# GeoPRISMS Steering and Oversight Committee Highlights, Fall 2011

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**Introduction**

The Fall GeoPRISMS Steering and Oversight Committee Meeting focused on reviewing the recent Planning Workshops for Alaska and Eastern North America (ENAM) primary sites, and the role that community experiments might play in carrying out GeoPRISMS Science.

**NSF Update**

The FY 2012 saw 21 proposals submitted and reviewed by a virtual panel. Approximately 8-10 projects were likely to be funded, with budgets in the $150-$300K range. The next deadline for submission in July 2nd, 2012, and a new GeoPRISMS solicitation is being drawn up. Additionally, NSF has issued a Dear Colleague Letter clarifying the proposal submission process for the Cascadia Initiative.

James Beard replaced Ian Ridley as OCE-ODP liaison to the GeoPRISMS Program. OCE-MG&G is seeking a geophysicist to replace Rick Carlson. This position includes overseeing the OBS pool. Finally, the national separation of IODP facilities has been finalized: the D/V Chikyu will be operated and paid for by Japan, and NSF will fund the D/V Joides Resolution.

**GeoPRISMS/EarthScope Alaska Planning Workshop**

The joint GeoPRISMS/EarthScope workshop on Alaska was held in September 2011, following upon an EarthScope sponsored workshop on Alaska in May 2011 to discuss the deployment of the transportable array (TA). The Alaska Planning Workshop settled upon three focus areas for GeoPRISMS-related studies: the Aleutian Island Arc, emphasizing along-arc geophysical surveys and key focus studies, especially around the Amlia fracture zone; the Alaska Peninsula, emphasizing megathrust processes onshore and offshore; and the Cook Inlet Region, which offers opportunities to collaborate with EarthScope and build upon previous research. Further information can be found in Issue 27 of the GeoPRISMS Newsletter.

**EarthScope/GeoPRISMS Eastern North American Margin Science Meeting**

Two workshops on ENAM were held in 2011: a planning workshop following the EarthScope national meeting near Austin, TX in May and the Science Meeting held in Lehigh, PA in October. A summary of the former meeting can be found in GeoPRISMS Newsletter #27; a report of the Lehigh meeting is on page 4 of the #28 issue.

**Cascadia Initiative Update**

Several cruises have taken place to deploy OBS instruments in Cascadia; recovery and redeployment will take place in Spring 2012. The offshore OBS array will alternate deployments in the north and the south over the four-year deployment. A workshop will take place after the first year's data has been collected, and redeployment plans may change based on the outcome.

The GSOC is one of at least four committees with in the Cascadia Initiative. Coordination among these committees and their organizations is crucial. A similar situation exists with CI outreach programs: there are several websites presenting materials, managed by different organizations. Again, these efforts should be coordinated and updated.

Finally, NSF has prepared a Dear Colleague Letter announcing when proposals using CI data will be accepted. Open questions remain, however, regarding the initial processing of OBS data, the preparation and handling of QC, metadata, and archiving of data, and similar questions. One plan was for OBSIP to take responsibility for this, but these responsibilities may shift to IRIS, in which case the IRIS Board of Directors becomes another steering committee with a stake in the CI. Future discussions should resolve these responsibilities, and enhance coordination.

**Data Portal and Resources**

The GeoPRISMS data portal is now up and running. The primary site areas of the portal have been populated, and an expanding array of data is becoming available. Such datasets include results from Cascadia Initiative cruises, USArray stations, PBO stations, and others. The MARGINS data portal also continues to be updated, as do the MARGINS and GeoPRISMS bibliographies.

Other updates from IEDA include improvements to GeoMapApp, which now includes USGS seismic data. PetDB should include KALMAR data soon, as well. Further, the IEDA data compliance and data management plan tools are now available at IEDA for PIs. IEDA is also working toward users submitting their own data.

**Data Policy**

The GeoPRISMS Data Policy has been updated, and is available at the GeoPRISMS website (*geoprisms.org/data-policy.html*). The current policy focuses mainly on field data, and questions remain about how to handle derived data products. Standardization of these products is a particular concern, however the need to retain these products and make them available was widely recognized. It was also noted that education products should be archived as well.

**Updates from Partner Organizations**

EarthScope was renewed in 2010 and has a science plan through 2020. IRIS and UNAVCO will submit concurrent proposals to continue Operations and Management for USArray and the PBO facilities. These proposals will require "deep community input," partially satisfied by the joint GeoPRISMS-EarthScope workshops. EarthScope funding levels are fixed, however, thus any expansion must occur at the expense of something else, or through increased efficiency. EarthScope's present activities include the eastward migration of the TA (including Ontario and Quebec); EarthScope is hoping for a 1-in-4 adoption plan for seismometers on the East coast to maintain long-term coverage. An expanded GPS network based on the NOAA CORS network is in the works. Also, the State of Alaska is acquiring LiDAR along most state highways, a project that could serve as a good backbone to future Alaska projects.

The IODP science plan is now available for comment, and the NRC review was generally positive. The science plan is organized around 14 "Grand Challenges," of which Themes 3 and 4 are most relevant to GeoPRISMS. IODP and the GEO large facilities programs are under review, with the NSB decision coming in May. Guidance is being sought through a web survey, and a planning meeting will be held in Denver; attendees will be drawn from the survey participants. The current Science Advisory Structure will continue despite the separation of ship responsibilities, but a new system for drilling proposals is being implemented. NSF will take a more active role in planning ship tracks to help overcome the high costs of ship transit time. The target is to support ≈8-10 months of drilling per year. The new system should reduce proposal wait times from ≈10 years, to ≈4 years.

**Community Experiments**

Much discussion during the GSOC meeting was focused on community experiments, given the potential increasing importance of such efforts in GeoPRISMS. Examples include the Cascadia Initiative and possible geophysical experiments in Alaska and ENAM. The role of the GSOC, and the definition of a "community experiment," were prime points of discussion. It was agreed that a "community experiment" is defined as an experiment authorized or endorsed by a community workshop, with data made available as soon as possible, subject to reasonable QC and processing, and the call for participation and data access should be open and broad. Discussion continued around: how much of the GeoPRISMS funds should be dedicated to community experiments vs. individual PI proposals, the distribution of such funds between large, often geophysical, experiments vs. other disciplines, and how community proposals will review, etc. The GSOC will take a largely advisory role in defining such experiments.

The possibility of a community seismic experiment along the ENAM was also discussed. Such a project could leverage the USGS Dept. of State ECS program cruise expected in 2013, as well as industry interest in the ENAM region. The GSOC broadly supported this concept, noting that planning needs to begin quickly (A luncheon was held at the Fall 2011 AGU, to discuss this project. See summary on page 9 on this issue #28).

**Office Activities, AGU plans, Website Upgrades**

The GeoPRISMS Office has organized or co-organized 5 workshops in the last 12 months, three since March, with average attendance of more than 100. Two newsletters have been published, the 2011-2012 DLP planned, and others. GeoPRISMS will be very active at AGU, with several mini-workshops and a luncheon on the ENAM community seismic experiment, the Townhall meeting, and other events. The GeoPRISMS website continues to be developed: plans to migrate archival MARGINS content are being formed, and many suggestions from students and workshop attendees have been received. A system-wide web upgrade is also planned.

**Other Workshop Summaries**

An IODP workshop on "Using Ocean Drilling to Unlock the Secrets of Slow Slip Events" took place in New Zealand in August 2011. This workshop considered locations for drilling slow-slip events; a smaller working group convened following that workshop to develop a proposal to drill on the Hikurangi margin. This project offers the possibility of strong collaboration with GeoPRISMS.

A workshop on "Ocean Mantle Dynamics: From Spreading Center to Subduction Zone" took place in Chiba, Japan in September, 2011. This meeting focused on lithosphere and asthenosphere structure and melt migration. Using ship time efficiently and allowing for dredging of petrological samples wherever possible were emphasized, and as critical to advance the science. International cooperation was also stressed, given the ambitious nature of future projects.

**Future GeoPRISMS Workshops**

A science workshop should be organized for the Cascadia primary site to inform the community, foster collaboration across the disciplines, and to update the GeoPRISMS IPs. This meeting should be held jointly with EarthScope. Possible conveners were discussed and a GSOC representative for the convener group was selected (Note: this event was held in April, 2012).
A planning meeting for the East African Rift System (EARS) site was also deemed to be important, as the community may disengage if the issue is left too long. A related conference of the Afar Consortium is scheduled for Jan. 2012 (see report on page 12 of this issue #28), and

many projects are taking shape in the region. Further decisions on the EARS planning meeting, and the possibility of a New Zealand planning meeting, were deferred to the spring 2012 GSOC meeting.

**Initiative Reports**

Ongoing GeoPRISMS RIE Projects include:

- The Salton Seismic Imaging Project (SSIP; Hole, *et al.*) continues in the Salton Trough. This project tests ideas about the nature of transitional crust at rifted margins and the role of sediments in the creation of new continental crust.
- The northern Gulf of California study (Dorsey, Oskin) is testing the role of transtension in continental rupture. Field and seismic studies are largely complete. There appear to be two simultaneous active detachments, with sediment accumulating asymmetrically.
- The Gulf of California Synthesis project (Dorsey, *et al.*) is reconstructing the evolution of that region over the last 16Ma at 1-2Ma resolution; total slip could exceed 400km.
- The project in Northern Malawi (Shillington, *et al.*) is investigating the origin of a cluster of deep earthquakes. The usual explanation for such clusters is dike emplacement, but this would be unusual in this area. This project also features a significant outreach component to the Malawi Geologic Survey.

MARGINS SubFac and SCD:

- Boyce and Manning are developing a self-standardizing technique for ion microprobe analysis for determining volatile content in magmas.
- Reagan is mapping the geology of the Marianas forearc to understand early arc initiation, growth, and subduction initiation. Early arc stratigraphy spans 7-8 Ma and evolves from basalts to normal andesite arc magmas; he also located a peridotite-hosted cold seep supporting clams and other sea life.
- Wada (MARGINS Postdoc) is numerically modeling subduction zones to predict grain size distributions and incoming plate hydration.
- Fischer and Kincaid are performing glucose tank experiments to simulate 3D wedge flow to understand seismic anisotropy measurements.
- Spiegelman and others are developing next generation models of coupled fluid and solid dynamics to understand melt migration.
- Stern and others are continuing the SubFacSIP. They run workshops to teach users the Arc Basalt Simulator Excel package. They are also compiling a large database of petrologic data that enables statistical observations.
- Dasgupta is performing sediment melting experiments to understand the role of volatile content on melting.
- The long delayed Marianas MCS, OBS cruise of Lizarralde and Wiens is scheduled for early 2012, and will offer many opportunities for student participation.

MARGINS SEIZE and SCD:

- Naliboff (GeoPRISMS Postdoc) is numerically modeling the subduction zone outer rise to understand the development of shear zones and fluid alternation. His case-study region is Central America.
- Kitajima (GeoPRISMS Postdoc) is performing sediment deformation experiments under varying stress paths and documenting numerous empirical relationships between stress state and physical properties, notably between Vp and porosity.

- Tudge (GeoPRISMS Postdoc) is working with logs and cores to understand the petrophysics of sediments along the Nankai margin.
- Syracuse and Thurber are working on imaging the slab in Costa Rica from TUCAN data and data from regional networks.
- DeShon is imaging the shallow thrust interface beneath Costa Rica from several passive seismic experiments. She is also developing an automated picker.
- Rowe is working on fluidization in granular fault zones and the release of overpressures.
- Dixon and Schwartz have developed a GPS-seismic network on the Nicoya peninsula to image slow slip and tremor.

Continuing MARGINS S2S Projects include:

- Straub and Sheets are funded through RIE to statistically invert stratigraphic surfaces to understand stratigraphy-building.
- Kniskern (MARGINS Postdoc) is studying sediment dynamics along the Waipaoa river, adapting sediment transport models and studying shelf development. REU Dan O'Hara is working with her to simulate varying shelf widths to understand mid-shelf mud deposits.
- Roering has a project in New Zealand studying landslide effects on erosion rates.
- Nittrouer and Kuehl are preparing chapters for the Chapman S2S conference for Earth Science Reviews.

**Education and Outreach**

Student symposia were held prior to both the Alaska and ENAM meetings. These symposia offered introductory talks, brief presentations by the students themselves, and a half-day field trip. Students were also entrained in other conference activities (at ENAM, they were assigned mentors and served as breakout group scribes) and had a student-only dinner during which they could discuss the conference happenings and also learn about career paths from other researchers. Students were asked to evaluate the symposia; these evaluations were generally positive. Students were keen about the opportunities to speak and present their viewpoints, and about the symposia activities as a whole. Concerns were raised about the brief time allotted for their presentations, and difficulties in poster session scheduling.

The GeoPRISMS Office submitted two proposals to NSF about E&O activities: a TUES proposal and an REU proposal. The TUES proposal's goal was to develop cohesive components for undergraduate curricula from the MARGINS mini-lessons and to incorporate new MARGINS synthesis into the mini-lessons. The REU proposal would have established a distributed GeoPRISMS REU program similar to the IRIS REU program. As of this GSOC meeting, both proposals were pending. (The TUES proposal is still pending; the REU proposal has been declined.)

Other E&O activities were also discussed:

- GeoPRISMS' participation in a presentation about natural hazards on Capitol Hill (summarized in Newsletter #27)
- The continuing demand for the Distinguished Lectureship Program, and plans for collecting videos of presentations to post on-line.
- The GeoPRISMS Postdoctoral Fellowship Program was considered at length. The GSOC agreed that the program is an important opportunity for early career scientists, but proposed that surveys and postdoc tracking would be helpful to asses its success.

**Other Business**

Rosemary Hickey-Vargas completed her term on the GSOC, but will stay on the GEAC. A new GEAC member will need to rotate on to the GSOC. The next GSOC meeting will be held at NSF HQ in March 2012, before the next NSF solicitation deadline, to resolve any science and funding situations.