EAR 419/619 – Aqueous Geochemistry

Lab #6

Literature Review and Project Pre-report

**Report**

Students will turn in a report that details the purpose of their individual/group projects and describes **field**, **laboratory, data compilation/analysis** methods. This report will serve as a draft for the final project report where you will analyze results obtained from the data analysis. Provide as much detail as possible, keeping your writing *precise* and *concise*. Write in full sentences and paragraphs.

**Deliverable Requirements**

1. Title and author
2. Introduction (two to three paragraphs)
   1. *Graduate students* should use 5+ references (*undergraduate students* should use 3+) to describe the problems associated with their chosen project topics. These references should be specific to your scientific question(s) and used to explain the current state of knowledge as well as the research gaps in the field.
   2. *All students*: Give a purpose statement that describes your scientific question. Do not copy from above, but use your own words to describe the project objective. You can tailor the specific objective to a question you are interested in answering so long as your approach will provide data that can be used to address that question. **Briefly** summarize your data collection approach (field/lab work vs. data compilation) and how it addresses the main question.
3. Methods

In this section, *if applicable*, you will describe how the samples were collected, how measurements were taken in the field, how the samples were prepared for chemical analysis, and/or how public data was downloaded and compiled.

* 1. Use subheadings to organize your methods into sections, e.g., site description, field methods, laboratory methods, data source and compilation
  2. Include the following *if applicable*: 1) a map of all sampling locations either visited by your group or from which you downloaded public data; 2) information on the field site and description of sampling locations; 3) details on what your group did in the field; 4) details on what your group did in the lab – be specific with regard to chemicals and instruments used to prepare and analyze samples; 5) a table of all samples collected by your group (or from online data repositories) that includes field measurements (location, pH, EC, etc.).

**Tips on scientific writing:**

The ultimate goal of science writing is to communicate your findings to the reader. Make their job easy – a reader does not appreciate searching for meaning within vague terminology and abstract thoughts. State your message clearly and with confidence. Below are a few guidelines to keep in mind while constructing your report.

1. Write *concisely* and *precisely*
   1. Provide as many details as possible in as few words as possible. Use words that have specific meanings. Do not add extraneous words or phrases that detract from your main point. Do not use big words just because you think they’ll make you sound more serious.
2. Use strong nouns and verbs
   1. Subjects perform actions. Use specific nouns and active verbs.
   2. Avoid vague nouns such as “this” and “that”
   3. Don’t default to passive voice. Although often associated with science writing, passive voice less effectively communicates ideas. Why was the road crossed by the chicken? Because that chicken needed serious help with its writing.
3. Structure each paragraph around a main idea
   1. Lead a paragraph with the most exciting and/or important information. Use the following sentences to provide support for that main idea. If you want your reader to know something, make sure that information is obvious.
4. Be blunt.
   1. Don’t dance around what you’re trying to say. State your message with confidence. Do not use words such as “may” or “could” unless you’re in the realm of speculation.
5. The key to good writing is REVISION.
   1. Good papers are revised multiple times, undergoing tweaks and even major overhauls.
6. Learn to appreciate constructive criticism

Reread your writing. Have others read your writing. Read writing by others. Critique your writing and be open to constructive comments from peers and advisors. All of these tactics will enable you to evaluate and improve upon your writing.