Pathways to Diversity and Inclusion in 21st Century Coastal Planning: Lessons Learned from Challenges and Opportunities in the Geosicences

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Diversity Data for the Geosciences

- Recent NSF statistics: Approximately **8%** of graduate students are underrepresented (NSF 2016).
- Biological Sciences slightly higher percentage, **18%**.
- Whole number comparison: **1303** total underrepresented Geoscience, **9520** in the Biological Sciences.

Low Student Diversity: Causes

- Lack of personal connection.
- Unclear understanding by students.
- Ineffective messaging and engagement, particularly at the early undergraduate stage.

- Historic overemphasis of certain fields (e.g. biomedical).

Opportunities for Coastal Planning Activities and Education

- **Messaging and Student Engagement**
- **Skill Development**
- Leadership Development

SACNAS: Student Engagement

SACNAS Activities

Geoscience Row

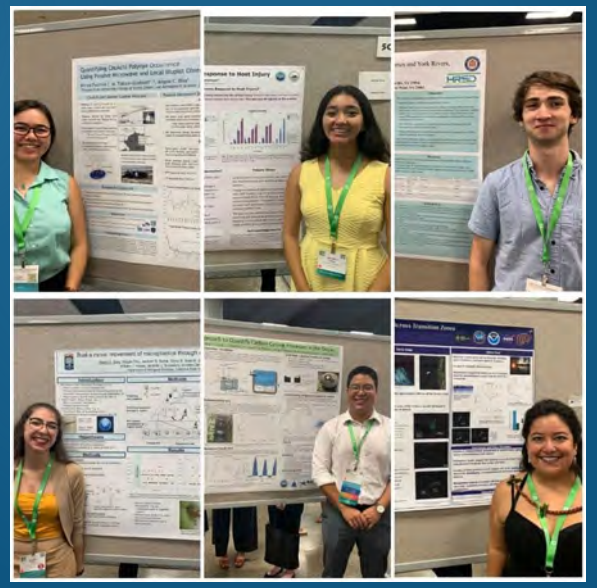
Geoscience Talks

Student Posters

Professional Development Sessions

SACNAS Geo-Futures

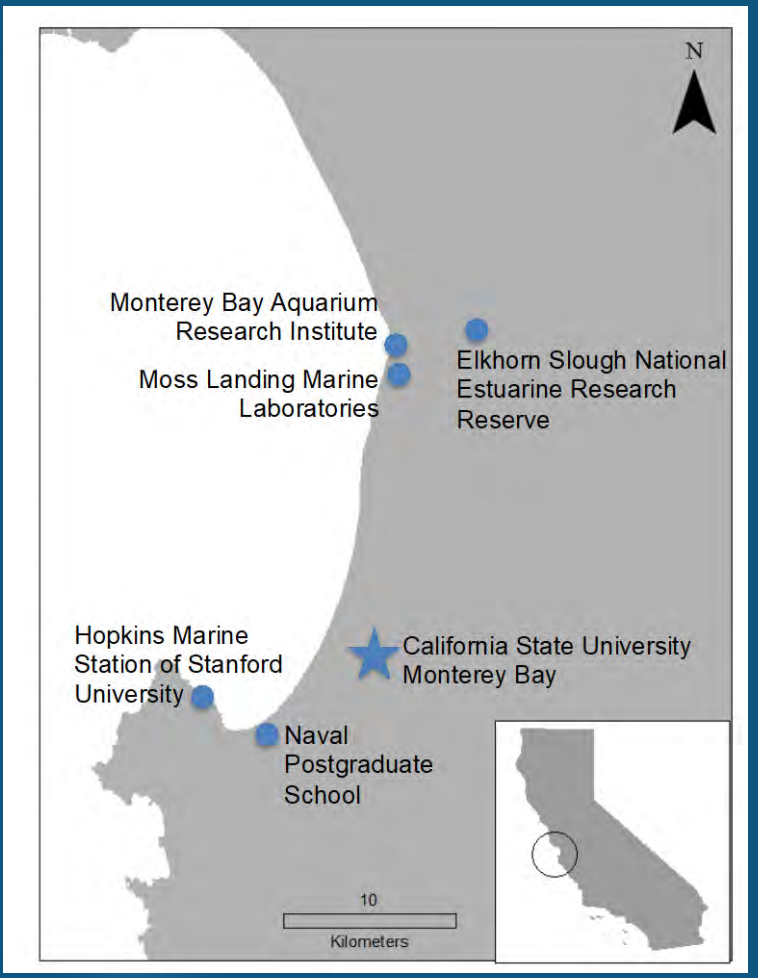
- SACNAS: Largest conference in U.S. for underrepresented students.
- Provides funding for students who have participated in Geoscience REUs or similar programs.
- Provides pre-conference preparation for students and mentors.
- Matches students up with Geoscience mentors at conference.
- Conference based sessions attached to Geo-Futures.
- Post-conference student support.



NSF

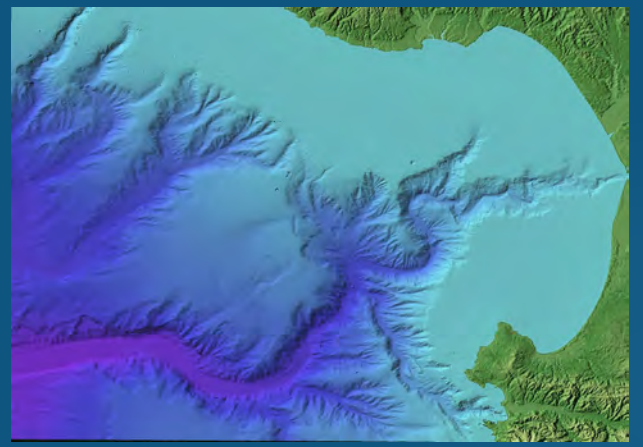
Monterey Bay Regional Ocean Science REU: Engaging Students in Diverse Research Activities

- Distributed REU Model
- California State University, Monterey Bay
- Elkhorn Slough National Estuarine Research Reserve
- Hopkins Marine Station of Stanford University
- Monterey Bay Aquarium Research Institute
- Moss Landing Marine Labs
- Naval Postgraduate School
- **Focus on underrepresented students.**
- **Fall REU component.**



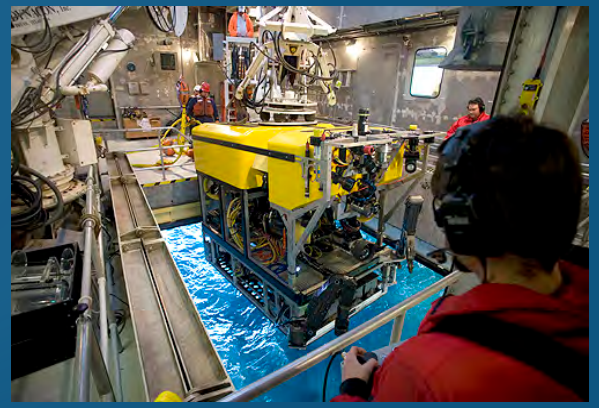
Marine Biology and Ecology

Marine Geology



Monterey Bay Regional Ocean Science
CSUMB
REU
Research Experiences for Undergraduates

Ocean Engineering

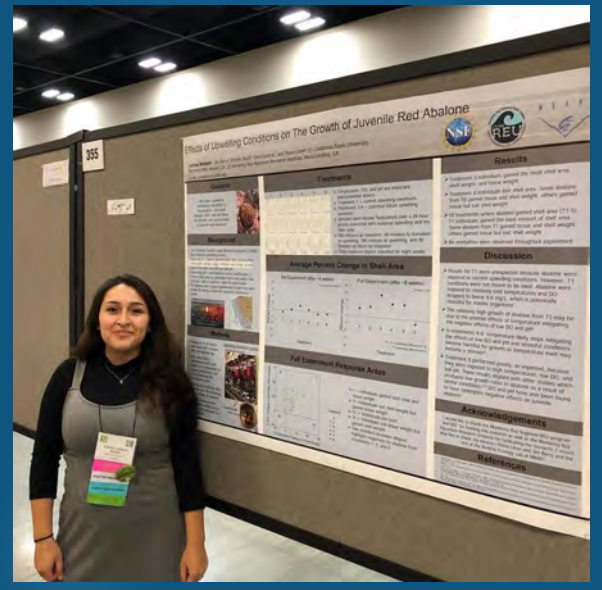


Oceanography

A diversity of people in a diversity of disciplines.

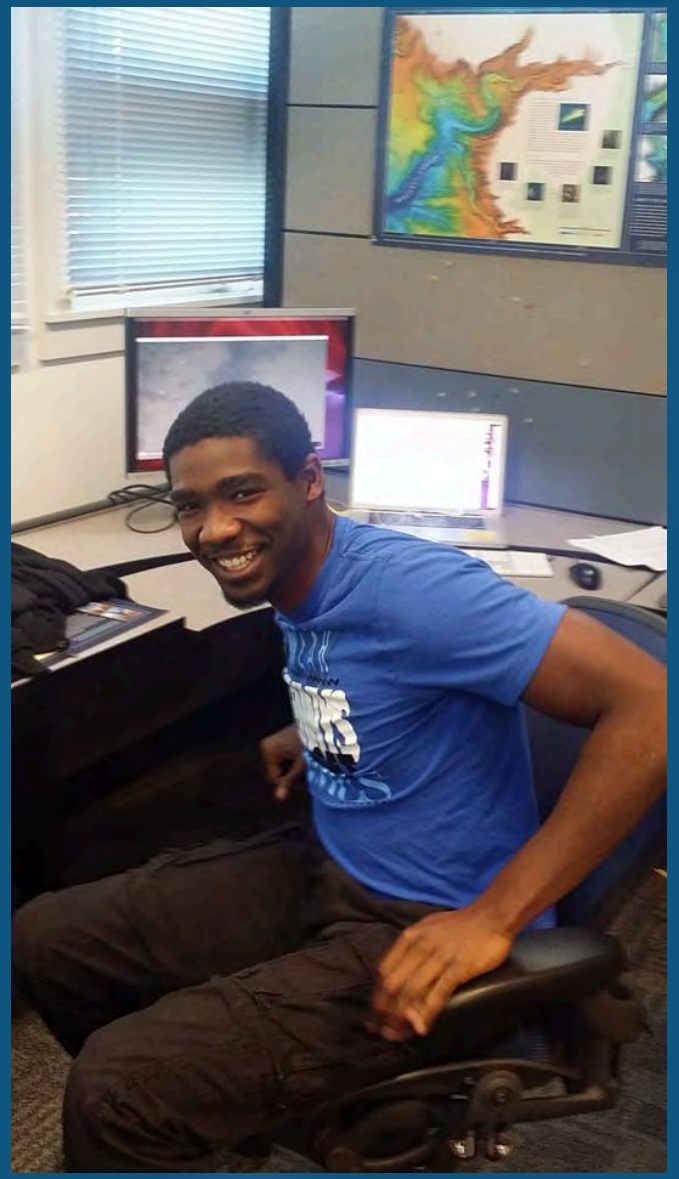
Student Diversity

- 70 students in the program
- **3 Native American, 7 African American, 26 Hispanic/Chicano, 6 Pacific Islander, 25 Caucasian. (63% URM). 3 U.S. Veterans**
- 38 students from research limited institutions (**12 Community College Students**).
- 13 Engineering, 16 Oceanography, 5 Geology, 36 Marine Biology/Ecology



REU Student Profile: Paris Smalls

- Worked with Dr. Charlie Paull of MBARI.
- Used his interest in Math to examine the origin of seafloor scours around hydrothermal vent communities.
- AGU MS-PHD Participant.
- Accepted to MIT/WHOI Joint Ph.D. Program in Oceanography.
- 2017 NSF Graduate Research Fellowship Program.



NOAA Cooperative Science Center

- Funded by NOAA's Educational Partnership Program (EPP).
- Designed to increase the number and diversity of students who attend minority serving institutions and graduate with STEM degrees.
- Four new centers established in 2016.
- Each center awarded $15.5 million over five years.

Center for Earth Systems Science and Remote Sensing Technology

Center for Coastal and Marine Ecosystems*

Living Marine Systems Cooperative Science Center

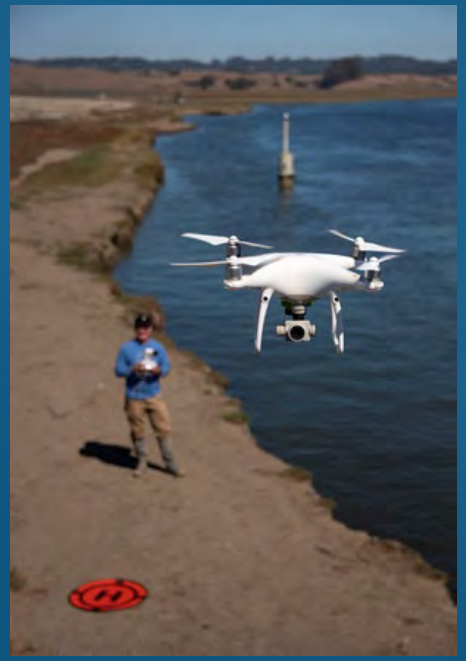
Center for Atmospheric Sciences and Meteorology

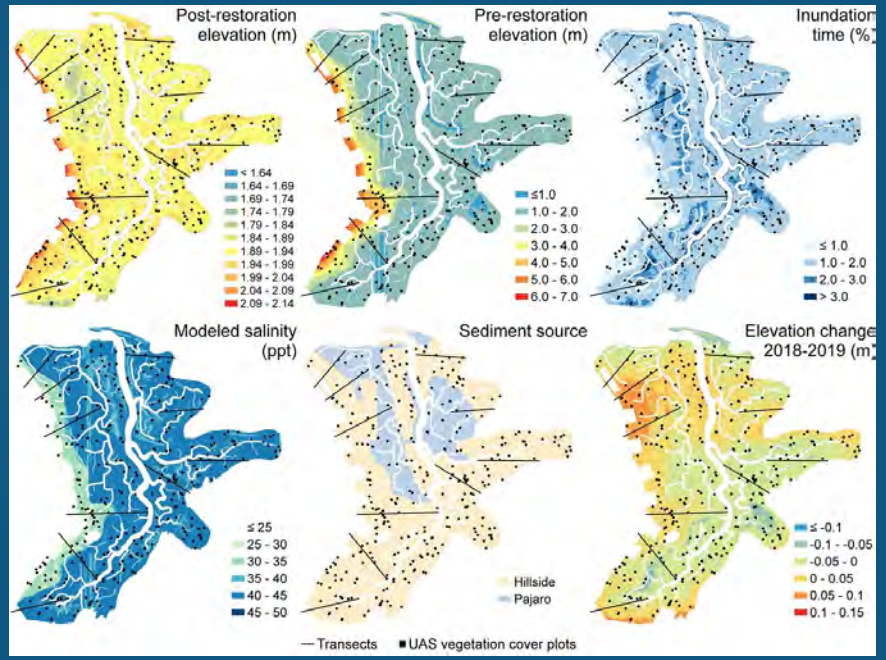
NOAA Center for Coastal and Marine Ecosystems

- Trains graduate and undergraduates in NOAA relevant science.
- Program designed to train a diverse future workforce for NOAA.
- Students and faculty engage in social science research as part of the program.

CCME Graduate Scholar: Alexandra Thomsen

- MS, Environmental Science, CSUMB
- Advisor: Arlene Haffa
- Thesis title: Temporal trajectory and patterns of natural vegetation development at a restored Central California high marsh
  - Evaluated restoration techniques based on several metrics of success at a large-scale restoration site within the Elkhorm Sough State Marine Reserve
  - Results inform future restoration planning to optimize resources and desired outcomes.





Why diversify participation in Coastal Planning?

For additional information:

- Coastal and Marine Ecosystems Program: https://csumb.edu/cme

- Email: cme@csumb.edu