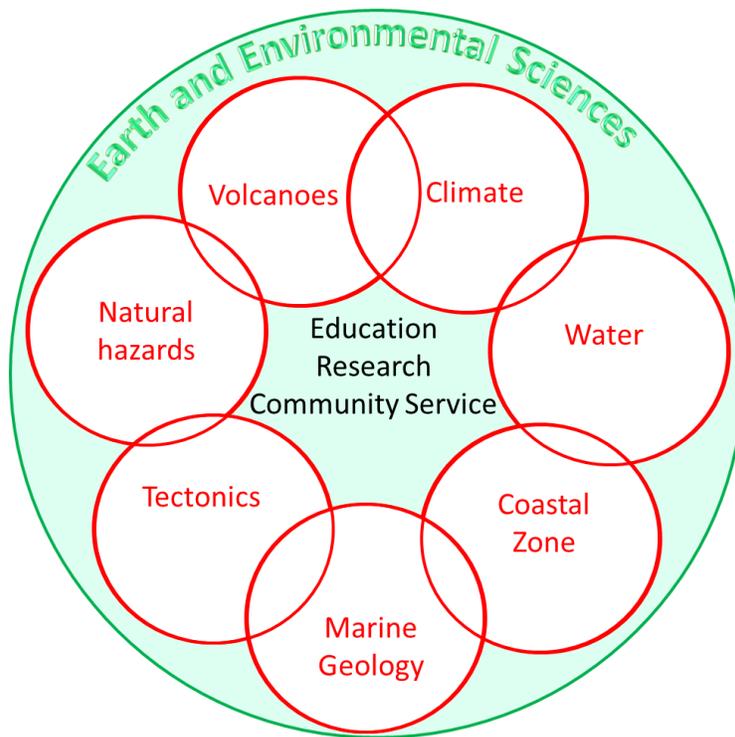




UHM GG Department Strategic Vision, April 2018

GG Mission (circa 2008): To identify and solve fundamental and applied problems in the Geosciences; to acquire new knowledge about Hawai'i, the Pacific Basin, and Earth; to serve society by teaching and training future geoscientists, teachers, and citizens; and to be a principal resource for objective geologic expertise to the state of Hawaii.



Core academic and research topics in GG

Intro

GG department is a vibrant center of instruction and research in SOEST with the longest continuous history of any academic program in the school. Formed in the 1950s and folded into SOEST when it formed in 1988, GG is the focal point for scientific studies of the Earth on the UHM campus. It has world class facilities for geochemical research, and well-established facilities for geological and geophysical studies in many areas. Programs of excellence are mostly focused around these areas

- Volcanoes
- Coastal Zones
- Hazards
- Water
- Climate
- Marine Geology
- Tectonics.

The location of the University provides unique advantages for research and learning in these areas so that excellence has naturally developed around them. However, many other efforts of note on individual topics beyond these areas also occur in GG.

GG supports experiential learning with field courses, field trip and lab-based courses unlike any other programs in SOEST, which supports an engaging learning environment, but also presents financial and infrastructural issues.

Historical Perspective and Current Status

GG has an impressive legacy of research discoveries, innovations in Earth Science education, and former students working in jobs in service to the people of Hawaii, the private sector, and academia.

As a 60 year-old program, and in an environment of both blurring lines between the traditional disciplines in the Geosciences, and challenges for how higher education and research is funded in the modern era, GG has been considering what forward-looking steps to take to transition into a very well-funded unit that is producing at or near capacity per faculty member in the areas of student enrollment and financial support of its research programs. The challenges from our history and status are not unique to GG, but are expressed uniquely in GG given the centrality of its degree programs to department identity and activities, a mostly unstructured (individual-driven) research portfolio, differing perspectives on the proportion of more traditional and more leading edge topical focusses of its degree programs, and a non-academic programs leaning of the dean's office

Research Challenges:

The frontiers of research in the Geosciences sit mostly at the intersections and overlaps between traditional disciplines (e.g., Geology, Physics, Chemistry and Biology) and their application to societal needs (e.g., hazards, resilience, climate change), resource utilization (water, food, energy), and improving scientific workflows (data discovery, access and utilization) with less emphasis in the funding arena on purely academic pursuits. GG has made inroads into this area but also has a significant number of faculty who are struggling to keep their traditionally-focused research portfolios funded and relevant, despite the overall conceptual excellence. As such, per-capita, inflation adjusted research support numbers are currently among the lowest in the past 4 decades.

Education Program Challenges

The frontiers the **education** include content and delivery method. GG has made significant inroads into new instructional modalities (online, active learning, flipped courses) that are starting to increase student numbers, but has a rather bimodal viewpoint on the faculty regarding the relative importance of traditional geological skills (e.g., mineralogy, structural geology, field mapping) and the frontier areas of cross-disciplinary, environmental and applied topics that many successful Earth Science programs in the country have adopted. The BA degree was recently refocused onto non-traditional topics and is growing in students' numbers, at the expense of the still traditional-leaning BS degree. While both degrees have their dedicated adherents, the student numbers are too small to be sustainable, and indicate immediate need to revise and recruit, in order to grow these programs to student numbers that are considered sustainable for a 20-person faculty at UHM. Attempts to refocus the undergraduate degree programs onto a set of agreed skills illustrated by topical content, a significant national trend in the discipline) have thus far been ineffective, but are one likely strategy for future progress. Other strategies under discussion involve stronger cooperation and perhaps some amount of degree blending between the three SOEST programs that currently have undergraduate degrees (ATMO, GES and GG), but this will require a process that aligns common goals and themes, provides clear incentives to faculty, and is led by a proactive and incentive-based approach from the Dean's office.

Analysis and future efforts:

GG as a unit has had a difficult time discussing these issues. Most of the discussion over the past 3 months on strategic planning per se has been about how to allocate recently-vacated faculty positions into topical areas and less about how to transition the department and to use these positions in that context. GG has been discussing low student numbers and dropping research revenues for 4 years, but has yet to nucleate around proactive plans to reverse these trends. Initially, many faculty did not appear to accept the precariousness of the situation, assuming the resource shortage is/was due to UHM and SOEST budget decisions. GG is not alone in SOEST in this regard. Some faculty are of late coming to appreciate that the power to change the circumstances lay in our hands, not in convincing the budget makers to revert to an older and less student-centric budget model. This change in faculty mindset should help in making progress on these topics in the future.

There are many potential areas for future growth in GG. The choices are up to the unit as to which to pursue. Strong success will mostly likely come from areas with widespread faculty acceptance. The target areas some in GG have been promoting include:

Research:

1. Re-establish a culture where extramurally funded research is respected and expected of ALL faculty.
2. Look for opportunities in new multi-disciplinary research areas, with enhanced interaction between GG and other SOEST units.
3. Define strategic areas of research growth and focus faculty recruitment there.
4. Support our most successful researchers and push our least successful researches harder (or rebalance workloads).

Education:

1. Modification of undergraduate degrees to reach a wider set of interested students
2. Focus enrollment growth on increased student population diversity and providing of STEM education to under-represented populations in science.
3. Position GG more strongly in UHM undergraduate programs by offering relevant General Education courses. (already underway).
4. Incorporate more research and experiential learning into the undergrad degrees.
5. Grow the graduate program through content-targeted MS programs of interest to self-funded students.
6. Seek sources of support for TA ships, to support grad students in the program and to support the growing student numbers in lower division GG physical and online courses.

Partnerships and the future

GG has nascent partnerships with international partners on shared degrees that we hope to grow, and strong partnerships with other parts of the school (especially HIGP for graduate degree programs). GG wishes to increase the strength of these bilateral relationships in the future, recognizing that the structure of the school does not presently support these things with innovative and mutually beneficial resource and credit allocation. Two obviously places to start are:

- stronger cooperation and perhaps some amount of degree blending between the three SOEST programs that currently have undergraduate degrees (ATMO, GES and GG).
- Better interaction between GG for research institutes for research initiatives and grad student opportunities.