Delivering science to support sustainability of our ecosystems and island communities

Four guiding science themes:
- Guidance for anticipated intermediate-term climate changes
- Potential effects of changing climate on freshwater resources
- Anticipating and addressing change in coastal and low-lying areas
- Forecasting sustainability for resource management & planning

Coastal hazards

PI-CSC covers vast ocean expanses between isolated island groups and atolls, all of which are seeing alterations in coastal conditions with a changing climate.

Problem: Coral bleaching
Solution: Evaluate species responses to develop hardier corals

Solution: Monitor CO₂ and pH in coastal waters to identify necessary changes to coastal water inputs

Problem: Coastal inundation/erosion
Solution: Modeling to develop decadal predictions of sea level rise
PI-CSC sponsors relevant actionable research informing climate adaptation, including:

- Modeling sea level rise projections across the Pacific, emphasizing inundation and coastal erosional hazards;
- Assessing coral reef microbial communities in HI and Guam and developing tools to promote more resilient, sustainable coral communities;
- Monitoring ocean chemistry near reefs, to inform understanding of global bleaching events and ocean acidification;
- Engaging in novel cross-disciplinary projects, including socio-economic examinations of freshwater resources and ecosystem services on Maui, and vegetation studies in Hawai‘i and the Marshall Islands to inform resource management.

PI-CSC promotes active cooperation with local stakeholders:

- The Manager Climate Corps program at the University of Hawai‘i at Hilo builds research partnerships with Hawai‘i Island natural resource managers to develop science products to aid in future climate change adaptation. Five stakeholder-driven projects focus on:
  - coastal planning adjustments for future sea level rise;
  - impacts of groundwater inputs to traditional loko i‘a (fishpond) management;
  - climate-smart agriculture using invasive albizia trees as sustainable fertilizer;
  - impacts of climate change on near-shore water quality.
- At the University of Guam, PI-CSC is developing, with the Geography Dept., a Geographic Information System (GIS) academic program with a Micronesia-focused curriculum to:
  - provide skilled personnel to improve spacial analysis for natural resource agencies;
  - enhance informed decision-making on sustainability, resilience, and adaptation.

PI-CSC is developing future climate scientists:

- Funding supports graduate research, education, and degree success.
- To date, 20 Master’s and 6 PhDs have been awarded; 15 more degrees in progress.
- Students across the consortium have been supported to attend Climate Boot Camps and other climate science trainings to gain new skills and build professional contacts.