

## EPSS C113/C213 Term Project

### Description:

As you've probably realized already, college and graduate school are mostly about teaching yourself, and learning to teach each other. Instructor-led lectures are, in effect, incidental tutoring. This project is intended to give you a chance to hone your skills of instruction, by delving into a biogeochemistry-related subject at greater depth than we can cover in class. The project will consist of two parts:

1. Term paper – write a 7-9 (undergrad) or 10-12 page (graduate) paper summarizing the research relevant to a topic in biogeochemistry or environmental geochemistry. This assumes double-spaced text. You will want to focus the topic narrowly enough that you can discuss the research literature in some depth within this length. The paper should include in-text citations and a bibliography (the title page, bibliography & figures do not count towards the length). The bibliography should include at least a dozen sources, most of which should be primary research articles. Including a few review articles, textbook or online references is fine, but if you find these dominating the citation list you should consider looking at more recent, state of the art findings and problems. As you are reading up on the topic and preparing your notes, try to think of new measurements or calculations you might make that would advance the state of knowledge on your topic, and describe these in the paper (you don't actually have to make new measurements or calculations, just describe them and explain why they would lead to scientific progress).
2. Oral presentation – a 5-minute presentation on the project topic, delivered to the class (the exact timing may change a bit depending on how the class schedule evolves). Presentations will be given during the last week of class and/or finals week. Some tips to consider in putting a presentation together: Why are you interested in this topic? Why should the class be interested in this topic? Make sure to include enough introductory information that everyone can understand what you are talking about. Giving short presentations is often much harder than giving a long lecture, and you will want to consider carefully which aspects of your topic are most important and interesting. Giving a few practice talks to a small audience (or even just talking to a stopwatch) will help you streamline your delivery, and get a sense of how fast your presentation will go. Staying close to the time limit will be part of the presentation grade. You are encouraged to use visual aids (i.e., Powerpoint/Keynote or an overhead projector) – be aware, however, that there will only be time for a few slides. Each student should also prepare 24 copies of a 1-page abstract summarizing their presentation (and reproducing a few key figures or tables if you want), to give to the rest of the class. This page can be printed on both sides, but try to avoid excessive text. The class copy code for the Geology copy room is 70409.

Term Paper Structure – the paper should be divided up into sections, including an abstract (a thumbnail description of no more than 200 words), introduction (including broader context and reasons why the topic is important), a discussion of historical and current research, a proposal for new research, and a summary. The proposal section should be at least 1-2 pages; this part of the paper is optional for undergraduates, but required for graduate students. The text should conclude with a bibliography of references cited in the text. You may wish to create or reproduce a few figures to help illustrate your topic – make sure these include a citation to the original source. Figures can either be inserted at the appropriate spot in the text, or attached in order of citation at the end of the paper. Make sure to insert a pointer to each figure in the text; i.e., “Holocene ocean surface temperatures reconstructed from foraminifer  $\delta^{18}\text{O}$  measurements (Figure 1, adapted from Shackleton et al., 1994) clearly show a reduced equator-pole temperature gradient during ...”. Feel free to use one of the review or research papers you’ve read as a general style template for the paper.

Citations – Be generous in providing citations to the literature that you consult in writing your paper. Try to avoid excessive verbatim (or near-verbatim) quotations, particularly ones that are more than a sentence or so in length. For each item in your bibliography, make sure to provide, at minimum, a list of authors, a publication year, the title of the article/book chapter cited, the journal or book of publication, the volume number, and page numbers. References to books should also include the geographic location of the book publisher. You can use the citation format shown in your textbook (Schlesinger); the American Mineralogist is another good format – articles from older volumes of this journal (1916-1999) are freely available for download at <http://www.minsocam.org/MSA/AmMin/TOC/>. Another good template is Environmental Science & Technology <http://pubs3.acs.org/acs/journals/toc.page?incoden=esthag>, which can be accessed from any UCLA internet connection. Look at a few articles in one of these journals to see how different types of references (books, journal articles, etc.) are handled. Do not use the citation formats typical of *Science*, *Nature*, or most chemistry & physics journals. They are too abbreviated for a term paper, lacking full article titles and page ranges. You are encouraged to include DOI (Digital Object Identifier) hyperlinks to sources in your bibliography, when they are available, but these are not required and will not affect grading.

The term paper is due on Wednesday of the last week of classes (March 14). Presentations will be scheduled around the same time, depending on how we set up the final exam.

I am happy to discuss project topics, and to give feedback on practice presentations and drafts of the term paper. Each student will work on their own independent topic, but you are encouraged to cooperate in editing drafts and practicing presentations.