

**Environmental Science for the 21st Century-
A new College of the Anthropocene**

Marilyn L. Fogel, Professor

School of Natural Sciences, Chair Life and Environmental Sciences Unit,
President Biogeosciences Section American Geophysical Union

Earth as we know it in 2014 is changing rapidly. The scientific community, supported by international and national groups, overwhelmingly recognizes that climate change and the impacts that it has on our food and water security and human health are some of the most important scientific problems of our time. Strides in this area of research are being made by new instrumentation for making sensitive measurements, lower cost genomics techniques, satellite imagery, and the manipulation and modeling of big environmental data sets for studying the biological and geological processes that drive Earth's water, carbon, and nitrogen cycles. UC Merced scientists with transdisciplinary interests and talent have the potential to make serious inroads into the problems of drought, extreme weather, and human impacts on land and water. The University of California at Merced's mission statement highlights environmental sustainability and the effects of global change on the ecosystems, health and economy of California and the Earth.

I propose to work with our faculty, administrators, and research staff to plan and seek funding for a new **College of the Anthropocene**. (The Anthropocene is the geological time period when humans lived on Earth). This new school will address ongoing issues with identification and strengthen UCM's interdisciplinary mission. Although environmental research was intended to be a campus hallmark, the student enrollment in three related majors (Earth System Science, Ecology and Evolutionary Biology, Environmental Engineering) is small relative to the size of the student body (about 200 undergraduates and 43 graduate students). Faculty and research groups are fragmented on the campus and in research units. Our talents and efforts often fall between the cracks of the University system. To have the impact we should have on UC Merced's campus a different organizational model is proposed.

I propose to create a more holistic and streamlined vision of a new "College" of the Anthropocene/Environment. On page 3 are the UCM and community groups that could be included in a living-learning, mixed-use building/area of the 2020 campus (see Table 1). My vision is to create a new School, not just an Institute, to promote transdisciplinary education and research that would be actively engaged in the larger environmental community. Campus building plans for the 2020 development project should consider the following and the impact for the campus:

Engaging Our Students in Environmental Issues and Sustainability:

- **Green dormitory space** for students in the School and any others who would like to live a "green" campus life
- **Dining hall serving local and organic foods**

- **Auditorium** for classes that could also be used in summer to hold small conferences and workshops on sustainability, global change, and other local issues
- **Classrooms** for undergraduate and graduate education
- **Instructional Laboratories** for Classes and Weekend outreach programs
- Space for an **organic community garden**

Promoting intellectual engagement for faculty and researchers:

- **Environmental Growth Facility and Greenhouse**
- **Offices** for faculty, research units, and staff
- **Laboratories** for faculty and research units
- **Open space** for solar research, Aerial Unmanned Vehicles (CIDER), commercial, consulting, and government projects

Providing a place for Sustainability and Environmental Leadership in the Central Valley:

- **Space for public and private resource and environmental agencies and firms** concerned with mitigation, conservation, agriculture, and hydrology
- **Restaurant serving healthy, natural food, California cuisine** for campus visitors, staff, and faculty perhaps highlighting student employees
- **Outdoor space for a farmer's market** and informal student gathering

Short-term Action Items: Built-in, short-term wins that will maintain momentum

- Earn a seat at the table for campus wide strategic planning and provide more input into the current, on-going strategic planning process.
- Attract and retain more undergraduate majors in the next 3 years.
- Modify the lower division curriculum in Biology to provide a greater focus on the Ecology and Evolutionary Biology emphasis track (started in Fall 2014).

Summary: The excitement and challenge of creating perhaps a “College” rather than a School, Institute, or Center, will be an attractive project for prospective donors. Although other UC campuses and many universities in the US have departments and/or institutes devoted to global and climate change and sustainability issues, most have not taken a transdisciplinary approach in designing a more holistic way of combining research and education. Creating another Institute at UC Merced would not serve to solidify the current groups that have already formed on campus, but lack the force to become nationally and internationally recognized through real accomplishments. Creating a new College is vital for UC Merced to achieve its mission of providing new ways to engage our community to solve important societal problems. This new educational format will also move us forward in educating and preparing our students to become future leaders in making the world a better place. The College’s integrated campus could be a showcase for undergraduates to interact with members of the environmental community, promote internships, and benefit the economic recovery in the Central Valley.

Table 1. Potential Academic, Research, Administrative, Government and NGO groups who are actively engaged in climate, global change, environmental, and sustainability issues would be co-located on the “College” campus.

Potential Participants	Relationship to School	Current location	Current Staff size	Projected Staff size
Life and Environmental Sciences	Academic Unit	SE1, SE2, Castle	13	20
Environmental Engineering	Academic Unit	SE1, SE2, Castle	8-10	20
Environmental Systems	Academic Unit	SE1, SE2, Castle	28	40
Sustainability	Academic Program	SE1, SE2, SSM, COB	20 (joint with other groups)	30
Natural Resources Management	Academic Unit	SE2, SSM	4	8
Climate Communication Program	Academic Program	SE2, SSM	4	8
CITRIS	Research Unit	SE2, COB	4	10
Sierra Nevada Research Institute	Research Unit	SE1	30	40
UC Natural Reserve System	Research Unit	AA, Yosemite Field Station	3.5	7
Public Health	Academic and Research Unit	SSM, COB	19	30
Environmental Analytical Laboratory	Research Unit	SE1	2	4
UC Solar	Research Unit	Castle	7	10
UC Agricultural Extension	Research Unit and Outreach	Merced	5	8
Yosemite Leadership Program	Education and Outreach	Recreation Center	6+numerous student members (20+)	6+ volunteers
Natural Resources Conservation Service	Government (USDA)	Merced	6	10
Sierra Foothills Conservancy	NGO	Mariposa	7	7
Campus Physical and Environmental Planning	Administrative	Promenade	5	8