CPSG100 Science & Global Change First Year Colloquium I
Anatomy of a Scientific Paper Project
DUE: Sept. 19, 2017

While research is where the core of Science is done, the transmission of research is how Science grows. And the primary means of transmitting scientific work is the scientific (or technical) paper. These are normally papers published in a periodical journal (which may come out weekly, monthly, or on a longer schedule). The purpose of this exercise is to get you used to reading and interpreting such papers.

STEP ONE: Find a paper, and print it out.

In the digital age, nearly all scientific journals have an online presence. Some of these are restricted to subscribers; others are available to everyone (“Open Access”). As a University student, you have access to a great number of these journals, because the University library has subscriptions to various journal services. You can access these from a University IP address (a hardwired computer on campus or wireless access from on campus), or by using https://umaryland.on.worldcat.org/discovery from off-campus. (Or, if you find a paper you want from a publisher for which the University has a subscription, add a “.proxy-um.researchport.umd.edu” after “.com” or “.org” or whatever, and that will put you straight into the article). (Actually, the best option is installing the “Reload@UMCP” link on your webbrowser. For more information, see http://lib.guides.umd.edu/reload-button).

Feel free to find an article from any scientific journal. There are a couple of strategies to use. You can use a searchable database (http://scholar.google.com or one of the University library’s databases, for instance) and search on topics you are interested. Or, alternatively, you can browse the titles of papers from the tables of contents of different journals. There are hundreds (if not thousands) of specialized journals out there, but there are also some journals that publish across the entire field of Science. So unless you have a real particular narrow interest, we recommend you checking out the following for potential papers:

- *Nature* (http://www.nature.com/nature/archive/index.html), published by the British Association for the Advancement of Science, a weekly journal
- *Science* (http://www.sciencemag.org/archive/), published by the American Association for the Advancement of Science, a weekly journal
- *Proceedings of the National Academy of Sciences* (PNAS for short) (http://www.pnas.org/content/by/year), published by the National Academy of Sciences of the United States of America, a weekly journal
• *Proceedings of the Royal Society B: Biological Sciences* (http://rspb.royalsocietypublishing.org/content/by/year), published by the Royal Society of London, published every two weeks.

• *The Science of Nature* (http://www.springerlink.com/content/0028-1042/), formerly called “Naturwissenschaten”, published by a coalition of scientific organizations. Despite the old German title, papers in this journal are now published in English.

• *Public Library of Science* (PLoS for short) (http://www.plos.org/publications/journals/), a purely online open access family of journals.

• *PeerJ* (https://peerj.com/articles/), another purely online open access journal, mostly focusing on biological and medical science.

For the purpose of this exercise, we require that the paper you examine:

• Is an actual research article, **NOT** a review article, news article, commentary, or the like: consult the lecture notes for the distinction between these

• Be less than 10 pages long (exclusive of supplementary online material) when printed out (if it is a tad longer, this is okay; many will be much shorter than this). Some papers can be much, much longer: we don’t want you to spend that much time on it.

STEP TWO: Read the paper. You may need to download the Electronic Supplementary material as well, because some journals move the Methods and Materials sections there.

**NOTE**: Don’t expect to understand all the scientific details in the paper! These articles are intended for professional researchers, so will include information, techniques, methods, etc. to which you have probably not yet been introduced. (After all, the point of an undergraduate and graduate education in your particular fields is to give you the skills and information to understand and actually do advanced work in your chosen subdisciplines!) That said, it is best to find a paper that interests you and that you can at least parse out the main details if not the nitty-gritty stuff.

STEP THREE: Answer the questions on the last page of this assignment as a text entry in ELMS. Due **Tuesday September 19**
1. Give the proper bibliographic reference for the paper: Use the SGC format (https://www.geol.umd.edu/sgc/resources/biblio.html)

2. Provide a direct URL link to the paper. **NOTE:** this link is to the publisher of the journal (e.g., sciencedirect, Elsevier, etc.), not to EBSCOHost or Google (which are search engines). Use the doi (digital object identifier) code if necessary to find that direct link.

3. Restate in your own words the main question(s) examined in this paper, the type of analysis that was used, and the conclusions from that analysis.

4. From your reading, is it clear how another researcher could use this paper to find out about the nature of the problem at hand, including previous work about this topic? If so, explain how and in which section of the paper you found that information. If not, explain why not.

5. From your reading, is it clear how another researcher could attempt to repeat the observations and analyses here (remember the importance of repeatability in hypothesis testing)? If so, explain how and in which section of the paper you found that information. If not, explain why not.

6. Does the paper discuss future possible work related to this topic? If so, what does it suggest?