

Student Worksheet: Analyzing a Journal Article

Please read the assigned journal article and answer the following questions. Review the “Paraphrasing” module as needed to help you understand how to paraphrase to avoid plagiarism.

Your name:  ___  Solution Set: Earthquakes  __________________________  Date:  __________________________


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<thead>
<tr>
<th>Step 1. What is the purpose/hypothesis/aim/objective of the study?</th>
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<td>a. Write down the exact statement in which the authors describe what they were testing. (Hint: This information may be provided in the article as a purpose statement or as a hypothesis). Include quotation marks around the exact wording, and indicate page number(s).</td>
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<tr>
<td>b. Now describe the purpose of the study (as you understand it) in your own words.</td>
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<td>c. What was the “gap” in the research that the authors were trying to fill by doing their study?</td>
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### Step 2. What is/are the major finding(s) of the study?

**a.** Make some notes about the authors’ major conclusions or findings as written in the article. Include quotation marks whenever you use their exact wording, and indicate page number(s).

“The present results clearly show changes in surface, atmosphere and total zone concentration, associated with the earthquake. The surface and air temperature, relative humidity and surface latent heat flux changes are showing complementary nature one day prior to the earthquake event. The atmospheric parameters at different pressure levels show a prominent characteristics one day prior the event compared to other days” (p. 1304).

“The complementary nature of surface and atmospheric parameters associated with Haiti earthquakes provide a strong evidence of lithosphere-atmosphere coupling” (p. 1304).

**b.** Now write those conclusions (as you understand them) in your own words.

A connection existed between atmospheric conditions such as surface temperature, air temperature, and humidity, and the lithosphere during the 2010 earthquake in Haiti.

### Step 3. How did the authors test their hypothesis?

**a.** Briefly summarize the main steps or measurements that the authors used in their methods. Try to explain in your own words as much as possible.

- Daily data collected about the epicentre of the earthquake using NCEP website
- Surface temperature collected and graphed to demonstrate a comparison of the last 6 months of data
- Similar graphs were created using the data collected to demonstrate comparisons about the relative humidity and surface latent heat flux on the days around the earthquake compared to other time periods
- A formula based on altitude, wind, and specific humidity was used to calculate surface latent heat flux

**b.** Do the authors suggest any problems or limitations with their methodology? Do you see any problems or limitations with their methodology?

No direct limitations were mentioned by the authors. I question why different time scales were used to demonstrate different measurements and very little information about the accuracy and validity of the data.
collected from the NCEP is provided. Assuming the data is accurate; the methodology demonstrates how the atmospheric conditions changed during the days around the earthquake.

c. How did the authors analyse their data? What test/s did they use?

The authors compared peaks data collected with the mean value or to the mean plus one standard deviation. This analysis was used to highlight that data points were significant and lied outside regular variance. The data was also graphed over time to show variations and irregularities that occurred around the earthquake.

### Step 4. How reliable are the results?

a. Do the authors suggest any problems with the study that could lead to unreliable results?

No they do not. In addition, the authors do not try to suggest that these results will happen in future earthquakes. Therefore repeated testing during future earthquakes will be needed to determine reliability across multiple instances.

### Step 5. Based on your analysis, are the claims made in this journal article accurate?

a. Do the conclusions made (about the results) by the author make sense to you? Are the conclusions too broad or too narrow based on what was actually done in the study?

The conclusions do make sense and the authors limit the results to this specific earthquake. They do not make generalized statements stating that this coupling relationship happens in all earthquakes or that it can be predictive in any way. In this regard, the results match the scope of the data collected and analyzed.

b. Based on the accuracy of the methodology and the reliability of the results as described in Steps 3 and 4, do you think the conclusions can be believed?

Either argument could be made. The conclusions made by the authors appear to be accurate. They merely state that atmospheric conditions change drastically prior to the earthquake. Given the previous earthquake evidence they are correct in making the conclusion that a coupling relationship exists in this case. They do not extend this coupling relationship to earthquakes in general nor do they provide an explanation for why these changes occur.
### Step 6. What is the importance of this scientific work?

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<th>a. Write (in your own words) the significant contributions of the experimental work in this journal article as reported by the authors.</th>
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<td>The authors demonstrate that just prior to the 2010 Haiti earthquake atmospheric conditions changed. This coupling of atmospheric irregularities with lithosphere changes is similar to results observed in previous earthquakes. The authors do not suggest that a causal effect is taking place - rather they are point out that coupling exists.</td>
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<th>b. Re-read your notes and explain why you think this is a strong or weak scientific article or study.</th>
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<td>The article is strong in the sense that the authors say they will demonstrate a coupling relationship and do so effectively. The authors clearly describe the atmospheric conditions at the time of the Haitian earthquake and conclude that a relationship in this instance occurs between the lithospheric changes and the atmospheric conditions. The article could be strengthened by suggesting uses of this understanding or providing an explanation of future research that could continue to explore the atmosphere-lithosphere coupling relationship.</td>
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### Resources for students:

1. If you are struggling with plagiarism and paraphrasing, then refer to our online “Paraphrasing” module.
2. If you are struggling with figuring out how to read the information, then refer to the section on active reading in the “Learning from Textbooks” section of A Guide for University Learning.
3. If you want to learn how to find more academic information on other science topics, then refer to our online “Searching for Scientific Journal Articles” module.