EarthRates RCN
Workshop funding report
Please return to katharine.kirakosian@uconn.edu

1. What were the goals of your workshop? 200-300 words

Scientific ocean drilling (SOD), through the International Ocean Discovery Program (IODP) and its predecessors, has a far-reaching legacy and has revolutionized many geoscience subdisciplines. Sediment cores recovered over the past ~50 yrs have provided an extensive record of deep sea microfossil assemblages and their evolution since the Cretaceous; however, the decentralized nature of the copious SOD stratigraphic and paleontologic data has hindered advancement of large-scale marine geoscience studies. This workshop, planned as the first in a series, focused on how best to incorporate and integrate shipboard and shorebased microfossil SOD records into existing databases, primarily the Paleobiology Database (PBDB). A major outcome of the workshop was the generation of a "blueprint" for a data-entry application to the PBDB tailored for microfossil groups, utilizing the resources already developed by the Open Core Data (OCD) project and the PBDB. The conveners will incorporate this blueprint in an NSF proposal to be submitted March 2019.

Across this 2-day workshop, we brainstormed about: the best ways of preparing micropaleontologic datasets, how they will be imported from OCD, how the PBDB will be modified for microfossil data, and subsequent meetings of this group. Fraass, LeVay, and Sessa kicked-off the workshop with presentations on meeting goals and a demonstration of the PBDB. ePANDDA was demonstrated as an example of databases connected via APIs. An OCD representative presented the structure of the SOD data in OCD and the OCD API. A Flyover Country representative gave a web demonstration on how the app is used in outreach and for research, so that participants could visualize what could be possible for SOD data. Nannotax and Mikrotax representatives presented the structure of those taxonomic databases for calcareous nannofossils and planktic foraminifera, as well as their plans for future work. Breakout groups brainstormed tools that could be used for taxonomic standardization.

2. What were the outcomes of your workshop? 200-300 words

1. Data type hierarchy - the group created a list of data fields and qualifiers for a data entry tool for microfossil data. Fields were categorized as required or desirable. Fields were put into a schema (Fils). See document of hierarchy within the workshop folder.

2. A theme that emerged independently from three of the four breakout groups on Day 1 was the need for a tool to visualize multiple competing taxonomic hierarchies (and move back and forth in time through taxonomy to visualize the state-of-the-art taxonomy in 1970, e.g.) and allow the user to interact with hierarchies - comment, edit, work collaboratively with other uses on taxonomic issues, ability to choose a particular age model and apply it to certain cores. Another

idea is to use GeoDeepDive to pull images and taxonomic descriptions of taxa from multiple sources.

3. Create a similar tool as described in #2 to visualize age models. We will be assessing if Macrostrat or Neotoma are better suited for hosting age models.

4. Closely related to the above was an online discussion forum tool to allow users to virtually work together in groups on taxonomy and/or age models.

5. Action plan for senior members of the group to approach IODP leadership about getting modest funds for Neptune SB to create an API.

6. We will explore the possibility of obtaining joint NERC-NSF funding to link the taxonomy database, Mikrotax, to the Paleobiology Database.

3. Who participated in your workshop? Please identify the number of early career scientists, as well as members of under-represented groups. Also list the students and postdoctoral fellows who were involved.

Hosts:
Andrew Fraass, University of Bristol, Post-Doc
Jocelyn Sessa, Academy of Natural Sciences of Drexel University, early career, female
Leah LeVay, International Ocean Discovery Program, early career, female
Brian Huber, Smithsonian National Museum of Natural History

Participants:
Laia Alegret, University of Zaragoza, female
Barbara Balestra, American University, female
Beth Caissie, Iowa State University, early career, female
Lucy Edwards, US Geological Survey, female
Isabel Fenton, Natural History Museum London, post-doc, female
Doug Fils, Consortium for Ocean Leadership
Austin Hendy, Natural History Museum of Los Angeles
Pincelli Hull, Yale University, early career, female
Gene Hunt, Smithsonian National Museum of Natural History
Heather Jones, Penn State University, PhD student, female
Caitlin Keating-Bitonti, Smithsonian National Museum of Natural History, post-doc, female
Adriane Lam, UMass-Amherst, PhD student, female
Rosie Oakes, Drexel University, post-doc, female
Marci Robinson, US Geological Survey, female
Ellen Thomas, Yale University, female
Mark Uhen, George Mason University

Sophie Westacott, Yale University, PhD student, female
Jeremy Young, University College London

Total Number of Participants: 22
Number of Early Career: 4
Number of Post-Docs: 4
Number of PhD Students: 3
Number of Female Participants: 15
Number of International Participants: 4

4. What communities benefited from this workshop and how? Please explain. 200-300 words

The micropaleontology community benefited in that they have not had much experience with the EarthCube community, and they appreciated the presentations and discussions with Sessa, Fils, Hendy, and Uhen and the presentation by Loeffler of Flyover Country. Scientifically, they benefited from the discussion on solving these issues and being able to hear from scientists with different specialties. Having a broad group of participants allowed everyone to learn from one another and led to exciting brainstorming.

It was important to us to include a broad group of science expertise and experience levels. We strove to invite several early career, post-docs, and graduate students as we could for several reasons. Early career scientists add new ideas and can invigorate scientific discussions. It is also beneficial to this demographic to get workshop experiences and meet leaders in the field. We were very successful in attracting early career scientists: half of our meeting participants were students, post-docs, or early career scientists. Several of the participants told the conveners that they appreciated the gender balance of the workshop group, and the focus on including early career researchers. Over two-thirds of the attending participants were women.

5. Has this project lead to any conference papers, publications, or grant proposals? If so, please explain. 200-300 words

Planned grant submission to NSF EarthCube Science-Enabling Data Capabilities solicitation on March 05, 2019 by Fraass, Sessa, and LeVay.

6. **Are there other materials you would like to share with us, such as workshop agendas and presentations? If so, could you please link those below. Be clear if those are just to be shared with us or if we might also link anything on your workshop's page on our website.**

Group Photo, Smithsonian National Museum of Natural History Ocean Hall

Tweets:
https://twitter.com/CLowery806/status/1071859543162933248
https://twitter.com/SeaIceBeth/status/1071454992245157890
https://twitter.com/ForamWhisperer/status/1071434612470136832

Google Drive folder:
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