EESA06 – INTRODUCTION TO PLANET EARTH

Winter 2018

The purpose of the poster assignment is for you to gain valuable experience in researching a particular topic and summarizing the material as a poster.

Please read the following instructions carefully.

You will present your poster at the 'Planet Earth' Student Conference in the Atrium of the new Environmental Science Building on March 23th. This will also give you the chance to ask questions regarding the course, and about other Environmental Science courses and programs on offer at UTSC. By 'presenting your poster' we mean simply answering a few brief questions about its content and why it interested you. DO NOT PREPARE ANY FORMAL PRESENTATION: THERE ISN'T TIME. Be relaxed and enjoy it; it's a great experience.

This assignment is worth 40% of your final grade.

You can present a printed poster at one of two poster sessions during the Planet Earth Student Conference in the Atrium of the new Environmental Science Building on March 23th. The sessions run from 10:00 to 12:00 am and from 1:00 to 3:00 pm.

To sign up for a session, one member of your group must sign up for the whole group on Blackboard between 9am on January 26th and 9pm on February 26th.

Assignment Details:

1. **Groups:** You may work individually or in groups of up to 4. Groups of more than 4 students *will not be allowed so please do not ask.* Individuals are also permitted, through groups are encouraged.

2. **Topics:** A list of approved poster topics is provided in this document (pgs. 8-9). You may select one of these or suggest one of your own provided that it is related to the course content, the textbook and http://planetrocks.ca. *To work on a topic NOT on the approved list you must receive prior written approval from TA.*

3. **Late Posters** Most students will work in a group so illness of any one member will not prevent you from completing and presenting in the Atrium. If a student member of a group making a presentation in the Atrium is ill, we will need a completed UTSC medical form (provided on Blackboard under Course Materials) for that student to receive a mark.

4. Late posters will NOT be marked.

5. **All Posters must** show the full name (as it appears on ROSI) *of each group member and the last 4 digits of your student number*. This is the only way that we can identify who worked on the poster. Please do not put your full student number on the poster.

6. If your name does not appear on the poster you will not receive a mark.

7. **Need Help with Your Poster?** Your TA's are here to help you, please visit one of them during their office hours.

Lastly, we have a record of posters presented in previous years.
DO NOT re-use material from previous years as you will receive a mark of zero.

POSTER INSTRUCTIONS:

If you are presenting in the Atrium, your poster MUST be **printed**. Printing can be done at many places such as Staples and Kinko's however the most cost effective place is right here on campus.

Allow yourself at least 72 hours to get your poster printed on campus. It takes about 30 minutes to print one poster, and there will be well over 200 posters printed for this conference! Not having enough time to print your poster before the conference is not an acceptable excuse for not presenting a poster and you will be assigned a mark of ZERO.

Your poster should:

- Be 3 x 2ft (landscape) or 2 X 3ft (portrait) in size. The **MINIMUM** font size for text is 18; for titles is 40; and for end references is 14.

- Be printed in colour. However B&W is acceptable. However use discretion when choosing B&W since it can detract from overall effectiveness of the poster.

- Attract attention: visible font sizes; not too much text; include photos, graphs, tables, and maps

- Contain **PARAPHRASED** information. Direct quotations are not acceptable. It is important that you learn to *put things into your own words* to demonstrate understanding. Help with paraphrasing can be found on the University writing website or at the writing centres. When you paraphrase you MUST still cite the original source both in text and in the end references. Text for the poster should not be in point form.

- You can create your poster using a software program such as Powerpoint (or other poster building software). In Powerpoint start out by going into page setup then choose custom from the drop down menu and enter in your measurements (ex. '3 feet by 2 feet' would be 36" x 24" or [using 1" = 2.4 cm] '91 cm x 61 cm'). It is *VERY important* to set the page size using page setup before adding in your text and figures. When you are finished save it as a pdf file for printing in addition to saving it as a regular ppt file.

You may find this site helpful: http://utposter.com/designhelp.html for helping you "build" your poster.

Organization and Figures - Please note how the text and images work together in posters (see examples below). Figures should be informative. Be certain to refer to each image somewhere within the text, for instance: Coal mining occurs in eastern North America (Fig. 1). There are various types of coal mines, such as...

- make sure that your poster is well organized; use section headings
- edit your information, what does the reader or viewer need to know to actually understand the topic
- choose colours and font styles that are easy for the "reader"
- well balanced posters usually are about 40-60% text and 40-60% figures
- make the sequence ('flow') for reading the posters obvious

Referencing – Data and figures must be referenced by providing an in-line citation **and** a full reference in the reference list. An in-line citation occurs within the written text or in the figure caption when information is taken from a specific source. For example: Earthquakes occur on a frequent basis in Southern Ontario (Doughty *et al.*, 2014). or..... According to Doughty et al. (2014) earthquake occur on a frequent basis in Southern Ontario. Note differing use of ., and . after the citation in these different cases!

Here are some examples of the style for references as they should appear at the end of the poster under List of References:

Doughty, M., Eyles, N., Wallace, K.W., Boyce, J.I., and Eyles, C. (2014) Lake sediments as natural seismographs: earthquake-related deformations (seismites) in central Canadian (Ontario and Quebec) lakes produced by reactivation of Precambrian structures. Sedimentary Geology 313, 45-67.

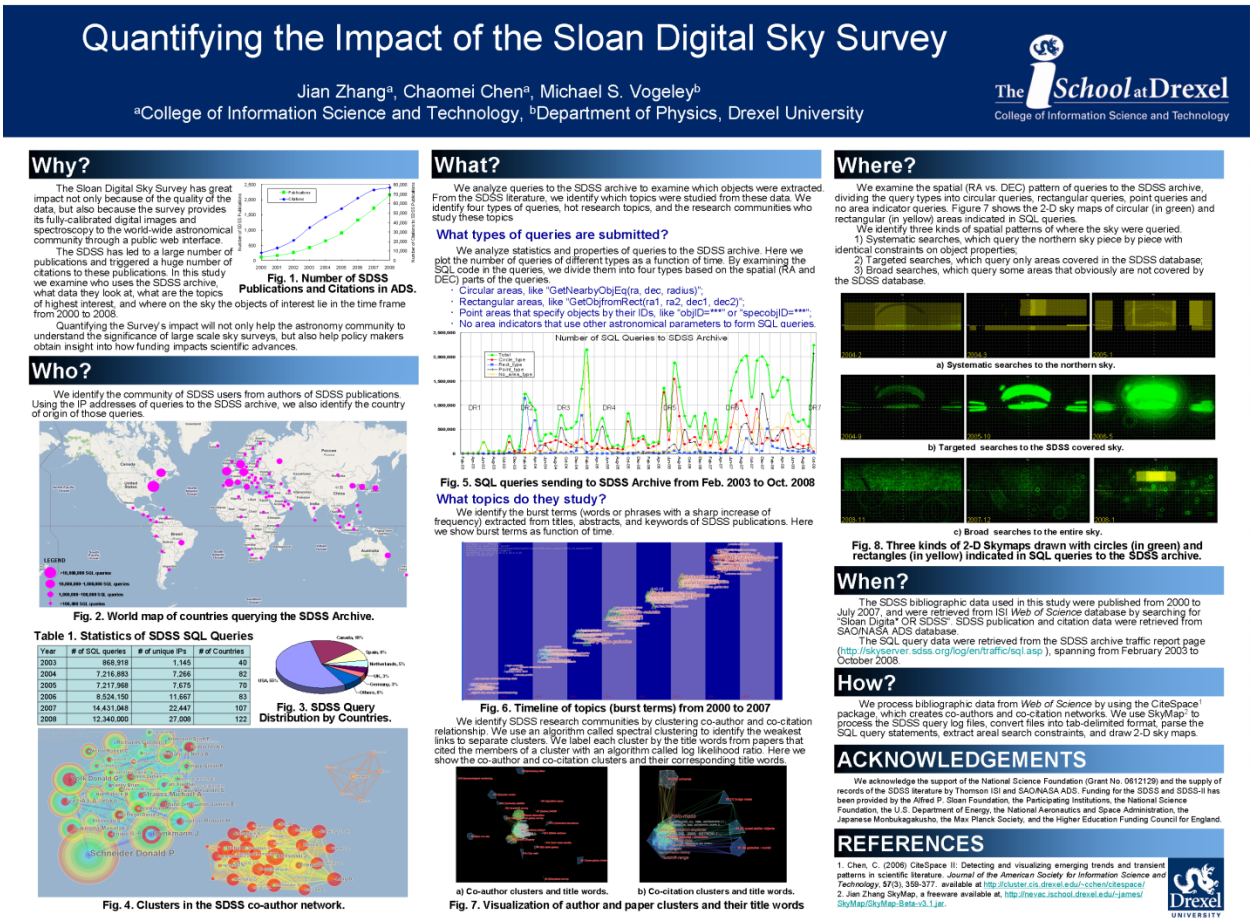
Eyles, N. and Putkinen, N. (2014). Glacially-megalineated limestone terrain of Anticosti Island, Gulf of St. Lawrence, Canada: onset zone of the Laurentian Channel ice stream. Quaternary Science Reviews 88, 125-134.

Doughty, M., Eyles, N. and Eyles, C.H. (2013). Seismic reflection profiling of neotectonic faults in glacial and postglacial sediment in Lake Timiskaming, Timiskaming Graben, Ontario/Quebec, Canada. Sedimentology 60, 683-706.

Eyles, N. Meriano, M. and P. Chow-Fraser, P. (2013). Impacts of European settlement (1840-present) in a Great Lake watershed and lagoon: Frenchman's Bay, Lake Ontario, Canada. Environmental Earth Sciences 68, 2211-2228. DOI 10.1007/s12665-012-1904-8

Data sources: As much as possible, your sources should be peer-reviewed and published in academic journals. Other legitimate sources include publications released from government agencies, textbooks, and the planet rocks website. Wikipedia, the Canadian Encyclopedia and most other websites are NOT legitimate or reliable sources. Attend the TA office hours if you are unsure about a certain source.

SAMPLE POSTERS:



Quantifying the Impact of the Sloan Digital Sky Survey

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Why?

The Sloan Digital Sky Survey has great impact not only because of the quality of the data, but also because the survey provides its fully-calibrated digital images and spectroscopy to the world-wide astronomical community through a public web interface.

The SDSS has led to a large number of publications and triggered a huge number of citations to these publications. In this study we examine who uses the SDSS archive, what data they look at, what are the topics of highest interest, and where on the sky the objects of interest lie in the time frame from 2000 to 2008.

Quantifying the Survey's impact will not only help the astronomy community to understand the significance of large scale sky surveys, but also help policy makers obtain insight into how funding impacts scientific advances.

Fig. 1. Number of SDSS Publications and Citations in ADS.

Who?

We identify the community of SDSS users from authors of SDSS publications. Using the IP addresses of queries to the SDSS archive, we also identify the country of origin of those queries.

Fig. 2. World map of countries querying the SDSS Archive.

Table 1. Statistics of SDSS SQL Queries

Year	# of SQL queries	# of unique IP's	# of Countries
2003	868,918	1,145	40
2004	7,216,883	7,266	82
2005	7,217,968	7,675	70
2006	8,524,150	11,667	83
2007	14,431,048	22,447	107
2008	12,340,000	27,008	122

Fig. 3. SDSS Query Distribution by Countries.

Fig. 4. Clusters in the SDSS co-author network.

What?

We analyze queries to the SDSS archive to examine which objects were extracted. From the SDSS literature, we identify which topics were studied from these data. We identify four types of queries, hot research topics, and the research communities who study these topics.

What types of queries are submitted?

We analyze statistics and properties of queries to the SDSS archive. Here we plot the number of queries of different types as a function of time. By examining the SQL code in the queries, we divide them into four types based on the spatial (RA and DEC) parts of the queries.

- Circular areas, like "GetNearbyObjEq(ra, dec, radius)";
- Rectangular areas, like "GetObjfromRect(ra1, ra2, dec1, dec2)";
- Point areas that specify objects by their IDs, like "objID=***" or "specobjID=***";
- No area indicators that use other astronomical parameters to form SQL queries.

Fig. 5. SQL queries sending to SDSS Archive from Feb. 2003 to Oct. 2008

What topics do they study?

We identify the burst terms (words or phrases with a sharp increase of frequency) extracted from titles, abstracts, and keywords of SDSS publications. Here we show burst terms as function of time.

Fig. 6. Timeline of topics (burst terms) from 2000 to 2007

We identify SDSS research communities by clustering co-author and co-citation relationship. We use an algorithm called spectral clustering to identify the weakest links to separate clusters. We label each cluster by the title words from papers that cited the members of a cluster with an algorithm called log likelihood ratio. Here we show the co-author and co-citation clusters and their corresponding title words.

a) Co-author clusters and title words. b) Co-citation clusters and title words.

Fig. 7. Visualization of author and paper clusters and their title words

Where?

We examine the spatial (RA vs. DEC) pattern of queries to the SDSS archive, dividing the query types into circular queries, rectangular queries, point queries and no area indicator queries. Figure 7 shows the 2-D sky maps of circular (in green) and rectangular (in yellow) areas indicated in SQL queries.

We identify three kinds of spatial patterns of where the sky were queried.

1) Systematic searches, which query the northern sky piece by piece with identical constraints on object properties;

2) Targeted searches, which query only areas covered in the SDSS database;

3) Broad searches, which query some areas that obviously are not covered by the SDSS database.

a) Systematic searches to the northern sky.

b) Targeted searches to the SDSS covered sky.

c) Broad searches to the entire sky.

Fig. 8. Three kinds of 2-D Skymaps drawn with circles (in green) and rectangles (in yellow) indicated in SQL queries to the SDSS archive.

When?

The SDSS bibliographic data used in this study were published from 2000 to July 2007, and were retrieved from ISI *Web of Science* database by searching for "Sloan Digita* OR SDSS". SDSS publication and citation data were retrieved from SAO/NASA ADS database.

The SQL query data were retrieved from the SDSS archive traffic report page (http://skyserver.sdss.org/log/en/traffic/sql.asp), spanning from February 2003 to October 2008.

How?

We process bibliographic data from *Web of Science* by using the CiteSpace[1] package, which creates co-authors and co-citation networks. We use SkyMap[2] to process the SDSS query log files, convert files into tab-delimited format, parse the SQL query statements, extract areal search constraints, and draw 2-D sky maps.

ACKNOWLEDGEMENTS

We acknowledge the support of the National Science Foundation (Grant No. 0612129) and the supply of records of the SDSS literature by Thomson ISI and SAO/NASA ADS. Funding for the SDSS and SDSS-II has been provided by the Alfred P. Sloan Foundation, the Participating Institutions, the National Science Foundation, the U.S. Department of Energy, the National Aeronautics and Space Administration, the Japanese Monbukagakusho, the Max Planck Society, and the Higher Education Funding Council for England.

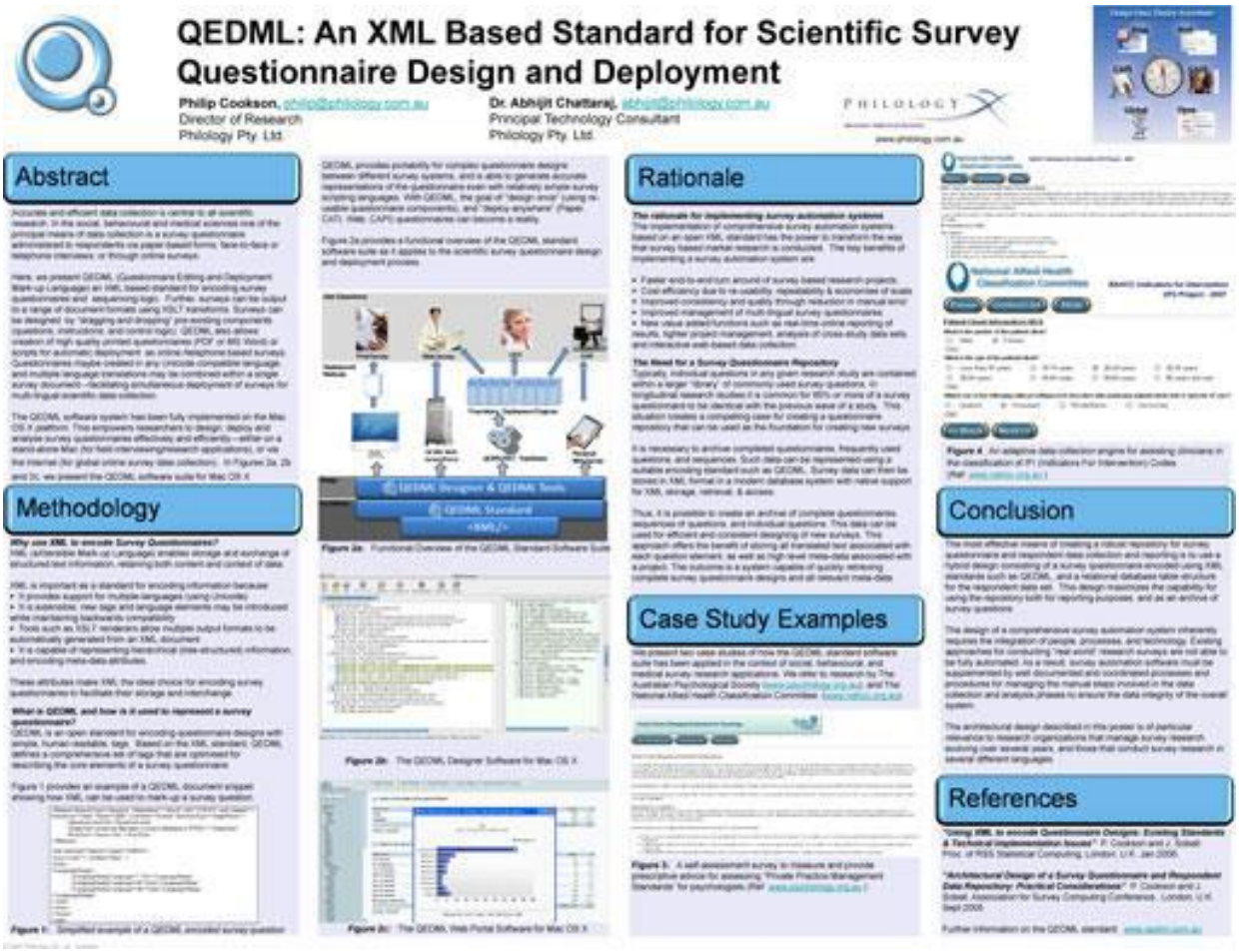
REFERENCES

1. Chen, C. (2006) CiteSpace II: Detecting and visualizing emerging trends and transient patterns in scientific literature. *Journal of the American Society for Information Science and Technology*, 57(3), 359-377. available at http://cluster.cis.drexel.edu/~cchen/citespace/
2. Jian Zhang SkyMap, a freeware available at, http://nevac.ischool.drexel.edu/~james/SkyMap/SkyMap-Beta-v3.1.jar.

Drexel UNIVERSITY

This is a great 'review' poster with a good mix of text, images and headings. Note you do not have to have these same headings. Also note that the figures present scientific data and are not merely there to take up space.

http://cluster.cis.drexel.edu/~cchen/resume/posters.html



This poster has too much text and not enough figures. Additionally the figures are too small. http://www.apple.com/ca/science/poster/

Note how the headings are different from the other poster as this one presents the results of an experimental procedure.

In general the best way to assess your poster is to solicit comments from your friends and family. Do they understand it? Is it attractive to look at and informative? Did they learn something by reading it? Out of a crowded conference does it draw people's eyes? Doing a good poster is part science and part art.

TEN TIPS FOR A SUCCESSFUL POSTER

1. **START EARLY!** Don't leave this assignment to the last minute. Preparing a good poster takes more time than you might think and requires a great deal of thought to put together in an appealing format.

2. **PROOFREAD.** Make sure you proofread your poster. Better yet have someone else read the poster to find any errors. Nothing detracts from a poster more than a typographical error in the poster, particularly in the title or subheadings.

3. **CITATIONS.** Use of proper in-text citations and references is important. If you don't think you fully understand proper in-text citations please visit one of your TA's; they are here to help you.

4. **CAPTIONS.** All figures and diagrams must be properly labelled with a figure number, caption, and citation reference. All figures should be referenced in your text.

5. **FLOW.** Is your poster material presented in a logical manner? Can the reader easily understand in what order to read your poster?

6. **BALANCE.** Do you have a relatively equal balance of text and drawings on your poster? Too much text makes your poster a bit boring and too many drawings will result in too little content.

7. **COLOUR AND APPEARANCE.** Do the colours you have selected for your poster make it easy for your audience to read? Are the figures and drawings large and clear enough to be easily read and understood?

8. **LEGIBLE.** Have you chosen a large enough font size for your audience to read the material easily? Is the font style suitable to be easily read?

9. **WELL RESEARCHED.** Have you researched you topic well using the Planet Rocks website, textbook and other reputable sources? Note: sources such as Wikipedia are not acceptable.

10. **PRINT EARLY.** Make sure you print your poster long before the assignment deadline. Leaving your printing to the last minute may result in you not having a poster printed for the conference.

11. Remember: Late posters will NOT be marked

Using the poster format provided to you, and the information provided in http://planetrocks.utsc.utoronto.ca (*selected* ***illustrations from Planet Rocks website will be made accessible in JPEG format for use on your poster***) and the course text book, choose one of the following topics:

APPROVED POSTER TOPICS:

1	How does Ontario's geology record ancient climates? Where would you go to see these rocks?
2	You have a visitor from another country. Put together a virtual field trip from northern to southern Ontario that would demonstrate to them the geologic history of Ontario over the past 3 billion years or so.
3	Canada's mineral wealth plays a large part of the economy of our country. What and where are the principal mineral deposits?
4	Where are Ontario's largest mineral deposits, what are they and how did they form?
5	How do the rocks used in buildings in Toronto reveal the geology of Southern Ontario?
6	Put together a virtual field trip to illustrate the range of sediments and landforms left behind by ice sheets in Ontario.
7	What are your favourite geology sites in Ontario and where would you most like to visit?
8	What is the origin of the salt put on our roads in winter? Where does it come from?
9	What is chemical weathering? What landforms in Ontario, often hidden from view underground, record the slow dissolving of rocks by water?
10	It has been said that 'plate tectonics' was discovered here in Ontario: by whom?
11	What is the significance of the Don Valley Brickyard (now called Evergreen Brickworks) in understanding past climates of southern Ontario?
12	Ontario is being pushed about 3.7 cm westward each year by plate tectonics: what is the evidence that rocks are stretched and stressed by this relentless motion?
13	You have friends who don't believe that earthquakes occur in Ontario: where would you take them to see evidence of past earthquakes?
14	Deep canyons were cut by glacial meltwater rivers during the last ice age. Where are they?
15	Niagara Falls is the most famous waterfall in the world but there are many others in Ontario. Where? Why are they where they are?
16	What happened at Walkerton?
17	What is a graben? Where is one in Ontario? What major tectonic event does it record?
18	Sudbury, Wanapitei, Brent and Holleford are examples of what catastrophic process?
19	How did the Canadian Shield form?
20	Niagara Falls are said to be 'retreating.' Why is this? What process is at work?
21	Explain the geology and origin of the Niagara Escarpment.
22	Ontario's geology has been assembled by plate tectonic processes over the last 3 billion years. Illustrate this by reference to specific sites across Ontario.

Marking Ruberic

	Mark	Out of
CONTENT • Thoroughness of background research • Quality of sources and references cited • Identification of key points?		**20**
ORGANIZATION • Logical structure and flow of poster (e.g., use of sub-headings and paragraphs). How easy is it to read and understand?		**10**
VISUAL APPEARANCE • Clarity of illustrations and captions • Balance between text and graphics • Evidence of creativity (use of colour etc.)		**10**
	TOTAL	**40**