

GeoPRISMS Steering and Oversight Committee Highlights, Spring 2013

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Introduction

The Spring 2013 GeoPRISMS Steering and Oversight Committee Meeting focused on revisions to the GeoPRISMS Implementation Plan for the East African Rift System (EARS) primary site, plans for the upcoming GeoPRISMS Planning Workshop for the New Zealand Primary Site, finalization of the phased funding models for GeoPRISMS primary sites, and planning for the upcoming AGU Meeting.

NSF Update

GeoPRISMS Funding and Planning: NSF funding is uncertain, due to the sequester; NSF budget may be reduced 3.5-5%, but some NSF programs could undergo bigger cuts than others. With the ongoing Continuing Resolution, all programs are holding back 20% of FY2012 budget. NSF hopes to have a better idea of the FY14 budget in July or August 2013, and optimistically will get back some of the budget.

The FY2013 GeoPRISMS budget is essentially spent out. The FY2014 budget will be mortgaged by about \$2M; currently there's an existing mortgage of about \$850K. The funding situation is worse than in previous years and NSF will experience lean years in the foreseeable future, which means greater scrutiny of budgets, tougher competition for funds, fewer planning workshops, and less travel, including for NSF staff. Virtual workshops and meetings are encouraged.

The Phased Funding Model for the GeoPRISMS Program has been implemented by NSF in time for the July, 1 2013 GeoPRISMS solicitation. The revised solicitation will provide advice to proponents for submitting large field data acquisition proposals (>1M\$), defining "windows of opportunity" for such large experiments to limit the number of expensive projects funded at one time. This funding model encourages self-organization of the PIs and advance coordination through community discussions. Preparatory work, data analysis, data synthesis and thematic studies will continue to be considered for all sites each year. The windows of opportunity for large field data acquisition experiments are defined by site and can be found on-line. NSF personnel offered that the plan will be flexible when necessary, e.g., to take advantage of unique opportunities, and the model can be revised over time.

Now that the planning workshops are complete, GeoPRISMS can begin organizing Science workshops, critical to maintaining and engaging the broader GeoPRISMS community. Community coordination of research efforts can take place in smaller venues, e.g., at AGU. NSF can provide technical assistance organizing virtual meetings and webinars if that would be helpful.

Update from the EAR Division

Wendy Harrison, the new EAR Division Director, highlighted the importance of the phased funding model in these lean budget times. Expected cuts will affect new awards, but will not be taken out of existing awards. The approach of focusing and organizing community effort is really important when budgets are tight. GeoPRISMS and the GSOC can help by making sure that the science is excellent and visible, and by reaching out to the community. Harrison emphasized her desire to continue to increase the EAR contribution to GeoPRISMS, but the ongoing budget crunch makes this impossible to guarantee. Harrison also provided a brief update on EarthScope, noting the increasing collaborations with GeoPRISMS. NSF addressed a mandate from the Office of Management and Budget to retain some TA

stations in the Eastern and Central US as part of a permanent monitoring network. These stations will have to be replaced when the TA is deployed to Alaska. EAR and EarthScope are keen to engage a broader community of science when the TA moves to Alaska, to more fully leverage additional interest in the remote station locations. Sites will be of interest to the Arctic Program, and Atmospheric Science. Strong communication between EarthScope and GeoPRISMS will be very important.

GeoPRISMS Planning Meetings and Outcomes

EARS Implementation Plan

The updated Implementation Plan (IP) for the East African Rift System (EARS) Primary Site has been completed, following the workshop held in New Jersey in October 2012. The draft of the IP was distributed to the community in March 2013. The IP outlines how to best address the key questions in the Science Plan in the areas identified by the community:

- The Eastern Rift is identified as the primary focus area (from Turkana to the Tanzanian Divergence), where most of research efforts funded by GeoPRISMS are expected to take place.
- “Collaborative Targets of Opportunity” recognize ongoing efforts by US and international researchers, which can be leveraged to address GeoPRISMS science questions. Key areas include the Afar, the Western Rift, and the SW Branch.
- Potential synoptic investigations are identified across the entire rift. These are not to build a “back-bone” experiment but rather to fill in gaps in current coverage (e.g., geophysical, geochemical, and climatological) and to encourage efforts to synthesize existing data.
- The EARS IP can be used as guidance for proponents to seek GeoPRISMS funding as well as other sources of funding through other programs like SEES and IES.

The IP for EARS does not include detailed descriptions of ongoing or planned projects, but the community is encouraged to contribute brief synopses of past or ongoing efforts to the GeoPRISMS website, to inform other investigators about existing data and leveraging opportunities. Synopses should provide links to project websites giving up-to-date details, and include contact information.

An important follow-up to the EARS planning workshop will be for GeoPRISMS representatives to attend a meeting in Africa to share the IP with African scientists and help develop collaborations with US scientists – maybe during the year before the window of opportunity opens for large experiments.

Substantial credit was given to the students at the workshop, who developed a rigorous and systematic methodology to identify the target area for GeoPRISMS focus that best addressed most of the questions of the science plan. The workshop-wide vote pretty much agreed with the matrix prepared by the students. The conveners of the meeting were keen to emphasize the students’ contributions to this process of site selection, demonstrating that they are an integral part of the GeoPRISMS community.

GeoPRISMS Planning Workshop for New Zealand Primary Site

The GeoPRISMS Planning Workshop for the New Zealand Primary Site will be held in Wellington, New Zealand, April 15-17, 2013, sponsored jointly by NSF GeoPRISMS, the New Zealand Ministry of Business and Employment, the Consortium for Ocean Leadership, GNS Science, and the New Zealand Earthquake Commission. Out of 220 applicants, ~150 participants from the US, Europe and Asia will attend. A key outcome will be a portfolio of potential studies, and how best GeoPRISMS can contribute. A student symposium will be organized the day before the workshop, followed by an afternoon field trip to the Wellington Fault. [A report on the New Zealand Planning Workshop is on page 5 of this issue.]

Other Meetings and Mini-Workshop Summaries and Plans

ExTerra @ Goldschmidt – August 2013

GeoPRISMS will co-sponsor a mini-workshop in association with the Goldschmidt Conference, ExTerra 2013: Understanding Subduction through Studies of Exhumed Terranes, on August 24-25, in Florence, Italy. The meeting will focus on the study of subduction-related metamorphic and igneous rocks, to identify a common set of scientific targets and centralized tools to move the discipline and community forward. [A report on the ExTerra Workshop is on page 10 of this issue.]

Cascadia Marine Geophysics

About 40 scientists attended this mini-workshop, held the day before AGU att. The objectives of this meeting were to review the ongoing projects, coordinate efforts and plan future marine work in the Cascadia primary site, following the acquisition of several large-scale onshore-offshore geophysical data sets in 2012. Major projects, NSF proposal opportunities, and short contributions “from the floor” were presented to the audience before opening the discussion among the participants.

IODP in SCD Studies

About 25 scientists attended the IODP Opportunities in GeoPRISMS Subduction Studies mini-workshop on Thursday evening. The main objective of this workshop was to stimulate scientists’ interest to write drilling proposals for the Aleutians, Cascadia and Hikurangi Margins, in a way to best address the key questions of the SCD section of the GeoPRISMS Science Plan. A series of short talks reviewed the different aspect of the SCD initiative as well as potential drilling targets. [A report of the IODP mini-workshop is available in the Spring 2013 GeoPRISMS newsletter.]

Early Career Investigators Luncheon

GeoPRISMS sponsored jointly with EarthScope, an Early Career Investigators (ECIs) Luncheon organized by the IRIS ECI working group, and attended by about 60 graduate students, postdoc fellows and early career scientists. The luncheon was designed to discuss research interests and explore potential collaborations based on shared GeoPRISMS and EarthScope focus sites and initiatives, and for ECIs to network. Breakout sessions on primary sites-related topics were led by senior scientists. [A report of the ECI Luncheon is available in the Spring 2013 issue of the GeoPRISMS newsletter.]

Chikyu+10

Susan Schwartz, serving on the Chikyu+10 steering committee, provided a brief update on this meeting, to be held in Tokyo, Japan on April 22-24, 2013. Five themes to be discussed at the meeting are of direct interest to GeoPRISMS: active faults, continent formation, and sediments secrets. Keynote talks will be focused on the last ten years of drilling and the science objectives for the next years.

Ocean Bottom Seismograph Workshop

This workshop, to be held in Redondo Beach, CA, Oct 21-22, 2013, will focus on achievements and needs relating to OBS studies. GeoPRISMS may sponsor a mini-workshop on the OBS activities in Cascadia and the future of the amphibious array.

Community-Based Research Programs

COAST Survey

Harold Tobin reported on the R/V Marcus G. Langseth cruise MGL1212 COAST (Cascadia Open-Access Seismic Transect), a 2D seismic survey carried out in July 2012 off the coast of Central Washington. The

PIs were Steve Holbrook (Univ. Wyoming), Graham Kent (Univ. Nevada) and Katie Keranen (Univ. Oklahoma). A project goal was to build the science community with skills and interests in carrying out marine multi-channel seismic (MCS) field programs. The science party was selected by open application; 13 graduate students, 2 post-docs and 2 faculty were selected out of 60 applicants. About half of the participants had never been aboard a research vessel or participated in a marine seismic reflection survey. Excellent quality multichannel seismic data, as well as gravity, magnetic and multibeam bathymetry data, were acquired to characterize the potentially tsunamigenic and seismogenic plate boundary. These data were made available on the LDEO website within 2 months post-expedition, and were the subject of several AGU presentations in 2012. Proposals are being submitted to work with the data.

ENAM Community Seismic Experiment

The community proposal for an ENAM community seismic experiment was submitted in July 2012, for data acquisition and training workshops on MCS processing and active source OBS work. There is interest in expanding the survey with industry support, but no guarantee.

Cascadia Initiative

Susan Schwartz presented an update of the Cascadia Initiative activities. Year 2 expeditions have been completed, recovering OBSs from Cascadia year 1 deployments in the northern area, and deploying in the southern area. Several proposals have been submitted to NSF to work with the year 1 data. Planning for year 3 is underway, and an open call for participation will be issued on the GeoPRISMS website for graduate students and early-career scientists. NSF has asked the CIET to submit a proposal to fund the 4th year Cascadia acquisition. Further community discussions will take place at upcoming meetings about the year 4 deployment and proposal plans.

Future of the Amphibious Array

Geoff Abers reported on the planned discussion to be held during the EarthScope National Meeting in May 2013 in Raleigh, NC, to advertise the Cascadia Initiative and discuss possible plans for the amphibious array. A one day workshop might be organized with the OBSIP Workshop to be held in California in October 2013. These forums would provide opportunities to bring the community together to discuss the first 2 years of the Cascadia Initiative, to assess data quality and any associated problems, and to discuss the future of the Amphibious Array Facility. A community workshop is still needed in ~2014 to plan the future of the amphibious array.

Alaska Community Expedition: GeoPRISMS work in Alaska and the Aleutian arc presents logistical challenges due to the remote locations and limited time window for field work, so advance coordination is critical. PI cooperation and resource sharing can reduce the costs of field operations for all. NSF and members of the community are exploring the concept of a community expedition in the Aleutian arc, in which a ship will transit along the Aleutian arc over a two-year time span. Ship availability and timing would be announced in advance to allow members of the community to write proposals to take advantage of the ship, and to coordinate their efforts. [See page 16 of this issue to sign up for the related AGU mini-workshop.]

GeoPRISMS Data Portal Update

Andrew Goodwillie provided an update of the GeoPRISMS Data Portal and recent improvements in capabilities. Users can now narrow their search by primary site, type of data, etc. An interactive map provides links with details on the data. GeoMapApp is updated every 6 months, with the addition of new

data, bibliographic references, and much more. [A report on the GeoPRISMS Data Portal is on page 17 of this issue.]

Education & Outreach Updates

MARGINS Mini-Lesson Project

The NSF TUES project to develop new MARGINS Mini-Lessons was funded in September 2012. The project aim is to synthesize and incorporate MARGINS research of the last decade into upper level undergraduate geoscience curricula, and to show how MARGINS science has changed our understanding of continental margins. The project launched in February with a series of webinars offering the highlights of the four initiatives. [A report on the MARGINS Mini-Lesson project is on page 19 of this issue.]

AGU Student Prize

GeoPRISMS awarded two \$500 prizes for the Outstanding Student Oral and Poster Presentations on GeoPRISMS or MARGINS-related science at AGU Fall Meeting. The office received 35 applications for poster and 15 for oral presentations this year. Maryjo Brounce (University of Rhode Island) and Samer Naif (UC San Diego) received the oral and poster presentations respectively. Erin DiMaggio (Arizona State University), Kristina Walowski (University of Oregon), Brad Pitcher (Oregon State University) and D. Sarah Stamps (Purdue University) were rewarded for their work with an honorable mention. [Biographies of the prize winners and honorable mentions can be found in the Spring 2013 issue.]

Distinguished Lectureship Program

The Distinguished Lectureship Program (DLP) continues to be very popular, with 53 applications received for the 2012-2013 season, 7 from new schools. Of these, 34 institutions are scheduled to receive speakers for the 2013-2014 academic year. The GeoPRISMS Office is creating a DLP library to share with the community by collecting speakers' presentations from hosts and speakers. Several DLP speakers have visited museums for public lectures, which is strongly encouraged.

Social Media

GeoPRISMS has a Facebook page to promote GeoPRISMS activities and opportunities, and a Twitter feed. Like us on Facebook to keep up with the latest goings on with the program, including DLP activity, AGU plans, upcoming workshops, and GeoPRISMS related science.

Initiative Updates & New Projects (GeoPRISMS & Related)

New and ongoing RIE Initiative projects include:

- Matt Pritchard, James Gaherty, and Donna Shillington continue a GeoPRISMS-funded project on early-stage rifting in Northern Malawi, after the December 2009 swarm of earthquakes. A related continental dynamics project in the area is building a network of 6 GPS stations around the Lake Malawi to record opening rates across a couple of segments in the rift. Rob Evans and colleagues (Canales, Atekwana) collected MT data in Botswana and Zambia. Next June they will conduct seismic work in the Okavango Delta to relate the displacements to the early stage of rift propagation to the south.
- Elizabeth Johnson and Esteban Gazel have been funded to work on Cenozoic basalts in Eastern North American Margin (ENAM). Combining geochemical, spectroscopic, and

petrologic observations and modeling, their study will constrain the structure and the evolution of the mantle lithosphere.

- Also relating to ENAM, but funded by EarthScope, Maureen Long and Maggie Benoit and others will carry out a passive seismic study from Virginia to Ohio, providing an integrated view of the dynamics from the mantle to the surface. The EarthScope funded SESAME project (PIs Wagner, Fischer, Forsyth, Hawman) also lies in an area of interest to GeoPRISMS.

New and ongoing SCD Initiative projects include:

- Building on a previous study, David Chadwell has been funded to install two more seafloor geodetic stations (for a total of three) along the Cascadia subduction zone, to understand megathrust slip behavior.
- Paul Johnson, Evan Solomon, and Robert Harris will work on the thermal structure of the Cascadia Subduction Zone in the Gray's Harbor area, to refine models for the locked portion of the megathrust fault.
- Yang Shen and Haiying Gao are developing a velocity model of the Cascadia subduction zone using OBS data, and will do full-wave ambient noise tomography and receiver function analysis.
- Work on the iMUSH project to study the architecture of the magmatic system beneath Mount St Helens will begin in summer of 2014, involving Ken Creager, Heidi Houston, John Vidale, Alan Levander, Adam Schultz, Paul Bedrosian, and Geoff Abers.
- Adam Kent, Robert Duncan, and Anita Grunder are studying the explosive volcanic history of the Central Oregon Cascades to probe the changing state of the Neogene Cascade Arc.
- Doug Wiens and Dan Lizarralde completed a collaborative study of mantle serpentinization to assess the water budget through the Mariana Trench.
- Brian Jicha, and Sue Kay are carrying out on $^{40}\text{Ar}/^{39}\text{Ar}$ and U/Pb geochronology, and geochemical and isotopic analyses, to characterize the earliest stages of the Aleutian Arc.
- Peter Kelemen is investigating plutonic rocks in the intra-oceanic Aleutian Arc.
- Peter van Keken, Bradley Hacker and Geoff Abers are funded to study dehydration in the mantle wedge correlated with V_p/V_s ratio in Cascadia and Alaska.
- Taryn Lopez is funded to conduct a geochemical study on the source, flux, migration and seismic signature of volcanic fluids of the Katmai Volcanic Cluster – Alaska.

Ongoing S2S and related projects:

- Neal Blair is studying the carbon cycle of subduction margins (Hikurangi, South Alaska and Cascadia), to determine the nature of organic Carbon transported to the trench.
- Kyle Straub and Ben Sheets are reconstructing ancient passive margin dynamics by relating geomorphic and stratigraphic surfaces using combined laboratory and field studies.

Partner Organization Updates

Community Surface Dynamics Modeling System (CSDMS)

GeoPRISMS has recently partnered with the CSDMS Program to co-sponsor a Geodynamics Focus Research Group (FRG), co-chaired by Phaedra Upton and Mark Behn. They are seeking community input to prepare a 5-year plan for this FRG. An AGU session on surface-geodynamic feedbacks, along with a GeoPRISMS mini-workshop, will provide opportunities for community input to define the directions of this cooperation.

EarthScope

EarthScope's US Array facility is moving to the East Coast. A variety of GeoPRISMS-related FlexArray experiments are underway. There will be discussions of interest to GeoPRISMS at the next EarthScope National Meeting (ESNM) in May 2013, including an ENAM breakout session before the ESNM, and a pre-meeting workshop to discuss the next MT-TA footprint.

IODP

Tom Janacek provided an update about the International Ocean Discovery Program (IODP), which has been renewed, at least for the short term. Platform ship tracks are being planned in advance for more efficient scheduling. NSF ODP funding for basic research, including site surveys for future drilling, is currently only ~\$1-2 M, extremely low, due in part to the high costs of maintaining the facilities, among other reasons. The new IODP framework has changed, including:

- The three platforms (Chikyu, JOIDES Resolution, and Mission-Specific platforms) are now funded independently, and overseen by independent facility boards, which will schedule their use. Berthing exchange arrangements will continue, enabling international participation.
- The Advisory Panels still exist, and will be available for all platform providers if they care to use them. These include: proposal evaluation panel, site characterization panel, and safety and environmental protection panel.
- A small support office will take care of proposal processing, provide logistics support for the panels and the website. The office will start to run by mid-September.
- A new international IODP Forum, chaired by Keir Becker, will provide guidance to the platform providers. The new forum will have no fiscal authority.

GeoPRISMS Office Activities & Updates

The GeoPRISMS Office is closing out the EARS workshop, while also organizing the next planning workshop in New Zealand. Ongoing activities include website and listserv announcements, fielding applications for upcoming workshops and other events, building a presence on Facebook to inform about GeoPRISMS-related activities, and setting up webpages and application forms for upcoming activities and meetings. The Rice GeoPRISMS Office is preparing for the office transition, and helping with post-transition activities while the new GeoPRISMS Office at the University of Michigan, directed by Peter van Keken, gets up and running.