

URGE Deliverable #4: Policies for working with communities of color
3/19/21

Audit of previous interactions with communities of color at our organization:

Research:

An informal survey of students and postdocs suggests that there are scattered efforts within ongoing research projects to directly involve and interact with communities of color. This area, particularly with regards to fieldwork, stands out as an opportunity to build durable relationships with these communities, as fieldwork tends to happen repeatedly in the same locations. There do not appear to be resources available at Caltech for fostering these types of lasting relationships, and the responsibility tends to fall on willingness of individual researchers to do so (largely, as far as we can tell, driven by early career scientists).

Research in the GPS division is often focused on global, long-timescale, somewhat abstract problems. There are exceptions - some research groups work on environmental chemistry and air pollution both in the LA area and abroad, as well as on local seismicity and earthquake hazards. There are remarkable analytical capabilities and financial resources available within GPS at Caltech, that with slight shifts in research priorities, could be directed towards solving scientific problems specifically relevant to communities of color. A recent course in GPS, Topics in Environmental Justice, Fall 2020, produced a white paper that offered paths forward for how Caltech could incorporate this into its ongoing sustainability research. This white paper highlighted a crucial point: while many members of the Caltech community are aware that it is a necessity to work directly with communities of color, especially locally, that work is very much in its nascent stages and it will take a shift in research priorities to accomplish it. Caltech GPS is a leader in addressing global environmental problems - why can't it become a leader in solving local, societally-relevant problems motivated/directed by local communities of color as well?

Fieldwork sites show varying degrees of commitment to engaging with communities of colour. Some efforts are listed below:

- Namibia: The Caltech group invited members of the Geologic Survey of Namibia to join for the first few weeks of fieldwork. They were able to discuss science and local issues. They were not included in the data analysis, but were added to the acknowledgements section. This collaboration was able to occur because the PI had done fieldwork in Namibia since the 90s and had friends in the Geologic Survey. The community interactions have not gone well because there is an issue of trust in Namibia with

regards to all geologic research. People think that all geologic research is for the purpose of resource mining. To mend some of that, this Caltech group is hosting a virtual conference focused on all aspects of science from that region of Namibia (hydrology, ecology, deep time geology). The conference will (hopefully) not only be international researchers, but also workers from the Geological Survey of Namibia, geology students and academics from Namibia, and locals.

- Death Valley: The main interactions here have been with land management agencies. However, the student has made classroom visits to a local school, which is 40-50% native students, to explain the scientific concepts of the research. More work needs to be done on the proper entities to contact to get in touch with a Tribal Nation. These procedures are currently unclear to research groups and this inhibits efforts of engagement. Despite this, the student is incorporating land acknowledgements into publications and presentations. One thing the student is making an effort to try is using features in a paper first by their indigenous name and then their English given name in parentheses: for example, mafic plutons of the Pamidu Toiyabe (otherwise known as Sierra Nevada Mountains, California). However, it is unclear how reviewers will respond to this and the student would like to understand if indigenous people prefer this.
- Four Corners: This group is involved with methane satellite data, but needed to conduct ground measurements of methane in many parts of tribal land in the US. Their interactions were again limited to permit acquisition. However, they did hold a public forum in Four Corners where people could come and ask questions. They also invited an indigenous scientist to speak at this forum in terms of translating questions and answers but also providing his perspective and knowledge on the subject. Future work could definitely involve making satellite data of tribal regions more accessible to indigenous people, as it provides insight into air quality.
- E/V Nautilus: This student works aboard this research ship and regularly interacts with the local community to provide ship tours for schools/people in the area, and brings aboard people of the area they are researching, including local Natives. For the E/V Nautilus, local names are given to equipment used on the expeditions in Native waters, and data is sent back with the representatives. They also do ship to shore live talks during the cruise so that local communities can see and ask questions about the ship. More effort could be put towards having language translations of the work, with the recognition that finding and funding an interpreter are obstacles in the way of providing interpretations of research in different languages.
- Turks and Caicos, South Africa: Other than land acknowledgements, these groups have been unable to engage with the community. They have reached out to several tribal representatives & organizations to see if there are ways to interface with those communities, and have not been able to successfully move forward in those conversations. It is clear that Caltech as an institution needs to create contacts in field sites so that individual scientists can interface with communities more easily.
- Pescadero Basin, in the Gulf of California, Mexico: The primary meaningful interactions with local communities is through collaborating with scientists from local institutions on this project (including Centro de Investigación Científica y de Educación Superior de Ensenada, Universidad Autónoma de Baja California, and Universidad Autónoma de

Baja California Sur). This collaboration is both at the PI level and at the student level-- a grad student (of colour) from UABC came and spent a couple months in the lab at Caltech, and she is scheduled to join the Caltech group at sea later this year. They also did a 2018 cruise to the region on the R/V Falkor, which has an extensive built-in outreach mission, including live streaming of dives-- and so interfacing with the local communities also takes the form of ship-to-shore educational outreach to local schools, in Spanish (which they did). The science highlights videos that Schmidt produces about the cruise are also bilingual and subtitled in whatever language is not the one spoken. Another connection to the local communities of color is in the naming of features in the new hydrothermal vent field we discovered-- with the assistance of local collaborators, all the features are given names in one of the local indigenous languages. Associated with one of the other Orphan Lab field sites (in Costa Rica), local collaborators there hosted a symposium on the research, at UCR, right before a recent cruise, which was a way to highlight the work at the local university and to build further connections. The UCR collaborators also support informational signs for the general public around the waterfront in Puntarenas, highlighting work that's been done on shared projects and describing the undersea areas for the local people.

- Many faculty and students in planetary sciences do research involving telescopes built on indigenous land in Hawaii (Mauna Kea Observatory) and Chile (ALMA). ALMA runs outreach programs involving natives. There is no record of Caltech faculty or students becoming involved in such programs or otherwise initiating their own interactions.

Outreach:

There are a few outreach efforts that have either ancillary or concerted efforts at interacting with communities of color within GPS and the broader Caltech community. One is through Caltech's Seismo Lab, which conducts earthquake science, risk, and preparation outreach across schools in LA, including in communities of color. Another is the Caltech RISE program, where Caltech graduate students and postdocs can serve as weekly tutors in STEM fields to students from the Pasadena Unified School District (PUSD). PUSD stands out as somewhere more local outreach efforts with communities of color could be focused, with an 85% minority student population¹. A number of programs specifically aimed at connecting Caltech scientists with PUSD students are run by the Center for Teaching, Learning, and Outreach (CTLO). A few examples include:

- The Visiting Scientists program where Caltech graduate students and postdoctoral scholars teach science to K-5 students at Madison Elementary.
- Science Nights which brings hands-on science demonstrations to science nights at local schools.
- Eight different summer programs aimed at pre-K through 12th grade students³

The CTLO conducts pre- and post-program surveys to assess the effectiveness of its programs and engages in regular dialogue with PUSD teachers and administrators to adapt programs to particular needs of individual schools and/or grade levels. The discourse between the CTLO and PUSD seems essential for providing the necessary resources to the PUSD community.

Coursework:

A survey of instructors who have run field courses in the last couple years found that none recalled any significant interactions with communities of colour occurring recently during field courses, either because the courses were run on public lands, or they did not encounter communities of colour. The trips are mainly run on public lands controlled by the Bureau of Land Management (Ge 121/136). Courses (Ge 136) taught in Baja California, México are coordinated through and run jointly with the Centro de Investigación Científica y de Educación Superior de Ensenada, Baja California, México.

Fellowships:

The WAVE fellows program is aimed at providing research experience to students from the following backgrounds: “underrepresented minorities, women (in certain fields), first-generation college students, geographically underrepresented students, educationally or financially disadvantaged students, and students with disabilities.”² This program started six years ago and provides fellowships for around 25 students per year. In addition to providing research experience, one goal of this fellowship is to create a community among the students that they can sustain throughout their scientific careers. The program sends out two surveys each year to check in with alumni and learn more about their endeavors after participating in the program. One main goal of WAVE is to recruit future Caltech graduate students from more diverse backgrounds, but these numbers are not publicly available. The program is actively seeking to reach a wider group of potential applicants by increasing attendance at different types of conferences, such as annual meetings of the National Society of Black Engineers (NSBE) and the Society for Advancing Chicanos/Hispanics and Native Americans in Science (SACNAS). No specific guidelines are outlined for working with WAVE fellows and the statistics (regarding each year’s participants and alumni) are currently not publicly available.

Overall, there appear to be some efforts on the individual level to engage with communities of color in each of the aforementioned areas. Caltech does not have any institutional guidelines or resources for these types of interactions.

Outputs of Discussion about deliverable

After conducting this audit, our pod discussion centred around attempting to propose some first steps to mending the uneven and insufficient community engagement listed above:

- We thought of creating a form that listed several concrete ways to engage with local communities and having anyone going into the field sign this document. We then realized a much bigger problem: there is currently no a) formal record and then b) centralized record of people leaving the institution for any of the above purposes and as such, the way to institute such a form became a central component of the discussion.
- We discussed creating a form for people to self report their fieldwork before and after, listing simply the community members reached and organizations contacted. However, some members of the discussion felt that self-reporting is not a high yield process and that this additional step of reporting would dissuade people’s interests in creating these

outings. Currently, no records of fieldwork are kept and there is resistance to implementing such a requirement.

- It was brought to our attention that graduate students conducting fieldwork found themselves in the position of starting from scratch with community engagement, and emailing local community members themselves, which did not always result in responses. A database maintained by the division of organizations that work with communities of color would help remove the burden placed on individuals who are being asked directly to represent their communities while simultaneously providing appropriate contacts for Caltech researchers.
- Another simple measure would be to add fieldwork progress reports (Including locations, activities, and community engagements) to academic progress meetings that are already scheduled on a regular cadence and officially reported on.
- We then came to the realization that it would be critical to have graduate students and all members of the department trained in how to conduct good outreach if it is to become a cultural norm of doing research in this division. The possibility of hiring a departmental DEI officer has come up on multiple instances, both within our pod meetings and in other DEI-related division meetings. This possibility has always been met with resistance at a departmental and faculty level, often under the guise of financial considerations. Because of this, a once-annual workshop on ethical outreach from an external expert, or someone in the CCID, was suggested. This may be insufficient for the high standard we are expecting of community engagement from members in this division, but it would constitute progress nonetheless.
- In general, members of this pod have noticed a disconnect between the willingness to engage with communities of color in research efforts between early career scientists (e.g. students and postdocs) and faculty members. Because students and postdocs generally do not have the power to enact department or university level formal changes, we contemplated ways students and postdocs could use collectivism and existing, more casual means of enacting cultural changes. For instance, while it is imperfect, we considered asking TAs of fieldwork courses to a) accumulate ethics resources and b) conduct sessions on them in any fieldwork courses they teach, as TAs are graduate students and graduate students and postdocs seem to be the most passionate about instituting this kind of change at Caltech. These resources could then be disseminated broadly within GPS by means of department-wide emails, discussions at social hours, and other informal communication methods. Both with regards to engagement with communities of color and other cultural shifts advocated in previous (and future!) deliverables, early career researchers can use these mechanisms to begin to change departmental culture, even as official department and university level changes occur slowly and with limited scope.

References

- ¹<https://www.pusd.us/site/handlers/filedownload.ashx?moduleinstanceid=12689&dataid=19141&FileName=2019-20%20Districtwide%20Norm%20Day%20Enrollment%20Trend%20by%20Student%20Ethnicity.pdf>
- ²<http://www.sfp.caltech.edu/programs/wavefellows>
- ³<https://ctlo.caltech.edu/outreach/summerprograms>