External Program Review: Sonoma State University BA in Geography
Dr. Jerry Davis
Chair, Department of Geography & Environment
Director, CSU GIS Specialty Center
San Francisco State University

Introduction
I received the Self Study and other materials from the Department of Geography & Global Studies, and visited the campus on Friday, 27 March 2015. On that date, I was able to meet with all four tenured faculty, one lecturer, the Dean of the School of Social Sciences, the Provost, and eight Geography students. It was a very productive visit, and I came away with a very positive impression of the department and its program. I have worked with some of the faculty before through the events of the CSU GIS Specialty Center, which I have directed for 20 years or so, and have always found that Sonoma State Geography faculty have stood out as exceptional, despite the small size of the department. Their areas of expertise and approach to research has long exhibited significant innovation, and their enthusiasm for their subject areas I would expect to play out in successful teaching.

This report includes a review of the self study integrated with observations made during my site visit. I’ve organized it around the sections in the self study, with observations and interpretations scattered throughout, followed up by a series of recommendations.

Discussion of Sections of the Self Study
The self study was organized into five sections: (1) The Curriculum, (2) The Student Body, (3) Faculty, (4) Research Centers, and (5) Facilities. Each section started with a general description, consideration of how well the 14 goals from the 2008 assessment were or were not met, followed by additional accomplishments during the review period, and wrapped up with an action plan of goals for the next review period. In this discussion, I will provide an additional perspective and evaluation of these accomplishments, focusing on certain areas as appropriate. Many of these goals and accomplishments need no further discussion beyond what is provided by the self study.
Curriculum

In the area of curriculum, the three goals from the previous review were primarily in the area of learning objectives, and all were achieved. Each of these goals – increasing the visibility of learning objectives, aligning paper formats through web-published guidelines, and redesigning the senior exit survey – were all completely within the power of the department to achieve and thus they were successful. It's commendable but not surprising that they did not limit themselves to goals articulated at the last program review, but accomplished five additional curricular goals along the way. One of these – deleting GEOG 205 – is being reconsidered (discussed later in this document).

The assessment of the curriculum in the self study is well done. This department, despite its small size, has managed to create and use what appears to be a well-designed instrument for assessing how well students have achieved the learning objectives for the program. Curriculum deficiencies have been identified in ecosystem services and these appear in the goals identified for the next phase. Changes in concentrations chosen in the major have been quantified and interpreted. Graduation rates show that students are getting the classes they need to graduate. Exit surveys show that students appreciate the quality and rigour of the curriculum.

One major curriculum project resulted from a recommendation of the external reviewer in 2008: "Better allocation of instructional facilities." I had a chance to visit Stevenson 1002 early in the morning of my visit, and it's a nicely designed classroom with a tiered semi-circular layout that is able to accommodate more students. As a result of new university methods for allocating these limited resources, GEOG has increased its use of this facility. This semester, there are four lecture sections scheduled in 1002: one for GEOG 201, and three sections of GEOG 203. The biggest curricular design change taking advantage of that access appears to be the creation of multiple TA-led labs in Stevenson 3065. On page 7 of the self study is briefly described -- and then on page 12-13 is further developed – a reconfiguration of GEOG 201 as it "changed from a medium-sized lecture-oriented course to a large lecture/lab-oriented course" employing experienced geography majors to run the labs. On page 13, the personal benefits perceived by those student lab facilitators is documented. In discussions with the faculty, it appears that this model is working but does present challenges, especially in recruiting good T.A.’s for the lab sessions. However I applaud this development, and it's something that I would like to achieve on our campus. Another challenge is getting the 201 lab accepted in lower division general education to ensure the class fills to capacity each semester.

Action Plan: Curriculum

Seven goals were identified for curriculum. Similarly, I've identified some of these goals to discuss further.

1. Strengthen the curriculum with new courses in human-environment interaction, data analysis and geospatial science. These are discussed below, in #2 and #4.

2. Develop a new lower-division course in human-environment interaction. I've reviewed the proposal and syllabus for this course, and it's a well-designed course that considers a series of
important environmental themes of climate, population, agriculture, biodiversity conservation and water resources through a series of theoretical frameworks: cultural & political ecology; environmental history; natural hazards & vulnerability; and environmental justice. See further discussion of this and the previous goal in the next section on Student Body.

3. Improve recruitment of T.A.’s for GEOG 201. This appears to be a big challenge, but the department is looking into creative solutions by reaching out to other programs on campus, such as Education, ENSP and Geology. This of course assumes that students in those programs will have the right background to support labs that cover the atmosphere, biosphere, hydrosphere and lithosphere. The following are some thoughts on each of these programs from my review of the SSU Catalog and websites:

- In reviewing courses and faculty in Geology, I really only see lithosphere with only a smattering of other topics that students would be exposed to. There is GEOL 107 Introduction to Earth Science which mentions weather and climate, but I see no faculty expertise in this area. This course also appears to be designed for non-majors, specifically for those in the ENSP, AMCS, LIBS, and CALS programs, so would not be a source for Geology major student expertise. GEOL 323 Hydrology is the only course I see that would provide exposure to relevant topics, but I cannot see on the university web site who on the faculty is responsible for this course, perhaps a lecturer.
- ENSP doesn’t offer courses that go beyond the biosphere with the exception of ENSP 303 Applied Physical Science. However, ENSP majors can take GEOG 201 in the ENSP-Conservation and Restoration program. (Notably, GEOL 107, despite being listed as intended for ENSP students, is not listed in any ENSP program.) Given the larger size of the ENSP major, this might be a good source of T.A.’s.
- I have no information on the potential of Education majors for this, but it may be risky assuming that student-teachers intending to teach science will understand earth science.

Further thoughts on Action Plan #3: Since it appears that the best available course to provide the background needed is GEOG 201 itself, perhaps reaching out to better students in that class, whatever major they are in.

4. Strengthen the introductory spatial concepts curriculum, by resurrecting the one-unit GEOG 205, covering geospatial literacy, and creating a new lower division geospatial course, GEOG 287 Introduction to Spatial Analysis. In discussions with the faculty and review of the curriculum, this seems especially important to me, but also needs to consider the quantitative methods needed for the curriculum. Perhaps this can be accomplished by requiring the lower-division quantitative reasoning requirements be met before signing up for geospatial (or other) courses, or this might be incorporated in the proposed 287.

5. Improve the quality and utility of the senior assessment instruments. This goal demonstrates that the department takes assessment seriously and wants to use it to make concrete improvements in the curriculum to improve student learning outcomes. This effort is commendable.
6. Maintain resources critical to the curriculum. Supporting field excursions is becoming increasingly difficult, but field experience is vital to a geographer's education. It's also good to see that a solution to staffing the map library is being pursued.

7. Make the Department more visible to the University Community. Geography can certainly contribute to the Sustainability Initiative that is taking on a bigger role on CSU campuses. Geographers study sustainability, and it's simply a matter of translating this to improvements we can make on campuses: watering stations, composting programs, local foods, better communication to students about reducing their carbon and waste footprint. STEM is an increasingly important topic, and some geography programs (e.g. Berkeley) have reclassified their program as a STEM discipline such as one of the Resource Management CIP classifications.

At least in the hallways of Stevenson, Geography has increased the visibility of its research projects with several interesting posters, and Geography classes are nicely illustrated in one display (see figure). I didn't think to take more pictures, but was impressed with the hall displays.
Student Body

The two goals from the 2008 study focused on increasing majors were to (1) maintain high targets and increase targets for GE classes to recruit majors; and (2) develop a range of strategies to increase interest and visibility of the geography program. Strategies focused on increasing enrollment in classes, thus attracting those students to become majors, and increasing outreach through class and research posters, presentations and the web. In my visit, I was impressed by the research posters in the hallways; at least for students who visit those halls, they present the department and thus the major very favorably. The redesign of Geog 201, taking advantage of an available large lecture room and incorporating hands-on labs, has apparently been popular with students, and the word should spread.

The strategy of encouraging integration of Geography classes into other majors is notable. Enriching the Global Studies curriculum with Geography courses is an excellent idea for that program even if it doesn't increase majors in Geography, but you will always have some students who realize that what they were really wanting was what's in Geography, and some might become double majors.

The same could certainly be said for ENSP, however that integration has been much more limited, and in reviewing the Sonoma State University 2014-2015 Catalog, I can only see this in Track I Biological Emphasis and Track II Social Sciences Emphasis in the BA in ENSP-Conservation and Restoration, for which GEOG 201 and 387 are listed. I would think that GEOG 201 in particular would be valuable in all of the ENSP degrees, as it documents how the planet works. A few of the tracks specify GEOL 102, an introductory physical geology course, which covers the lithosphere; however a student studying any aspect of environmental studies needs to have the foundation in atmospheric systems, global circulation, the hydrologic cycle, soils and biomes that a class like GEOG 201 provides. It’s possible that some of this is covered in ENSP 303, but this is unclear from the catalog description, and my assumption is that a class like GEOG 201 would provide the best coverage of these important topics needed by environmental studies students to intelligently evaluate air pollution, water pollution and climate change without understanding these critical earth systems. Unless ENSP 303 is indeed comparable, I would encourage integration of geography courses like GEOG 201 into the ENSP curriculum.

Table 13 (Distribution of Majors in Geography Classes) is very interesting. One thing that it shows is the effect of adding courses to the GLBL major; GEOG 320 "Geopolitics" in particular has more GLBL majors than GEOG majors in attendance. For ENSP, it's notable that two courses GEOG 372 "Global Climate Change: Past, Present and Future" and GEOG 375 "Natural Hazards" have more ENSP students than GEOG students enrolled, despite not being listed in the ENSP major.

Targeting students in a wider array of majors, particularly in the School of Science and Technology (p. 22-23), is an excellent idea. In meeting with students, I heard from students who have switched from Biology, and this echoes what I've seen at SFSU; I've signed up quite a few former Biology majors who were very frustrated trying to get the classes they needed, and found Geography much more appealing. General education is one way to do this, thus
presence of high quality Geography courses in both the natural and social science lower division GE requirements is critical.

Action Plan: Student Body

The single goal in this section is **Recruit more majors**, with strategies of improving assessment and increasing visibility and awareness of Geography. I thought that the current self study has done a very good job of assessing these, and Table 14 demonstrates the key factors – the all-encompassing nature of Geography and being captured by high quality, interesting classes, followed by the human-environment focus of the department. The only option that might have confused students would be "A particular faculty member / Geog. Professors" – students might have been voting for good professors all-around here. However, finding out more about pathways would certainly be useful, though I expect that there are many, with some random aspects. Strategies such as talking to the Advising Center and participating in freshman summer orientation are excellent ideas.

One strategy mentioned relates to creating a new human-environment GE course (Geog 206) and getting it into the social science "house" of the Academic and Career Exploration (ACE) program (this is not in the Catalog) for freshmen. This would not only help expand the exposure of students to Geography, it would also benefit SSU students in general, as the human-environment perspective is a prominent development in applied science in recent years, and an area in which Geography has pioneered. In reviewing the ENSP courses in the Catalog, one course ENSP 301 "The Human Environment" might be confused with this proposed course based upon its name, though from my review of the proposed Geog 206 syllabus, it's unlikely that the ENSP course explores the range of theoretical frameworks that Geog 206 covers. I have also learned that ENSP 301 isn’t being taught anymore, which adds urgency to creation of this course.
Faculty

The department has much to be proud of in its faculty. While few in number, they are a great team and quite accomplished. The self study reviews their responsibilities and accomplishments, and I'll briefly discuss some of these here.

**Rheyna Laney** lists her specialties as cultural and political geography studying agricultural change and development in the US and Africa. Recently she has served as department chair and continues to be centrally involved in the direction of the department, taking a lead role in writing the self study for this review, as well as serving at the university level on the faculty senate and general education committee. Her recent research has focused on agriculture and the unique alliances between rice farming and avian habitat restoration in the Sacramento Valley, with contract funding from The Nature Conservancy and major funding from a $175k CALFED grant. This local, agriculturally focused research is especially appropriate for involvement of students and helping them to understand the interconnections between water resources, agriculture and habitat effects of land use decisions.

**Jeff Baldwin** is a human-environment geographer with a political ecology methodological approach who teaches courses in human geography, geopolitics and a regional class in Latin America. His diverse research combines work on tourism in the Caribbean and Latin America with more local interests in the American West and consideration of globalization issues and sustainability on American dietary choices. As a biogeomorphologist myself, I was especially interested in his research on beavers in environmental restoration projects in Oregon. We also talked about capstone classes; Jeff teaches the senior seminar for Geography and we discussed the important role of these classes in providing a senior-level writing experience that wraps up a student's degree.

**Matthew Clark** is the current Chair and specializes in remote sensing, GIS, biogeography and ecosystem analysis and conservation, and also directs the Center for Interdisciplinary Geospatial Analysis (CIGA). I've worked with Matt for several years through the CSU GIS Specialty Center Board, and have long been impressed with his work, some of which we have published in our *CSU Geospatial Review*. His impressive grantsmanship ($2.1M over the last eight years) supports active research in hyperspectral remote sensing and land cover change. He also manages all of the geospatial resources for courses in GIS and remote sensing in the department, which I know personally can take a considerable amount of attention. His high level of productivity in these areas is supported by a reduced teaching load, clearly a good decision made at the time of his hiring by the school administration.

**Michelle Goman** is the most recent addition to the full-time Geography faculty, starting in 2011, and at the same time developed the Sonoma Quaternary Research Laboratory (SQUAL) which is equipped to study micro- (e.g. pollen) and macrofossils from lake beds and wetlands, tree cores and soil samples. Dr. Goman is continuing work based on a $192k NSF grant funding research in Oaxaca, Mexico, and has initiated local research on Petaluma Marsh. I visited Michelle in her lab, and as someone who has done a bit of paleoenvironmental research (palynology, isotopic dating, and dendrochronology) myself, it's clear that she has identified the right kind of capabilities needed to pursue an active research program, involving
undergraduate students, while working within the constraints of a building designed for social science research.

At the end of this document is my list of recommendations, and one of these (#7) relates to supporting research with reduced teaching loads as a choice for faculty willing to take on a higher bar for research productivity. To date, this has only been negotiated with Matthew Clark, who has been able to achieve his level of research productivity and grantsmanship through a reduced teaching load. The higher bar is not going to be attractive to all faculty, but should be an option.

**Action Plan: Faculty**

The two goals from the 2008 Self Study were replacing Dr. Freidel, which was accomplished with hiring Dr. Goman; and advocating for a new hire, which has not been granted. Thus the goal for the next review is a new hire, and there's a lot of evidence to support this request. The need to staff lower division GE and maintain a healthy offering of majors classes is critical. The department has moved itself to the highest SFR in the School, so they should be first on the list for expansion.

The self study specifies the area which needs the most attention is in **human-environment interactions** and this is consistent with the plan for developing a lower-division general education course in this topic. This would build on strengths in the department, and increase the potential for cooperation with ENSP, if planned appropriately. The self study also identifies the need for the hire to share responsibilities in geospatial methods, and this is a clear need. The one area surprisingly missing from the curriculum offered this semester is in geospatial techniques. This is partly due to Dr. Clark's service as department chair, but even without this there is a need for greater faculty support for geospatial methods.

From meetings with faculty and students and review of the curriculum, there is also a clear need for a human geographer focusing perhaps on the urban environment who applies quantitative geospatial methods. Social science applications of geospatial methods will also open up significant collaboration potential with other departments in the social sciences, since studies in political science, history, anthropology, sociology, and other disciplines often involve a geospatial component.
Research Centers

The Department maintains two very good research centers, the Center for Interdisciplinary Geospatial Analysis (CIGA), directed by Dr. Clark, and the Sonoma State Quaternary Laboratory (SQUAL), established in 2011 by Dr. Goman. The track record for CIGA is impressive, providing funding for numerous undergraduate research as well as a postdoc. Goals for CIGA include continuing in the mode of funding new research projects, and increasing the center’s outreach and collaboration. Replicating this successful model in the more recently established SQUAL is promising, with active local research involving student researchers already ongoing at Petaluma Marsh adding to recent Oaxacan research. Sharing resources with Anthropology to provide wet-lab capabilities in Stevenson 2061 is an excellent solution, and my visit to both Stev 3034 and 2061 convinced me that success has been achieved and cooperation with Anthropology is clearly evident.

Facilities

Goals from the previous review included (1) lobbying for larger classrooms, described above; (2) moving a lab, which was replaced by remodeling the GIS Teaching Lab and upgrading the Physical Geography Lab/Map Library; and (3) identifying a funding source for maintaining the GIS Teaching Lab, which was not met. I was surprised to hear that no instructional equipment funding is provided to the departments, and is only promised if the department relinquishes control of the teaching lab. It’s important for a department to be able to control teaching lab spaces, so I would never recommend giving this up. However, this semester no geospatial classes are being offered in this space, an anomaly certainly related to the need for an additional faculty member covering geospatial methods. (Two other classes, GEOG 315 and GLBL 498, are scheduled in the lab, however.) The introductory geospatial methods class envisioned in this review could also increase use of this space, increasing the rationale for regular refresh of computing equipment in this lab. Alternatively, other funding sources might be identified, as specified in goal #12 in the self study. Office space for adjunct faculty was the final goal identified in the self study. Having offices for adjunct faculty nearby the department is critical, as these faculty often see more students than TTR faculty.
Additional Observations from the Campus Visit

Meetings with full-time TTR faculty

I was able to have individual meetings with all four current TTR faculty (Laney, Baldwin, Clark, and Goman) as well as one emeritus professor (Freidel) during my visit on 27 March. I've discussed these faculty members above. These meetings were useful in gaining individual perspectives on the current conditions and directions of the department, and I was impressed by how consistent the message was that I heard. I enjoyed learning about all of their research interests and their approach to serving students in the program. From these and group events (lunch and dinner), I was also highly impressed with how well this group appears to work together. The level of camaraderie and compatibility I observed is rare in academia.

Meeting with Adjunct Faculty

I was able to have a meeting with one part-time faculty member, Derek Eysenbach, who reportedly has served the department well in covering a large lower division class in human geography (GEOG 203), an upper division general education class in Social Geography (GEOG 338), and had one opportunity to teach Urban Geography (GEOG 350). He also is leading a class structured around a professional conference; he’ll be taking student presenters to the California Geographical Society meeting at Humboldt State University this coming May 1-3. From what I gather, his classes are very popular, and I'm sure the department would love to retain him. In our meeting, he expressed his great passion for teaching students at Sonoma State University, though he had to admit his frustration trying to do this from the position of a lecturer. Unfortunately the pay scale for lecturers is making it impossible for him to continue in this capacity. This story is apparently also true for another talented lecturer, Adam Williams. The challenges of retaining high-quality lecturers for critical program classes raises the urgency for a new TTR faculty line.

Meeting with Students

During my visit, I met with a group of eight students and asked them to share what they most liked about the program and what they would most like to see improved. I was quickly impressed by their keen interest in sharing their deep appreciation for the attention they get from the Geography faculty, with no exceptions. They noted that their instructors were highly supportive and clearly interested in their success as students and members of society. Some noted the unique opportunities they had in being centrally involved in faculty research projects, including paid positions in research labs.

One of the characteristics of this program that is similar to other successful geography programs is how students "discover" geography by taking courses and being inspired by the instructors. In great contrast to most of the rest of the civilized world, geography is poorly covered (if at all) in U.S. high schools, so students going to college don't consider geography as a major. They'll instead gravitate toward disciplines that are well covered in high school like Biology, Chemistry, English, or History, or if they want to try something new they'll look for one of the
various ___ studies (environmental studies, global studies, urban studies, ...) that sound trendy yet don’t have a core disciplinary home (which can be a problem when applying to grad school.) The lucky ones who find geography discover it by taking general education classes from great instructors and they realize to their surprise is that what they were looking for all along: a program that looks at our planet's natural and human landscapes with all its interconnections, applies research in their local communities as well as in international settings, and a discipline that had an environmental focus long before the environmental movement took hold in the 1960's. All of the students I talked with had similar stories of how they had discovered geography in this program, and these stories were similar to what I've long heard from students in our program at SFSU.

The result of this mode of discovering the major has its benefits and its challenges. The benefit is that nearly all the students have come into the major with a positive attitude and develop a clear purpose to be successful students. They look forward to taking the array of interesting classes that a geography program offers. They also develop bonds with their fellow students not only from shared experiences in classwork and research projects, but even more so from shared field experiences from class field trips and research fieldwork. The challenge comes in numbers; students typically only discover geography by the time they are sophomores or juniors, and may only be able to do the geography major by changing from their current major which they have already invested time in.

Concerns raised by students in this meeting all centered around limited offering of upper division courses. While they found that for the most part sufficient courses were offered to allow them to graduate on time, their ideal focus might not have been possible, thus forcing some to choose a general geography degree instead of a focus. They observed that some courses in the catalog had not been offered during their time as majors. With students only having a two-year window to catch a class, a course offered less frequently will be missed. One course that multiple students wished to see is Urban Geography. This is a popular (and similarly non-GE) course at San Francisco State, filling every semester, so I am not surprised by the interest.
My Recommendations

I see this department as having an exceptionally high quality but limited quantity of faculty. Increased offering of upper-division majors courses is its greatest need, and this is going to require a new faculty line. If students see a rich array of classes being offered on a regular basis, they will certainly be more attracted to the major.

1. Gain a new faculty line that couples geospatial methods with an application in human or human-environment geography. A quantitative or mixed methodological approach is important for this position, and could help support an introductory quantitative course needed as a foundation for upper-division courses. This faculty member could teach a healthy profile including a large, lower division general education course in human geography (GEOG 203) and/or the proposed human-environment interaction course (GEOG 206), introductory quantitative & geospatial classes (such as the proposed GEOG 287), and upper division courses in human geography such as Urban Geography (GEOG 350) and geospatial methods (GEOG 387 and 487). An upper-division spatial statistics class or a new human geography class might represent an obvious expansion area, and the former in particular would appeal to students in other majors such as Biology, ENSP, Geology and various social sciences, as spatial statistics is one of the most rapidly developing areas of statistical analysis with applications in many disciplines where location and distance plays a role in an analysis.

2. Create the new course Geog 206 Society, Environment and Sustainable Development for the social science GE program and the Academic and Career Exploration program, and integrate into the Geography major as a permanent core course. As documented in the syllabus, this course would expose students to the unique contributions that geographers provide to assessing environmental systems and understanding global development issues. This course should also be advocated for the ENSP and Global Studies programs, and probably others. One caveat is to consider any potential impact on enrollments in GEOG 203, which shares the D2 GE group "Nature and Development of Complex Societies."

3. Continue the work on the redesign of Geog 201 with hands-on laboratories. This is an admirable effort, challenged by the availability of suitable students to run the labs, but if majors increase, this would provide a positive feedback effect. I haven't seen the assignments, but if they include field experience, even in a very limited way in nearby environments, students remember these as significant to their education and tell other students about them. Reach out to students who've done well in Geog 201, whatever major they come from, though this misses students who have transferred in with an intro physical geography class. With 201 in the ENSP curriculum, these majors may provide a good pool of T.A.'s. I'm less convinced about Geology majors, but my perception is based only in reviewing SSU's web site on that program.

4. Continue the visibility efforts, and work on maintaining the web site. This requires continuous, thorough attention. I don't know what web design software was used. At SFSU, our department web pages have converted to a Drupal-based system, which required a huge investment of time to initially set up (primarily because of ADA
compliance that also kicked in at this time), but ever since that initial setup was complete it's been much easier to maintain with current information. Getting the IT support to set something like this up would greatly help in keeping your web pages current, and this is more important than anything else (with the possible exception of a good reputation of instructors) in increasing visibility.

5. Become more central to the ENSP degree programs, and help to make it a more viable program by providing students with the critical Geography courses (like 201 and introductory geospatial methods) it so clearly needs in all of its concentrations. ENSP could clearly benefit from what the Geography & Global Studies department has to offer, not only in classes but also in faculty expertise.

6. Continue to maintain or even expand high quality instruction in lower division natural and social science GE courses, and provide those instructors with the resources they need to be successful. This is probably the best way to get majors.

7. Consider creating a 9 WTU teaching load for research-active faculty, with 3 WTU's for research and 3 for service. This could be based upon review of annual faculty activity reports structured in such a way to also support post-tenure review reports, with lists of publications, grants, and conference presentations from the last five years, planned service activities and student supervision for the upcoming year. These reports are easy to update on an annual basis. In the College of Science & Engineering at SFSU, we have been successful moving to this option. While not appropriate for all faculty, creation of a higher bar for scholarship has led here to increased grantsmanship, good for the university, since research productivity is critical for successful grant applications.

In conclusion, I commend the Department of Geography & Global Studies for an excellent self study that exhibits ongoing attention to improving their program. I'm convinced that this department can do great things if given the appropriate resources. I encourage the university administration to strongly support this department, and help it to achieve greatness in the years to come.