.)

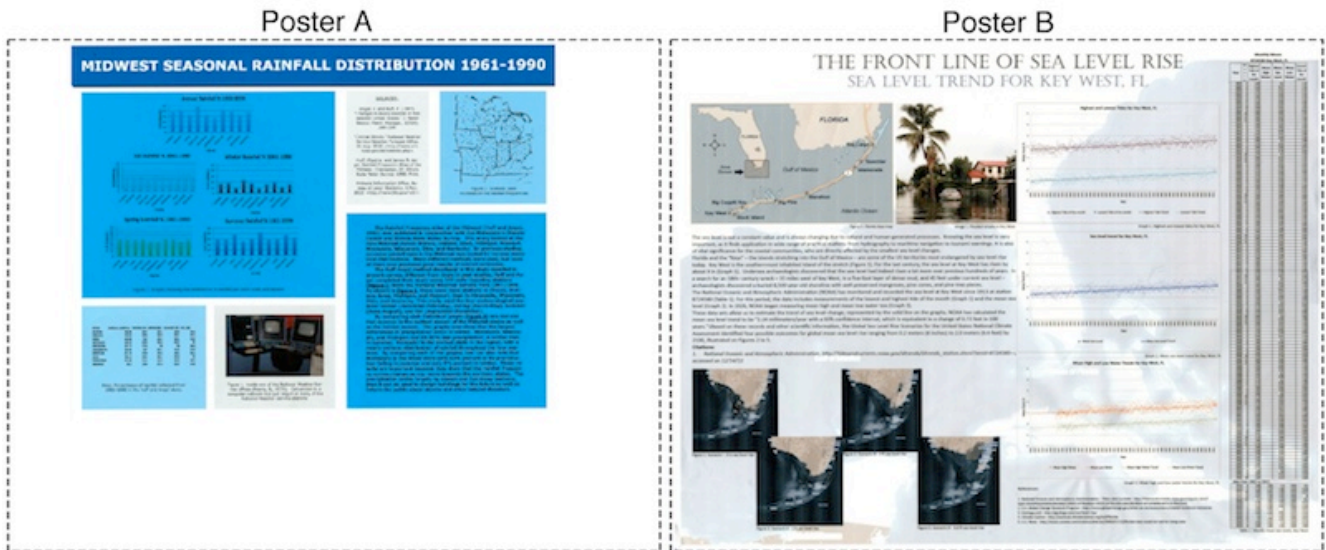


10. Briefly explain your choice from question #9.

(Short answer question with any answer accepted)

11. Which of these two posters do you think is better overall? Note: The dashed lines indicate the edge of the poster board.

(Either answer is acceptable.)



12. Briefly explain your choice from question #11.

(Short answer question with any answer accepted)