

Summer Education & Diversity Retreat
Colorado State University - Physics Conference Room
Tuesday, August 17, 2010
9 am - 4:30 pm

Meeting Minutes

9:00 **Welcome and LSOP Activity**

LSOP's theme for 2010-2011 is "It's about Time!" Our icebreaker activities were related to sound and Pulfrich Pendulum. LSOP had a booth at NewWestFest this weekend on the "Sound of Science."

9:15 **Introductions and Brief Updates (3-5 minutes each)**

SueEllen Campbell and John Calderazzo: Have revamped the ChangingClimates website (<http://changingclimates.colostate.edu/>). 100 Views of Climate Change. Which includes short videos on topics around climate and climate change. Videos are on YouTube and iTunes. Campbell and Calderazzo led the 2010 Graduate Student Colloquium on communication to non-specialists and a multidisciplinary look at climate change. Working with Kathleen Dean Moore, ethicist, who will be running a town hall meeting at the First United Methodist Church on November 14, 2010.

Scott Denning: CMMAP got renewed and we received great comments from the written reviews and our site visitors. For the next 5 years we need to focus on Assessment. Brian Cobb has been added to the team as our Assessment Specialist. We had an amazing summer with our undergraduate interns, teachers for the teacher course. Partnered with CSU's Alliance Program. The External Advisory Panel Meeting was held after team meeting and received some good feedback.

Mike Lacy: In his assessment of LSOP, Mike is documenting the knowledge base of students before and after LSOP school visits. Interesting find is that kids spend about 15 seconds at an exhibit.. 5 times more time is spent at the atmos exhibits, in particular the tornado one. Looking to make changes to some exhibits to see how much longer kids stay. Will get together with Brian Cobb.

Little Shop Of Physics (Brian, Sheila, Nisse, Paul): 2010-2011 theme "It's about Time" will be visiting 40 more schools this year. Working to change exhibits to increase students interaction time with exhibits. Two day teacher workshops at Haskell Indian Nations University and Pine Ridge this past summer, will be at NSTA and the Colorado Science Convention in October. Need ideas.. for Time, Weather and Scale TV shows. They are building a franchise... junior LSOP at Ogallala Lakota College. Paul Williams is on sabbatical with LSOP from Austin Community College, Physics teacher.

Silvia Canetto: Three levels of diversity research: elementary, undergraduate, graduate. The elementary study examining FOSS kits has been completed. At the grad

level, study looks at the perception of students and faculty in the fields of Atmospheric Science and related sciences. More data needs to be collected, but there have been numerous presentations based on this work. Looking for places to publish this work outside of the psychology field.

UCAR/W2U (Becca, Randy, Raj, Roberta, Susan):SOARS: research, mentoring, inclusive community, financial support. SOARS proteges are really interested in hands on science and would love to work with LSOP. UCAR: lots of new content for K-12 community, new graphics and teaching tools describing how the atmosphere changes. Plan to continue discussions with John and SueEllen on CMMAP video. 25% of traffic on windows is on CMMAP related pages. Will have a Severe Weather exhibit with DOW at the Expo on the National Mall in October.

Michele Betsill: Michele and her graduate student Linse Anderson have been studying CMMAP scientists and the policy interface. Their work has been presented at the American Political Science Association Meeting. Michele worked with Jackie Gushue, a CMMAP Intern on a project about smart grids. Samantha McGraw a 2009 intern who worked Michele is now starting at CSU pursuing a M.A. in Political Science, Michele will advise her.

Brent Vaughn: CMMAP's new Events Coordinator hails from Knoxville, TN. Brent will work on CMMAP travel and participate in some of the Education programs, in particular CGCC. He previously worked at the Big Brothers and Big Sisters of Knoxville as the Events Manager.

Tom Windham: Will be working with CMMAP as a consultant for diversity. He is a psychologist and worked in Boulder Valley high schools. He started the SOARS program and later went to NSF. Focus was to make science and engineering more attractive to diverse students.

Dave Randall: Renewal went well. We are FUNDED. Thinking about sustainability and the legacy of CMMAP. Excellent work so far for E&D. Would like to focus on how the E&D programs have a life after the end of STC funding.

10:15

Policy outreach: Where are we headed?

Michele asked the team if they could give her some guidance and direction for where the outreach to policymakers should go. Two ideas of internal capacity building and external. With internal capacity building: CMMAP could help people get the tools need for policymaking or externally we could determine who the potential policymakers are that can use this information. More broad than the research focus of CMMAP. Maybe along the lines of resources or vulnerabilities.

Pam @ California Climate Center: could come to Berkeley, have a breakout session on what policymakers care about.

Dave mentioned that our CMMAP grad students are interested in human impacts and policy. It's not clear how to find a career path that can do both. From the point of view of helping students, we could put together information on what type of careers there are, sources of funding (e.g. writing proposals), session on grad students focused on this for the team meeting. Possibly hold a professional development seminar for grad students at the team meeting.

What could CMMAP do to allow this structure for our students interested in policy? Internships for graduate students? Maybe CMMAP can do this... persuade AGU to do this? Develop a partnerships with the Western Water Assessment... offer background behind these fellowships. Jorge Ramirez received an IGERT on water resources.. this could be a good place for some of this info.

Find scientists who can be ambassadors and sit in with policy organizations. Target graduate students and climate scientists. Maybe talk with planners... related to population growth. We can invite them in to give a talk @ the team meeting.. try to engage and see what comes out.

Action Items:

Susan will reintroduce Michelle and Cindy Schmidt (UCAR Office of Government Affairs) to discuss climate and public policy strategies.

Michele will:

- Invite Pam Doughman from the California Energy Commission to the Berkeley team meeting. Pam could give a plenary talk on California's efforts regarding water planning and climate change. She could also meet with grad students in a break-out session to discuss her experience working at the boundary between science and policy as a professional development activity.
- Collect information on climate-related "boundary organizations" to share with graduate students and perhaps explore internship opportunities.
- Collect information on organizations working at the interface of climate and water and explore opportunities for partnership and engagement.

Diversity Study: How can we make the results more visible?

What are the graduate students experience? What is happening at this stage? Silvia has been presenting this information at APM. Silvia has been asked to present her research at a STEM conference.

Silvia needs to do more with ATS students to gather more data. Possibly publish this work in BAMS and EOS. One publication so far in the Journal of Women and Ethnic Minorities in Science.

How can we translate the results of this research into practice? What are the implications for mentoring? How to capture this at the K-12, undergraduate, and graduate levels?

NESTA publishes a journal that focuses on what teachers cause use right away. Can this be used in the classroom? Maybe write an article on best practices...

Can this be used for Graduate Education and Mentoring?

Are we willing to re-allocate resources to application? or best practices?

Can we extend the undergraduate and graduate study to the SOARS proteges? They would be a good sample of diverse undergrad and grad students in atmospheric science.

Best practices.. Concrete Recommendations.. Applications of these results in a way that in the end of 5 years and show that we took these results and put this work to practice

Action items:

Silvia to discuss work with Raj (meet with SOARS) and LSOP. Send script to Melissa to get more ATS graduate students involved in the project.

Review and discuss implications of Silvia's research on LSOP and W2U-UCAR EO activities (Susan and LSOP)

K-12 Education

Windows to the Universe

E&D resources and partnerships at UCAR

W2U was started in 1995 at the University of Michigan and then moved to UCAR. As of March 2010, W2U was moved to NESTA after Roberta received funding from the Hewlett Foundation. W2U has is now a non-profit organization. New redesign of the website will be launched soon. <http://windows2universe.org/>

Starting to leverage resources with UCAR E&O that they have related to climate and weather. Working with LSOP and ChangingClimates. Wanting more development related to time, spatial scales, modeling. Current focus on middle schools but some tweaking would allow for use in the HS level. Starting to become more impact focus.. re: natural disasters, a sense of place.

Action Items:

Set up meeting in Late September between LSOP, UCAR EO, W2U to scope the connections and opportunities in leveraging the LSOP theme - "It's all about time" and the UCAR/W2U themes of time, scales, weather, and climate. (Susan arrange)

Determine if John and Sue Ellen would like to be in this meeting and/or have another one at UCAR/NCAR about videos. (Susan)

Plan for testing of LSOP and W2U new resources with K-12 and public visitors at the NCAR Mesa Lab with Teri Eastburn, Brian, Sheila, Nisse, Randy, Becca, Roberta, Randy, and Susan (Susan)

Inquire with Rich Clark, PI, about CMMAP inclusion as a partner in proposal in development for NSF STEP solicitation for undergraduate climate course collaborative planning activities (Raj)

11:30 **LSOP Tour and assessment results**

11:45 **Lunch** (informal working groups)

12:30 **Community Based Participatory Research**
CSU Community Readiness Project
Next steps for CMMAP

See handouts from Barbara and Pamela regarding their Community Readiness Project.

Next steps regarding CBPR: develop a plan, determine our specific issue, and our audience.

1:45 Higher Education (Skype with Howard)
Development of Climate Concept Inventory
Assessment of Higher Ed programs: What should we do?

Howard suggested the idea of developing a Climate Concept Inventory, a standardized instrument for testing and evaluation of students knowledge about climate.

Q: What do we want people to know about climate and atmospheric science?

Q: How does CMMAP do this?

Roberta suggested the need to get backing from agencies. Have agencies help you with the legitimacy of the idea.

To get started we need to assess textbooks, syllabi, courses at CC and CSU. Then we can ask questions.. are we teaching in ways that are effective, test materials in different settings, undergraduate courses at 4 year schools, community colleges, advanced placement courses.

Action Items:

Howard will start working on Climate Inventory.

3:00

K-12 Education (Skype with Dave S.)

Connections with School Districts

CGCC

School districts have been making cuts and Lisa Pitot (science coordinator for PSD) lost her job. PSD is looking for a new Science Coordinator. Jan Lanting is still working for Thompson School District. Dave Swartz is on sabbatical from RMHS. Jan is a member of a consortium of 16 schools that meet monthly at Adams12. We could attend the meeting and talk about CMMAP E&D activities.

CGCC: We discussed moving conference to the Fall. Possibly late October would work best for school districts and would enable teachers to integrate the material into their curriculum. There are a few science meetings/conferences that would be a good place to market CGCC (e.g. STEMMapalooza (oct. 8 and 9), Colorado Science Conference (nov 18)). Disseminate information to the Colorado Science Education Network.

Start marketing for CGCC EARLY!

Possible organizations to partner with: Alliance for Climate Education (ACE), HS environmental clubs

Venues: Thompson School District or Poudre School District high schools, could use Teacher works days.

Ideas: Have a competition for a high school to host. Award a \$3000 prize. Since CGCC will be earlier in the year - perhaps CGCC should provide ongoing activities as a means of staying engaged with schools and students throughout the year. Have multiple conferences: a Northern/Southern Colorado conference or an Eastern/Western Slope conference. Reach out to environmental clubs at schools

Action Items:

Brent will put together a planning subcommittee from E&D team to work out details regarding CGCC.

4:00

Future of CMMAP E&D programs: Where are we going?

We need to write proposals and bring in more \$\$\$\$ for E&D programs.

Look into establishing a non-profit organization. Can be used to spin-off some programs (e.g. LSOP, teacher course, etc). Need more discussion around non-profit. Both Roberta and Howard have started non-profits. Many different business models, but low cost high volume is a possibility.

Teacher course: What are the costs for the teacher course? Need to make it systemic (build it into PD days in the districts) for it to last beyond STC funding. What is the scale of course? How often do we want to have it. Our course is different than others because our graduate students are teaching. Giving them teaching experience that not all grad students get.

Future E&D retreats: Held the day before the team meetings. Include an integration of scientists and graduate students. We will have 3 E&D retreats each year (2 team meetings and 1 during the year). People who can't be there in person can participate via telecon.

Education and Diversity Oversight Committee Meetings: Will continue this fall. Melissa will find out what times/days work best for Committee Meetings.

Action Items:

Write more proposals! Look over the draft submitted by Raj. Provide suggestions.

What do we want to see different because of CMMAP? What's our goal?

Draft Overall Goal of CMMAP: USABLE CLIMATE SCIENCE (Raj Pandya)

To ensure that individuals and communities (especially those communities that are underserved by climate research and individuals who are part of groups that have been historically under-represented in science) understand climate change and its impacts and use that understanding to in personal and community decisions.

Goals by Educational level	Activities	Diversity	Assessment	CBPR
K-12: students understand climate change and use that understanding in personal choices	LSOP; CGCC; W2U; Teacher training	Are we reaching representatives from all communities and engaging many different communities? Do the activities work for students	Are students revising/adding to existing knowledge; Are they able to apply that knowledge to their lives	Do these strands at various levels support community-based participatory research and education? Can community
Undergrad: Climate change is understood as something relevant to careers in and out of science	Climate for Poets; Climate Change @ CC; Internships	from different groups? Are there choices and options relevant to all communities?	Can students connect climate change to career paths? Do students understand key concepts and connect them to their lives?	priorities inform the educational activities and evaluation? Can these priorities work into course design? Can working with communities be part of graduate and
Graduate School: a future scientific workforce with the skills and knowledge to engage in and support community planning around climate change adaptation and mitigation	Graduate Training; Fellowships in "boundary organizations"		Do graduate students have skills to work successfully with communities? Is there a market for these skills?	undergraduate experiences?

4:30

Adjourn

Action Items:

We will meet in late October to report back on the action items determined during the E&D retreat. Melissa will send a doodle with possible dates.