MarineGEO

THE TENNENBAUM
MARINE OBSERVATORIES NETWORK

Smithsonian Institution

TAKING THE PULSE OF COASTAL MARINE ECOSYSTEMS WORLDWIDE

Answering key ecological questions of societal relevance for better management and sustainability of marine resources

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MARINEGEO CENTRAL QUESTIONS

How do coastal marine ecosystems work?

1. What controls the structure, function, and biodiversity of marine ecosystems?
2. Why is marine biodiversity important?
3. How and why is it changing around the world?
4. What management and policy strategies are effective in maintaining healthy ecosystems?

OUR COASTS: LIVING IN THE ANTHROPOCENE

Where humans and marine biodiversity are concentrated and interact most

Research themes:

- Distribution and abundance of habitat and biodiversity
- Continuum across pristine, natural, degraded, and restored habitats
- Invasive species
- Habitat loss
- Fishing impacts
- Consumer pressure

OUR PARTNERS

International networks

- *Zostera* Experimental Network
- *Thalassia* Experimental Network
- Reef Life Survey
- Global Coral Reef Monitoring Network
- Autonomous Reef Monitoring Structures
- Global Genome Initiative

Intergovernmental & Interagency

- Group on Earth Observations-MBON
- Global Ocean Observing System
- U.S. MBON
- NOAA Sentinel Site Program
- National Estuarine Research Reserves (AK, CA, HI, TX)
- U.S. Forest Service

WHAT IS MARINEGEO?

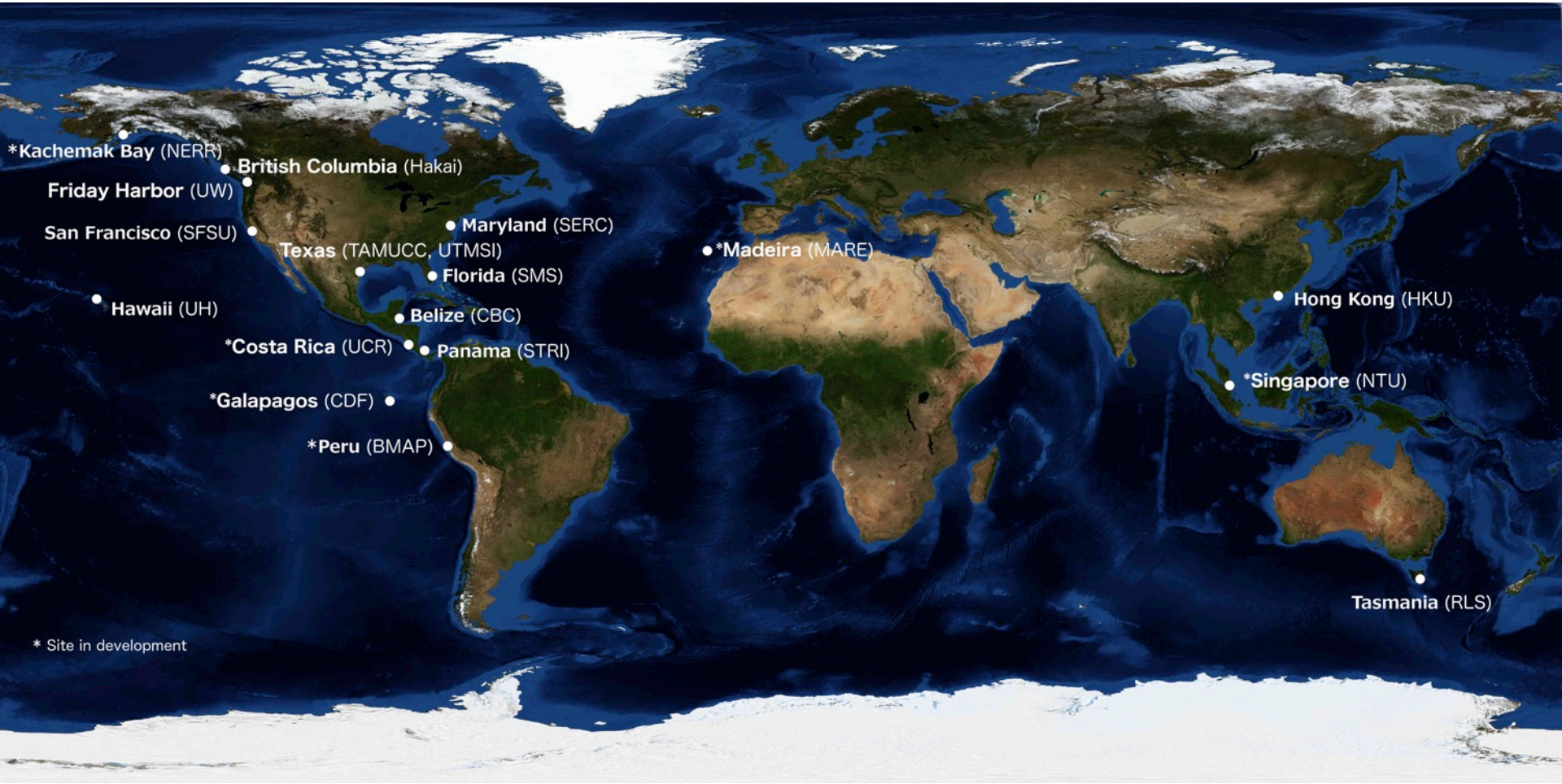
MarineGEO niche IS:

- Biodiversity and ecosystem function
- Coastal, shallow, benthic habitats
- Standardized sets of experiments and observations
- Long-term and interdisciplinary
- Coordinated across a global network of partnerships
- New and growing

IS NOT:

- Physical and chemical oceanography
- Open, pelagic ocean
- Only remote-sensing or observation
- Short-term, flash-in-the-pan
- Local or regional only

PHASE I: GROW THE NETWORK



PACIFIC EXPANSION

- British Columbia, Canada
- Friday Harbor, WA
- San Francisco, CA
- Kane'ohe Bay, HI
- Tasmania

MARINEGEO CORE RESEARCH

ENVIRONMENTAL FORCING FACTORS

- Temperature
- Salinity
- Dissolved oxygen
- Turbidity
- Pressure
- Fluorescence
- Nitrogen
- Precipitation
- Carbon chemistry, pH

BIODIVERSITY QUANTIFICATION

- Habitat mapping
- Collections
- Structural complexity
- Foundation species
- Infauna
- Epifauna
- Fishes

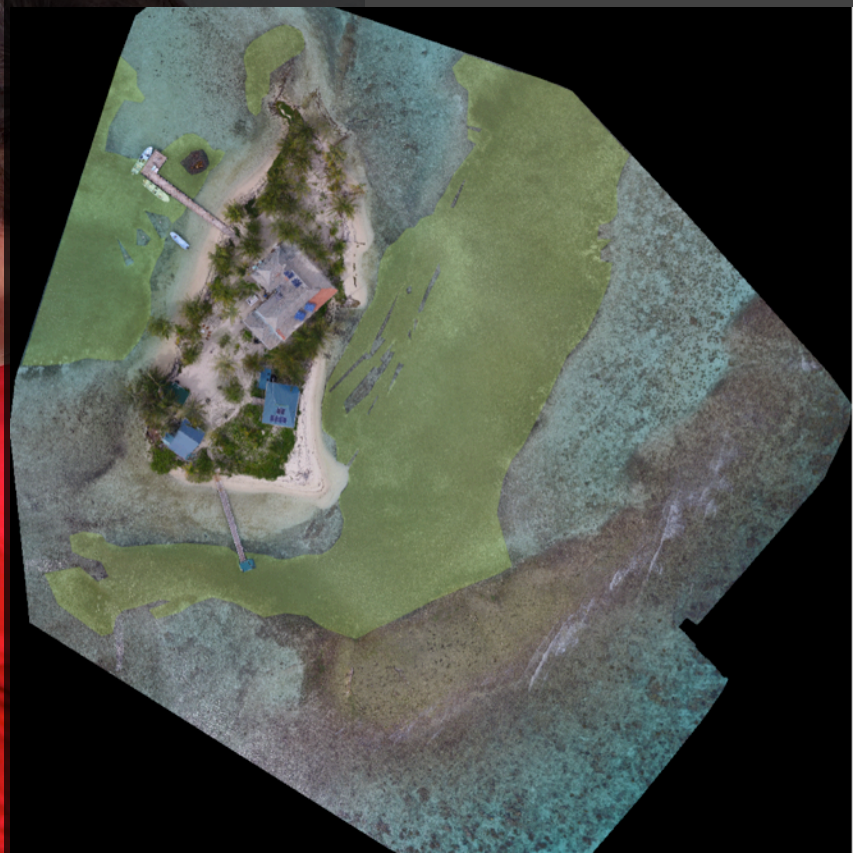
ECOSYSTEM PROCESSES

- Primary production
- Recruitment
- Decomposition
- Herbivory
- Predation
- Disease
- Historical ecology

EXPERIMENTS

- Coordinated
- Comparative
- Macro-ecological
- Function-oriented
- Management-relevant

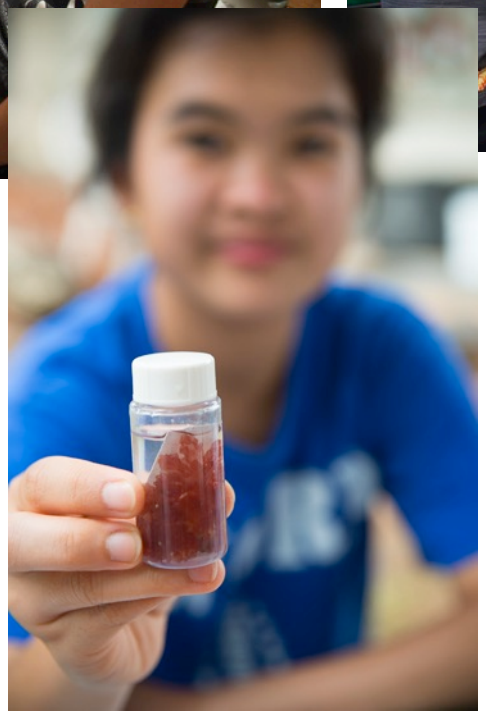
MAPPING THE SEASCAPE



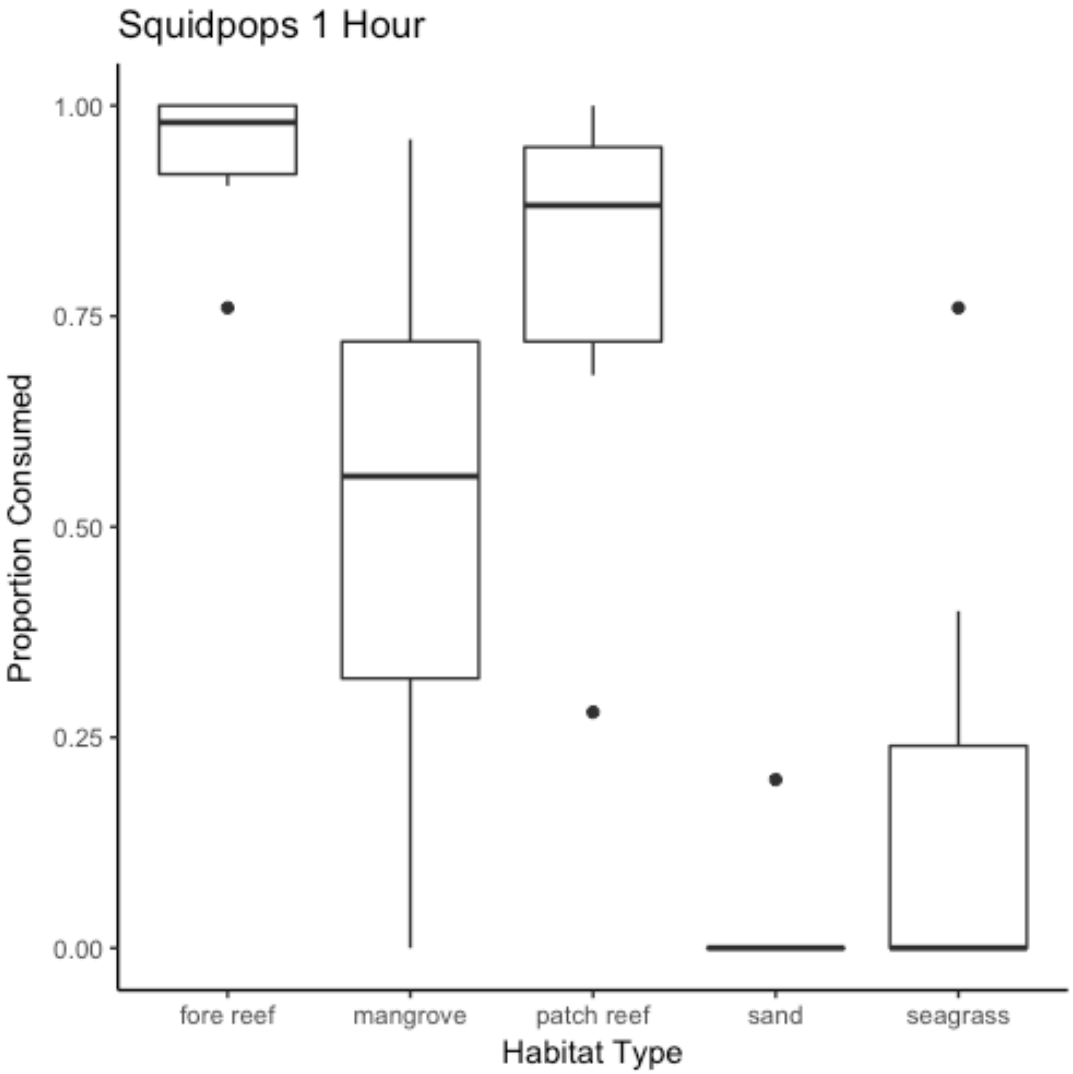
MARINEGEO - HAWAII

Photo: himb.hawaii.edu, Levy

+ COLLECTIONS & TEK



EXPERIMENTS: OCEAN BITEMAP



Squidpops + Seine/GoPro

- >40 participants
- 5 continents
- Feeding intensity
- Fish diversity
- Seagrass vs. sand

Participate

bitemap.wordpress.com

CHALLENGES WE FACE

- Limited resources
- Scope & direction
- Network growth
- Communication
- Data management

+ DATA MANAGEMENT

MarineGEO Seeks Job Applicants

Data and Information Technology Coordinator

The Smithsonian Marine Global Earth Observatory (MarineGEO) seeks a talented, motivated, and collaborative person to help implement and expand a network-wide data/information system to support its scientific mission of conducting coordinated, global research on marine biodiversity and ecosystems. This position serves as the data and information technology coordinator, a key role for the MarineGEO network of partners dispersed nationally and internationally. The coordinator serves a central function of facilitating research and data-driven discovery across the network by stewarding data management, system administration, and data collaboration.

Proposed shared schema for Kaneohe Bioassessment
Updated 05/24/17 by EDC

The schema is broken into two subtables, one of which describes a sampling event at a particular locality, and the other of which describes individual occurrences and samples derived from those occurrences. Fields are described with their DarwinCore term, followed by field names that were common among the disparate templates that we looked at. Where appropriate there is also a description of the format for that field, including a controlled vocabulary where necessary. Red fields are required prior to departure from Coconut Island.

UPCOMING OPPORTUNITIES

2017-2018

- Baseline data collection at new sites in the Pacific & Gulf
- Continued monitoring on the Atlantic
- Ocean Bitemap
- Pan-American Experiment
- Data systems management
- Workshop on leveraging university participation
- Strategic planning

Long-term

- Build a global network of long-term coastal biodiversity observatory partners
- Add 10 more sites in 5-10 years
- Develop specialized areas of research branching off the core
- Engage citizen scientists

THE SMITHSONIAN'S MARINEGEO

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Questions?