

## **GeoPRISMS Steering and Oversight Committee Highlights, Spring 2014**

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*Edited by Anaïs Férot, GeoPRISMS Science Coordinator & Peter van Keken, GeoPRISMS Chair*

### **Introduction**

The Spring 2014 GeoPRISMS Steering and Oversight Committee (GSOC) meeting provided an opportunity for a detailed discussion between representatives of the community and NSF program managers. The meeting as usual provides updates on the research at focus sites, an evaluation of impact of the phased funding model, and a discussion of new opportunities. Of specific interest this year were the plans for sharing logistics at the Aleutians and the future of the Amphibious Array.

### **NSF Update**

Debbie Bronk (Acting Director for OCE) welcomed the committee and thanked them for their efforts. Bilal Haq provided updates for NSF. EAR and OCE are both considering applicants for the Division Director positions. A new ice-capable vessel, the R/V Sikuliaq, will be available starting 2015. It is owned by NSF and will be operated by the University of Alaska – Fairbanks.

The budget for FY14 has been released and will remain flat at about 90% below the 2012 budget. The previously large mortgage in the program is down to a more manageable level but pay down on the mortgage partly induced the moderate success rate (15%) of proposals in this round. It is important for students to consider the GeoPRISMS Postdoctoral Fellowship program as well as opportunities for postdoc positions funded through EAR and OCE.

The windows of opportunity for submission of proposal for large data acquisition efforts with budgets exceeding \$1M remain defined as two year periods for specific focus sites. This year the program welcomes such large proposal submissions for Alaska-Aleutians and the East African Rift System. Funding for further data acquisition at other focus sites may still be obtained through core or other specific funding opportunities, which include Integrative Earth Systems (focusing on large multidisciplinary projects with a deadline in November), Interdisciplinary Research in Hazards and Disasters (focusing on extreme events and sponsored through GEO with a deadline in August), and the broader Partnership for International Research and Education.

### **Eastern North America (ENAM) Community Experiment Update**

Harm van Avendonk provided an update for the planning of the ENAM community experiment, which will combine marine and on-land seismic data acquisition following a GeoPRISMS/Earthscope-sponsored planning workshop in 2011. The community focused on targets near Cape Hatteras. The experiment includes active seismics (with the R/V Langseth), a few legs on the R/V Endeavor for ocean bottom seismometer deployment and recovery, and additional seismic lines on land. The community experiment will conclude with training workshops on data processing (planned for Spring 2015 at Lamont and the University of Texas at Austin).

### **Cascadia Initiative (CI) and Cascadia Open Access Seismic Transects (COAST) project updates**

Susan Schwartz provided an update on the Cascadia Initiative. This is an amphibious effort that followed a 2010 workshop to continue Earthscope and GeoPRISMS efforts at the Cascadia margin, with 27 seismic stations that reoccupied Transportable Array sites, upgrade of 232 GPS stations, and a deployment of 70

ocean bottom seismometers (OBS). The goals are to get better coverage over the margin and higher density deployments near the coast. The experiment is overseen by the Amphibious Array Steering Committee (AASC), Cascadia Initiative Team, GSOC, and the Earthscope Steering Committee. The CI includes past and future workshops discussing data quality and array deployments.

The CI will wrap up in the fall of 2015 with the final OBS pickup. The CI uses the Amphibious Array Facility (AAF; made possible through the American Recovery and Reinvestment Act - ARRA) and several growing pains have been identified, which should be taking into account when planning the future of the AAF. These include the duplication of effort and increased cost due to the participation of three institutional instrument centers (operating out of Lamont, WHOI, and Scripps), the lack of funding for quality control, and the overly complex oversight and coordination of effort.

Harm van Avendonk provided an update on the Cascadia Open Access Seismic Transects project. The R/V Langseth cruise was completed in 2012 to collect geophysical data included multichannel seismics, multibeam bathymetry, gravity, and magnetic data in a corridor off central Washington. The open participation cruise was popular and allowed the exposure of many participants to their first marine expedition. All data (including migrated stacks) are now available through Lamont and the University of Texas.

### **Aleutian Logistical Support Planning**

A number of proponents who are interested in field work in the Aleutians have been in discussion with the wider community and NSF to consider possibilities for sharing logistics and ship and helicopter resources. A GeoPRISMS-sponsored workshop was held just before the 2013 Fall AGU (see report on page 27) and was, with 90 participants, extremely well attended. The goals of this effort are to maximize the scientific impact of funded projects, reduce their logistical cost, and, as a consequence, maximize the number of projects that can be funded. The workshop participants included a strong representation of partners from the Plate Boundary Observatory, the Alaska Volcano Observatory, USGS, and the German GeoMAR. Outcome of the workshop included a focusing of the potential region where support can be provided due to limitations of helicopter flight time and fuel constraints, the strong recommendation to NSF to provide such logistical support, and a strong indication of the interest of submissions of projects that would make use of these shared resources.

Program Manager Jenn Wade provided at the GSOC meeting the exciting news that, with some of the usual caveats, NSF is planning to provide logistical support for field work in the Aleutians for part of the summer seasons of 2015 and 2016. The plan is to have marine vessels available with shipboard helicopter support. The new program solicitation (page 3) provides the details of the arrangements and the important advice to PIs to discuss any plans that may involve these resources with NSF ahead of proposal submission.

### **Amphibious Array Facility and Steering Committee**

The Amphibious Array Facility (AAF) was made possible by ARRA funding via EAR and OCE in 2009. A Steering Committee (AASC) was formed in 2010 to provide oversight and Susan Schwartz has started as Chair of the AASC in early 2014. Susan led a discussion about the future of the AAF as the Cascadia Initiative is getting into its final stage. The discussion included current restrictions regarding the locations the equipment can be deployed to and potential models for distributed use or continued collocation of the instrumentation. A community workshop principally organized by IRIS is planned for mid- to late October which will help define the future and new directions for the deployments of the equipment.

### **AGU and workshop summaries**

The GSOC discussed the GeoPRISMS-related sessions at AGU 2013 and the outcome of the mini-workshops. There was a large number of well attended mini-workshops this year, with the highest participation ever for the Aleutian logistics mini-workshop. This Sunday afternoon workshop had the principal goal to discuss whether shared logistical support would be feasible during the upcoming field seasons. On Sunday morning a workshop focused on international opportunities at the Kermadec-Le Havre Trough that builds on significant work that already has been done in this region. Separate evening workshops discussed opportunities in the East African Rift System (EARS) and potential for collaboration for research on the interactions between solid Earth and Surface Dynamics. The first part of the EARS discussion focused on logistics, capacity building, infrastructure development, and training opportunities. Many countries are involved and there is a great opportunity for significant expansion of research activities, but significant logistical difficulties exist. The second part of the EARS workshop focused on the potential for synoptic studies, database integration, and future data collection efforts, potentially under the umbrella of a community experiment. The final evening workshop focused on Earth Surface Dynamics with a focus on modeling and opportunities for collaboration between GeoPRISMS, the Community Surface Dynamics Modeling System (CSDMS), and the Computational Infrastructure for Geodynamics (CIG). For more detail on the mini-workshops see the reports on page 26.

### **GeoPRISMS at other meetings**

The studies of Exhumed Terranes (ExTerra) was highlighted at a workshop that was funded by EAR and organized by Sarah Penniston-Dorland and Maureen Feineman before the 2013 Florence Goldschmidt. The workshop provided an opportunity to highlight research activities and opportunities to an international group of scientists and students. A white paper detailing these opportunities came out of this workshop and is available through the GeoPRISMS website.

### **Partner Organization Update**

#### *EarthScope*

Program director Greg Anderson provided an update on the NSF perspectives on Earthscope. The Earthscope National Office is looking for a new host for 2015. Former GSOC and GEAC member Maggie Benoit has joined NSF to work on Earthscope projects. Budget expectations for Earthscope are flat and at 2005 levels. The discussion further focused on the current status of the Earthscope instrumentation efforts, including the Flexible Array projects on the East Coast and Transportable Array deployments in Alaska (expected to be completed by summer 2015).

#### *IODP*

Program directors Tom Janacek and Jamie Allen provided overviews of the new directions that have been taken in the International Ocean Discovery Program (IODP), where the US participates with 25 other countries to develop research targets for the JOIDES Resolution, Chikyu, and mission-specific platforms. The proposal evaluation process has been streamlined with a single science evaluation panel. Planning for approved projects partly follows geographical clustering to avoid long voyages in between missions. The deployments for the JOIDES Resolution during FY15-18 are principally in the Indian and southern Pacific Oceans with potential overlap only with the GeoPRISMS New Zealand focus site. The Chikyu may visit the MARGINS focus sites in Costa Rica and Izu Bonin. Suggestions as part of the Chikyu+10 meeting in Japan that are relevant for GeoPRISMS also included the Nankai seismogenic zone, slow slip at the Hikurangi Margin, and drilling to the Moho.

The GSOC also discussed the suggestion for a Subduction Zone Observatory which would initiate a multi-disciplinary, large-scale and amphibious observatory along the length of the Eastern Pacific (from the Aleutians to Tierra del Fuego).

### **Planning for Theoretical and Experimental Institutes (2015, 2016)**

The current three year plan for GeoPRISMS meetings include two Theoretical and Experimental Institutes (TEI) which are MARGINS-style meetings to allow for taking stock of ongoing efforts, highlighting critical gaps in discovery, and planning for further research efforts. A SCD TEI is scheduled for Spring/Summer 2015 followed by one for RIE in Spring/Summer 2016. Each TEI will be a 2.5-3 day meeting with a separate one day student symposium with an expected participation of 100-150 researchers. The preparations for the 2015 TEI will need to be started this summer guided in part by GSOC.

### **Initiative Updates and New Projects**

Based on input from the community, the GSOC members discussed updates and outcomes of projects that are either funded through MARGINS/GeoPRISMS or are closely aligned with its scientific goals. This included new projects in the Mid-Atlantic and Eastern US, Eastern Africa, Nicaragua, Cascadia, Alaska-Aleutians, and a few synoptic studies. Maureen Long (with input from the Earthscope National Office) also provided a focused update on Earthscope activities.

### **GeoPRISMS & MARGINS Data Portal**

Andrew Goodwillie provided an update to the Data Portal efforts in GeoPRISMS and MARGINS. This effort aligns with the Integrative Earth Data Applications (IEDA) initiative which disseminates geophysical and chemical data/samples. He discussed GeoPRISMS-related activities which included workshops and AGU Townhalls, improvements in the GeoPRISMS database, and results from Data Rescue awards to convert analogue to digital data. Andrew highlighted various new data sets in the GeoPRISMS Data Portal including high resolution bathymetry, heatflow, and seismic data. He also showcased a 3D printed model of Mount St. Helens and suggested 3D printing may become a standard option in GeoMapApp.

### **Education and Outreach**

The current office has seen a reduction in funds dedicated to E&O in particular due to the cut of the requested E&O staff position. The Office will continue to support well-established outreach activities but new projects will be limited. With the help of the GeoPRISMS Education and Advisory Committee (GEAC), the Office will continue to explore opportunities to acquire additional funding for E&O activities.

### **Distinguished Lectureship Program**

The Distinguished Lectureship Program continues to be popular with 66 applications in 2013 (up by 14 from 2012). Each year, a group of 8 scientists provides 3-4 lectures across the country to discuss GeoPRISMS-related science or talks geared to a more general audience. Deadline for applications for the 2014-2015 season will be August 1, 2014.

### **AGU Student Prize**

The \$500 awards for best poster and oral presentation went to James Muirhead and Megan Newcombe for their presentations at the 2013 AGU, with honorable mentions to Suzanne Birner, Ryan Gallacher, Stephanie Grocke, and Jiyao Li. The winners were selected out of more than 80 applicants whose presentations were evaluated by judges from the GeoPRISMS and MARGINS community.

### **MARGINS Mini-Lessons**

Juli Morgan provided an overview of the MARGINS mini-lessons project for which she received funding from the NSF through TUES (Transforming Undergraduate Education in Science, Technology, Engineering, and Mathematics). The project has led to the development of four groups of scientists and educators who have initiated the development of webinars and mini-lessons that are attractive for undergraduate institutions. The mini-lessons use new insights gained and data obtained by MARGINS and GeoPRISMS funded research and provide important updates and extensions to textbook material. The Science Education Resource Center (SERC) at Carlton provides invaluable advice in the development of the mini-lessons and provides an archive for the lesson materials ([serc.carleton.edu/margins/collection.html](http://serc.carleton.edu/margins/collection.html)).

### **Website and Social Media**

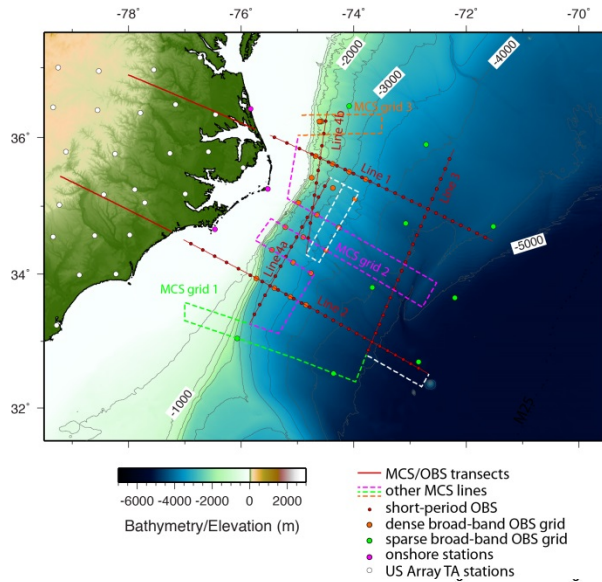
GeoPRISMS continues to be active on Facebook and Twitter with posts regarding student and early career opportunities, AGU and other meeting activities, and job opportunities. The Office maintains a listserv and provides logistical support to various initiatives for registration and dissemination of reports and white papers. The website has moved from Rice to a new service provider and over this summer the Office will implement a full overhaul of the website with changes in design, format, and layout.

### **Newsletter**

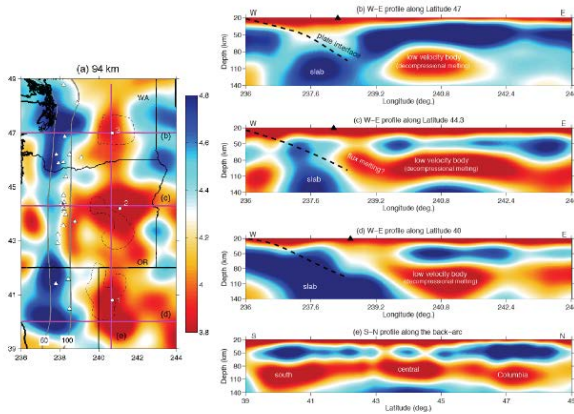
The Spring newsletter (which you are reading now!) was briefly discussed. The newsletter layout has seen major changes and there will be a change in distribution of the newsletters: the Spring issue will be science-heavy and distributed by regular mail. The Fall issue will be more focused on announcements leading up to the Fall AGU Meeting and will be distributed in electronic format only.

### **GSOC and GEAC rotations**

Rob Evans, Bradley Hacker, and Susan Schwartz are rotating off the GSOC this year and are thanked for their considerable input over the last three years. Andrew Goodliffe is rotating off the GEAC and is thanked for his continued positive contributions to the GEAC and the Mini-lessons project even while taking on a Deanship back home. The GSOC discussed potential candidates for the GSOC and GEAC, as well as the importance of members from the international community and industry.



ENAM Community Seismic Experiment data acquisition map. The data acquisition involves the offshore and on land deployment of seismometers that will record land and marine seismic sources and gathering of marine multi-channel seismic data with the R/V Marcus Langseth. More information about the objectives and design of the ENAM CSE can be found on the GeoPRISMS website at [www.geoprisms.org/enam/community-seismic-experiment.html](http://www.geoprisms.org/enam/community-seismic-experiment.html)



Segmented Low velocity anomalies along the Cascadia back-arc that correlate with volcano centers (marked by triangles). (a) Horizontal slice at depth of 94 km ( $V_s$  in km/s). The magenta lines mark the profile locations in (b), (c), (d), and (e), respectively. (b–d) W–E profiles across the back-arc anomalies. The y-axis has the approximate same length scale as the x-axis. The Juan de Fuca plate interface at depths of 20–100 km from the model of McCrory et al. (2004) is projected. (e) S–N profile along the back-arc low-velocity anomalies. The length scale of y-axis is exaggerated two times of the x-axis. All data used in this study are available on the GeoPRISMS Data Portal. From Gao and Shen (EPSL, 2014).