How to write an abstract for a Geological Society of America conference (www.geosociety.org)

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So you've done some awesome research, and you would like to present it at a geological conference. GSA is a great choice, because in addition to the technical sessions, there are great opportunities for student networking, grad school information, and employer networking. Get started working on your abstract early – the deadlines for abstract submission are usually 3-4 months before the conference!

Select the GSA Meeting

There are two types of GSA conferences during the year – the section meetings (6 North American sections plus 1 International Section), plus the national meeting. The section meetings generally have only a couple hundred people attending. The national meeting has 7,000 people and up. A lot happens at these meetings – the most important part for most people are the technical sessions - 1) oral sessions and 2) poster sessions. Oral presentations are usually 12 minute talks followed by 3 minutes of Q&A. Poster sessions usually last a half day, although you can usually leave your poster up for a whole day.

Where to Submit the Abstract

You have two options here – either a "Topical Session", which is a session focused on a single issue or research question, or a "Disciplinary Session", which is a broad setting for any research in an area of the geosciences. Examples of Topical Sessions from the 2012 national meeting are "Modern and Ancient Saline Lakes", "Sources, Transport, Fate, and Toxicology of Trace Elements and Organics in the Environment", and "The Geology of Asteroid 4 Vesta as Seen by Dawn: Results From One Year in Orbit". These are highly focused sessions, and your abstract should only be submitted to a Topical Session if it fits well into the topic. If you have a question about submitting to a topical session, you should contact the session convenors to see if your submission is appropriate.

If your abstract isn't appropriate for a Topical Session, then it should be submitted to a Disciplinary Session. Some examples of Disciplinary Sessions are "Hydrogeology", "Stratigraphy", "Igneous Petrology", "Geology & Health", "Geoscience Education", etc.

Authorship

Normally, anyone whose contribution was important to the success of the study should be listed as a co-author. The person actually writing and preparing the abstract is usually (although not always depending on circumstances) the first author. Second authors typically include advisors/professors who supervised the research, field or lab assistants who provided key help or ideas, or other members of a research team who are working collaboratively. Some abstracts only have one or two authors, some have many. Be sure to provide co-authors a chance to edit drafts of the abstract, preferably with plenty of time before the submission deadline.

Writing the abstract
If you've never been to a GSA meeting or read a bunch of abstracts, start by reading 5-10 abstracts from previous meetings. These can be accessed here

http://geosociety.org/meetings/searchabstracts.htm

The purpose of an abstract is not to tell the reader the topic of the study, but rather it is to deliver the findings of the study. In other words, a good abstract should have all the elements found in a good peer-reviewed published paper. This includes background/introduction, methods, results, discussion, and conclusions.

I recommend the following general formula, although of course deviations may be necessary:

1 sentence: Summary statement to place your study in context, define the overall purpose or problem being addressed.

1 sentence: Summary statement of your approach to the problem – mapping done, analyses performed, methods, etc.

3-5 sentences: Meat of the abstract. Results/Data.

3-5 sentences: Interpretive discussion.

1 sentence: Summary statement listing the conclusions of your study.

1 sentence: Statement relating your study back to the "big picture" – why does this work matter? How will it impact science and society?

Paying for the Conference
Several sources of support are available:

1. http://geosociety.org/grants/travel.htm (travel grants from sections or divisions usually require that the student be presenting at the conference)
2. The days of student volunteers running the 35mm slide projectors are over, but there are still a lot of volunteer opportunities at the meetings. Student volunteers can get registration often get costs covered – check the conference website. Do it early, because volunteer slots are usually limited.
3. Connect with other students to share rooms/travel expenses, etc. http://rock.geosociety.org/forumstudenttravel/

Example abstracts

2010 GSA Denver Annual Meeting (31 October –3 November 2010)

Paper No. 165-3

Presentation Time: 8:35 AM-8:50 AM

SEDIMENTARY GEOCHEMISTRY OF DIATOMACEOUS RIFT-VALLEY FILL: EXAMPLES FROM THE PLEISTOCENE OLORGESAILIE FORMATION, KENYA

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Recent advances in micropaleontology, palynology, isotope geochemistry, clay mineralogy, and related fields provide a powerful, multi-proxy tool kit for paleolimnology and allow detailed reconstructions of paleoenvironments and paleoclimatic conditions in East African Rift basins. This study presents the results of whole-rock geochemical analyses of altered lacustrine sediment in the Pleistocene Olorgesailie Formation, Kenya, within paleosols of Member 1 (UM1p) and Member 7 (UM7p). Based on Ar/Ar dates these are constrained to ~0.99-0.97 and ~0.90-0.78 Ma in age, respectively. Several major oxides and ratios provide useful indicators of paleoenvironmental processes. For example, SiO_2 in these units ranges from 62-83 weight%, and TiO_2 ranges from 0.4-1.7 weight%. These two indicators are strongly inversely related (e.g. UM1p: $r^2=0.84$, $p<0.0001$), reflecting the competing geochemical signals of diatom productivity and preservation versus detrital input. Samples of UM1p laterally distributed over ~3km of the basin have lowest SiO_2/TiO_2 ratios to the west, suggesting a detrital source in that direction. In contrast, UM7p SiO_2/TiO_2 ratios are less variable across the field area, consistent with observations of more uniform primary lithology in the unit.

Elemental ratios such as Ba/Sr and $(Fe_2O_3+MnO)/TiO_2$ provide data on variability in post-depositional paleo-hydrolytic or paleo-oxidative conditions, respectively. Significant relationships are also found between these indicators of diagenesis (e.g. UM1p: $r^2=0.45$, $p<0.001$). Both UM1p and UM7p have higher Ba/Sr and $(Fe_2O_3+MnO)/TiO_2$ to the east, suggesting greater weathering in that direction at times of subaerial exposure. Weathering indicators are overall more severe in UM7p, consistent with its interpreted longer period of exposure and pedogenesis. These diagenetic and pedogenic conditions are of particular interest for paleoenvironmental studies focused on terrestrial flora, fauna, or hominin paleoecology, as they reflect conditions during low lake level and subaerial exposure.

Lateral variability of primary and diagenetic geochemical signatures is important to consider in the interpretation of data from sediment cores, serving to remind us of the importance of sedimentary facies models to contextualize geochemical data.

2011 GSA Annual Meeting in Minneapolis (9–12 October 2011)

Paper No. 36-11

Presentation Time: 9:00 AM-6:00 PM

BIODEGRADATION OF DEEPWATER HORIZON CRUDE OIL ENHANCED BY NA-MONTMORILLONITE AMENDMENT IN IMPACTED SALT MARSHES, BARATARIA BAY, LOUISIANA

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The Deepwater Horizon disaster released ~4.9 million barrels of oil into the Gulf of Mexico, impacting over 500 km of salt marsh in the heart of Louisiana's fisheries and tourism industries. Based on lab experiments following Spain's 2003 Prestige oil spill, Warr et al. (2009) hypothesized that high-layer charge montmorillonite can enhance microbial biodegradation rates by altering the charged environment near the cell wall. Here we test this hypothesis in the field, and extend it to the anaerobic microbial communities dominating salt marshes. In early September, 2010, we seeded ~4m^2 test plots in oiled marshwith ~0.5cm of commercial Na-montmorillonite. Enhanced smectite:kaolinite ratios in the sediment were monitored by XRD.

Serial GC/MS analyses of surface oil in the marsh between September 2010 and May 2011 show losses of *n*-alkane petroleum hydrocarbons. These persisted in the marsh as recently as May 22, 2011, consistent with the slow rate of anaerobic biodegradation. Polycyclic aromatic hydrocarbons (PAHs), which are of particular concern because of their carcinogenic effects, have also decreased during this time.

Preliminary data suggest that clay-amended sites have more advanced biodegradation, based on total *n*-alkane and PAH abundances, as well as ratios of specific compounds to more conservative consituents such as hopane. Pristane/phytane ratios have remained roughly constant (~0.75) in both control and experimental settings. Preferential loss of lower molecular weight compounds is clearly observed; PAH profiles are now dominated by alkylated homologues. In clay-amended sites, loss of lower molecular weight compounds is more advanced.

Transcript analyses of functional genes indicate that Fe-reducing, sulfate-reducing, and methanogenic prokaryotic communities are metabolically active at both control and experimental plots. Analyses are underway to identify microbiological differences among the sites. Benchtop microcosm experiments are also underway to monitor petroleum hydrocarbons, pore water chemistry, and gene expression in a more controlled environment. If successful, clay enhancement of biodegradation is potentially a useful technique in remediation of oil-contaminated sites, especially those in anaerobic environments in which natural attenuation rates are very slow.