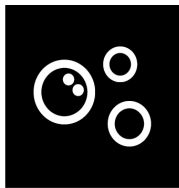
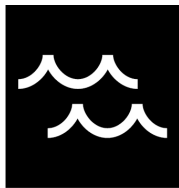




EARTH



LIFE



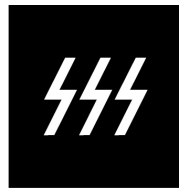
OCEAN



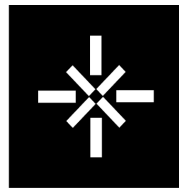
CLIMATE



ATMOSPHERE



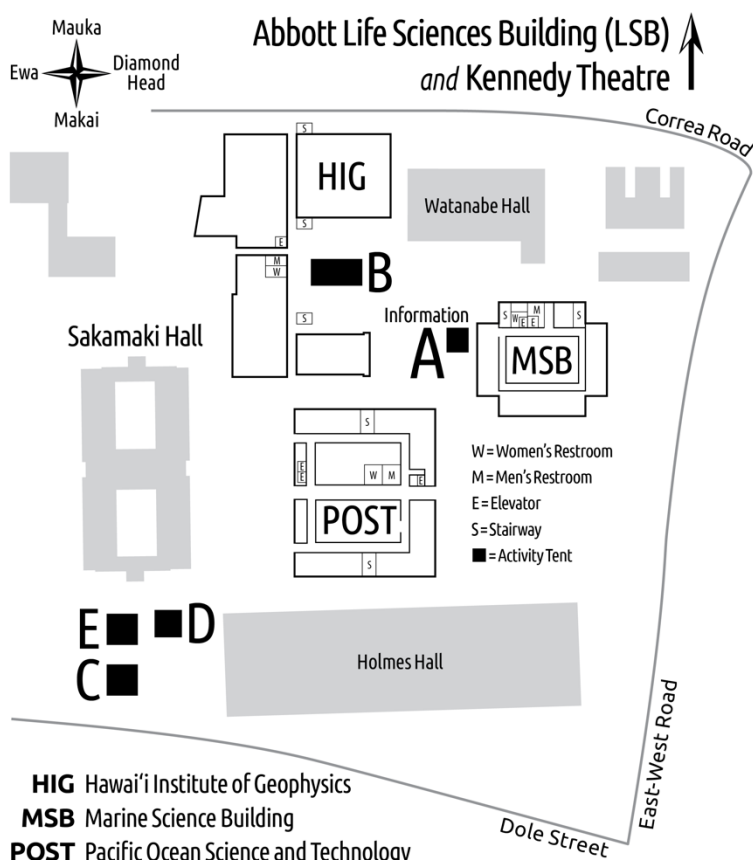
ENERGY



SPACE

# 2023 SOEST Open House Program

*Saturday 21 October (10 am to 2 pm)*



**HIG** Hawai'i Institute of Geophysics

**MSB** Marine Science Building

**POST** Pacific Ocean Science and Technology

**Tent A** Information, Maile Mentoring, Student Academic Services

**Tent B** Fish Printing, Polynesian Voyaging Society, Crushing Cans

**Tent C** Marine Trash, Underwater Vehicles, Volcano Models

**Tent D** NOAA: Pacific Tsunami Warning Center, Weather Hazards, Coastal Management

**Tent E** Hawai'i Institute of Marine Biology (HIMB), Robots, Ahupua'a of He'eia, Moon

## OUTDOOR ACTIVITIES

### 45-foot Humpback Whale (Outside Kennedy Theater)

Come explore a nearly life size 45-foot inflatable whale. Step inside the whale to explore its 3D inner organs.

### Make-a-Quake (MSB Courtyard)

Make an earthquake (by hitting a sledge hammer against the ground) and see the ground vibrations recorded by geophones at various countries around a mini-map of the Pacific Ocean.

### The Secret World of Marine Viruses (MSB Lanai)

Explore viral lysis using a model system with water balloons, citric acid, and baking soda. Prepare to make a mess! Visitors can also compete in a lawn game to be the best virus they can be.

### Underwater Robots (MSB Lanai)

You can take the controls of an underwater robot built by local high and middle school students! See how these machines are used to explore the deep ocean.

### Explosive Volcanism Demonstration (Between POST & Sakamaki)

Explosive volcanism will be demonstrated using liquid nitrogen, a 30-gallon trash can filled with water, and hundreds of colored particles.

### SOEST Maile Mentoring Bridge Program (MSB by Information Tent A)

The mission of the SOEST Maile Mentoring Bridge program is to attract kama'aina and other historically under-represented undergraduates into SOEST degree programs and help them thrive through individualized mentoring and peer support.

### SOEST Student Academic Services (MSB by Information Tent A)

Come and talk story about SOEST's degree programs, play some games, and get the chance to win some SOEST swag!

### Crushing Cans with Atmospheric Pressure (Tent B)

Watch the crushing power of the weight of the atmosphere!

### Secret Life of Reefs and Coastlines (Tent B)

Ever wondered what a day in the life of an underwater creature looks or sounds like? Come check out the MEGA Lab underwater live stream reef camera and view corals and coastal ecosystems in 3D using our augmented reality app.

### Moananuiākea Voyage & Wa'a Honua (Tent B)

Learn about the navigational knowledge used by the Polynesian Voyaging Society as they sail on the Moananuiākea Voyage and discover educational resources available to learners of all ages online through Wa'a Honua.

### Gyotaku—Fish Printing (Tent B)

Gyotaku is an old form of recording a fisherman's catch. Create your own gyotaku fish prints.

### Hawaiian Marine Communities (Tent B)

Join Waikiki Aquarium staff for a variety of hands-on activities for families.

### Wax Lava Flows (Tent B)

We will produce flows of molten wax and view them with a thermal infrared video camera. Come learn about monitoring lava flows.

### Diving Deeper with the Division of Aquatic Resources (Tent C)

Dive deeper with our ocean friends to learn how we can work together to mālama our oceans and communities. Interact with live coral and sea urchins and learn about what you can do to ensure healthy marine resources for generations to come.

### Science of Marine Trash (Tent C)

See how marine debris is transported across the oceans, how garbage patches are created, and the impact of marine debris on marine life

### Sampling the Ocean using Autonomous Underwater Vehicles (Tent C)

Come learn how we sample the ocean using AUVs and the power of this technology. We have different types of AUVs (Seaglider, Profiling float, Wirewalker) and a photo slideshow.

### Ocean Biogeochemistry (Tent C)

Learn how we use chemical sensors, autonomous robots, and computer models to understand how biology, physics, and chemistry interact in the ocean; and how carbon and oxygen move through the ocean and atmosphere.

### How Does a Volcano Work? (Tent C)

With various models, such as wax or sand volcanoes, we will share how volcanoes work. Learn how calderas form and see magma intruding into a gelatin volcano.

### Baby Fish Abound: Matching Ichthyoplankton to Their Adult Life Stages (Tent D)

Did you know that after fish eggs hatch, the larvae drift around as plankton before they grow up? Examine larval fish under a microscope and try to guess which larva matches which adult fish.

### Deep-Sea Diets (Tent D)

Explore preserved lancetfish prey and stomachs and see if you can guess the top lancetfish prey.

### Where Does Your Poke Come From? (Tent D)

Where does our local seafood come from and how does it make it to your table? Learn how NOAA sustainably manages fish so that we can continue to enjoy fresh, local seafood, and a healthy ocean environment!

### The Threat of Tsunamis in Hawai'i and Around the Pacific Ocean (Tent D)

Come learn about tsunamis including historical information, how to be prepared, and how we conduct 24/7 monitoring at the NOAA Pacific Tsunami Warning Center.

### Building Pilina (Relationships) to the Kai Lipo (Deep Sea) of Papahānaumokuākea (Tent D)

Demonstrating the use of technical diving and 'Ōiwi nomenclature initiatives to grow our collective knowledge of the mesophotic ecosystems of Papahānaumokuākea.

### Weather Hazards Across the Islands (Tent D)

We will demonstrate how flash flooding occurs using a small scale model. We will also review how the National Weather Service helps you stay prepared in various weather conditions.

### NOAA Office for Coastal Management (Tent D)

Come visit the NOAA Office for Coastal Management table to learn about career pathways.

### Robots in Space (Tent E)

Try your hand at driving a rover and see if you can navigate through obstacles! See how cameras provide streaming video to Earth-based astronauts.

### Hawai'i Space Flight Laboratory: SmallSats in Research (Tent E)

See models of CubeSats and learn how satellites help to drive research at the University of Hawai'i and beyond.

### Lo'i and Loko I'a in the He'eia National Estuarine Research Reserve (Tent E)

Learn about the ahupua'a of He'eia, where taro patches and fishponds are being restored to produce 'āina momona or abundant landscapes. Learn about the creatures of the estuary using our felt board, and test your skill at making a mini fishpond wall.

### Center for Community Education at HIMB (Tent E)

Explore Kāne'ohe Bay's plankton under microscopes and use a Plankton Field Guidebook to identify different species of zooplankton, sketch scientifically, and feed plankton to the Coral Resilience Lab's sea anemone, *Aiptasia*. Learn how school groups and families can visit Moku o Lo'e.

### Meet the Microbe! (Tent E)

Step up to a ring toss game and learn about unique microbial species! A coloring station with pictures of microbes and a picture book, "It's not magic, it's microbes", provides something for all ages.

### Coral Resilience Lab (Tent E)

The Coral Resilience Lab at the Hawai'i Institute of Marine Biology aims to understand coral resilience in the face of changing climate. Learn about our latest research and innovations!

### Exploring the Moon (Tent E)

View a giant lunar globe to see where the Apollo astronauts landed, where the latest Indian and China missions landed, and where humans may return in a few years.

# HIG

## Fishing for Knowledge (HIG 1<sup>st</sup> floor Canopy)

Learn about nearshore marine life, loko iʻa, and aquaculture by playing our fishing game.

## Visualizing Sea Level Rise with the Hawaiʻi Sea Level Rise Viewer (HIG 1<sup>st</sup> floor Canopy)

Join Hawaiʻi Sea Grant for a demonstration of this online interactive atlas that incorporates the best-available science on sea level rise and potential impacts.

## Hawaiʻi King Tides Project (HIG 1<sup>st</sup> floor Canopy)

Come learn about our Community Science project on King Tides, the highest high tides of the year! Photographing King Tides gives us a snapshot of what our future shorelines may look like with rising sea levels.

## Shifting Shorelines: Exploring the Impacts on Hawaiian Coastlines From Rising Seas (HIG 1<sup>st</sup> floor Canopy)

Over two-thirds of Hawaiʻi's beaches are chronically eroding, which will only get worse as sea levels rise. Come explore why this happens and how we can build resilience to adapt.

## Melting Ice, Rising Seas (HIG 1<sup>st</sup> floor Canopy)

Ice sheets are melting and sea levels are rising. Come observe a model of how this is happening.

## The Magic of Physics and Light (Outside HIG 107)

Use a Fresnel lens to focus sunlight to make fire on wood and learn why a paper clip floats on water. We will be displaying the SuperCam instrument on Mars 2020 Mission and recent advances in remote Raman spectroscopy.

## Fluid Harmonies: Exploring the Dance of Ocean Structures and Waves (Outside HIG 109)

Experience the captivating world of fluid-structure interactions as we unveil the discoveries in ocean engineering and fluid dynamics. Witness the mesmerizing display of a recirculating wave tank, showcasing the intricate movements of flexible structures under varying wave conditions.

## Scale Model Ship Towing Through Surface Waves (HIG 151)

This demonstration will showcase the new Ocean and Resources Engineering wave flume. Come learn how a ship model and towing tanks are used to determine ship stability and hydrodynamics.

## IT'S STORY TIME! (HIG 210)

Hawaiʻi Sea Grant invites you to our storybook corner to learn about hurricanes and rising tides from our friends the 'Io Brothers.

## Green Screen Magic (HIG 309)

See how TV meteorologists and big movie productions add backgrounds behind the presenters and actors! Your group will get to choose its own exciting weather background and get a photo emailed to your group leader as a souvenir.

## The Sand Lab—Hosted by the Climate Resilience Collaborative (HIG 311)

This exhibit features a hands-on exploration of sand across different wave climates and beaches in Hawaiʻi and beyond! Visit our microscope station to discover the tiny world that makes up a beach.

# ABBOTT LSB

## Insects of the Sea: Copepods and the World of Zooplankton (LSB Lobby)

Learn about plankton from Kāneʻohe Bay! Copepods, tiny shrimp-like crustaceans, are found everywhere in the ocean from the Arctic to the Antarctic. Come see microscopic copepods and zooplankton up close.

## Rat Lungworm Disease Research at UH Mānoa (LSB Lobby)

Everything you want to know about rat lungworm disease!

## Intracellular Calcium Changes (LSB Lobby)

Time-lapse video imaging of intracellular calcium changes.

## The Science of the Sting: Understanding Box Jellyfish (LSB Lobby)

Box jellyfish come up from the deep to spawn for a few days each month in certain nearshore reef areas in Hawaiʻi. Come learn how this venom works and how we can prepare the optimal first aid for jellyfish stings.

## Insects of Hawaiʻi (LSB Lobby)

Learn about mosquitoes and Hawaiian flies found only in Hawaiʻi. Visitors will have a chance to see insects close up, compete in fly races, and make insect art!

## Understanding the Experiences of Wāhine (Women) Advancement in STEM (LSB Lobby)

Come learn about the efforts at UH Mānoa to better understand the experiences and challenges of wāhine (women) in STEM.

## Warm and Cold is at the Heart of the Question (LSB Lobby)

A video recording of researchers in our group performing an experiment where mice are exposed to a cold environment to test how they adapt to low temperatures and how their hearts maintain the ability to beat.

## Selenium, Stress, Brains and Energy (LSB Lobby)

Learn about how selenium helps protect against cognitive impairment from steroids.

## Exploring the Microsphere (LSB 101)

Visitors will be able to explore the alien, bizarre, and beautiful world of the microscopic at the Biological Electron Microscopy Facility.

## Exploring the Micro Mysteries of the Sea: Marine Fungi Under the Microscope (LSB 101)

Dive into the exciting world of marine fungi at our interactive station designed especially for young explorers! Together, we will embark on an exciting journey where curiosity knows no bounds and the secrets of the ocean come to life under the lens of a microscope.

# MSB

## Connect Live with the Schmidt Ocean Institute's Latest Research Vessel, *Falkor* (too) (MSB 100)

Join Schmidt Ocean Institute's new research vessel *Falkor* (too), live in the Galapagos starting at 10:30 am! The crew on the vessel will give a tour of the ship and talk about the latest findings.

## An Ocean in a Tank (MSB 200)

Explore the strange world of rotation in the ocean and atmosphere.

## Display of Coral Skeletons using 3D Hologram Technology (MSB 203)

We will use a hologram projector for 3-dimensional display of coral skeletons and other marine creatures.

## Deep-Sea Fish Ecology Lab Tour (MSB 604)

Drop by to hear the latest research on the deep sea, the world's largest ecosystem, and learn about the mysterious and wonderful creatures that live in the depths of our ocean. We have hundreds of preserved deep-sea animals to look at and even a handful you can touch!

# POST

## Hydrogen and Fuel Cell (POST 126)

Hydrogen is an environmentally-friendly carrier to store renewable energy. Come learn how fuel cells convert hydrogen energy into electricity, providing power to your car, appliances, and other electric devices.

## HNEI Battery Research (POST 126)

Learn how batteries work and hear about cutting-edge research to improve energy storage.

## Adventures in Applied Research (POST 127)

Adventures in Applied Research showcases work done by scientists and engineers toward ocean science, sensor development, and remote sensing.

## *Up, Up and Away: A Solar System Adventure!*

The Hawaiʻi Institute of Geophysics and Planetology hosts a series of exhibits at the Pacific Regional Planetary Data Center (POST 544), which was founded by NASA. Come join us for a Solar System Adventure, with stops on Earth, the Moon, Asteroids, Planets and Beyond.

## Exploring Inner Space (Diamond Head Hallway Near POST 544)

Visitors will handle rocks from deep sea volcanoes and view videos of the deepest ocean trench and 3-D posters. Come chat with scientists who conduct research using deep-sea submersibles, remotely-operated vehicles, and deep-sea drilling to study the origins of life.

## Exploring the Solar System: Asteroids and Return Sample (POST 544)

Step back in time and immerse yourself in this captivating exhibit featuring a 4.6-billion-year-old grain-sized sample from asteroid Ryugu. This unique showcase provides a glimpse of this ancient asteroid and celebrates the remarkable technological achievements that enabled its collection.

## Hot Pressed Ice (POST 544)

Did you know that ice can be hot? We will squeeze hot water between diamonds to make ice crystals that you've never seen before! Using our diamond anvil cell, we will synthesize high pressure polymorphs.

## Looking at Infrasound: Explosions, Rockets, and Meteorites (POST 544)

We'll demonstrate a smartphone application that detects infrasound and show how it's used to detect explosions, rockets, and meteorites.

## Investigating the Moon with the Lunar Reconnaissance Orbiter Camera (LROC) (POST 544)

Check out LROC high-resolution image anaglyphs (3D red/blue images) and a demonstration of lunar libration, the wavering of the Moon perceived by Earth-bound observers.

## Mars or Earth? (POST 544)

Participants will be asked to guess whether images are of Martian or terrestrial features using images acquired by the NASA Perseverance and Curiosity rovers.

## Meteorites (POST 544)

The Cosmochemistry group will showcase a meteorite display, hands-on exhibit, thin sections of Mars meteorites, and a variety of posters about meteorites and cosmochemistry.

## The Visible and Invisible Space (POST 544)

Learn how we use spectrometers as powerful tools to explore visible and invisible aspects of space using soils returned from the Moon. See how a spectrometer can distinguish between terrestrial materials that look similar. Take home a 3D printed Moon!

## Family-fun Exploration of Outer Space! (POST 544)

Explore outer space and experience the extraterrestrial! This family-fun exhibit is designed for all ages. Space trivia with prizes (while supplies last), hands-on arts and craft activities, and a very cool extraterrestrial photo booth.

## The Electron Microprobe Lab Tour: Diving into a Micro-World! (POST 621)

How do olivine sands on Hawaiʻi beaches look under electron microprobe, at micro-scale? This lab tour will bring you into a micro-world, allow you to see how minerals can be very complexly grown, and get a glimpse of the mysterious histories behind them.

## Understanding Hawaiian Volcanoes Through the Power of Isotopes (POST 638A)

We will demonstrate a mass spectrometer and show how we use isotopes to understand modern and ancient Hawaiian volcanoes.

## Marine Invertebrate Touch Tank (POST 703)

Join members of the Kewalo Marine Lab at a touch tank with marine invertebrates such as sea slugs, urchins, sea stars, crabs, snails, and more. We will also bring invertebrate skeletons (urchins and corals) and a microscope for viewing larvae.

## SEED: Stimulating Education and Ecological Design (POST 706)

Learn about efforts to develop microplastic removal and separation technologies while fostering future generations in environmental stewardship.

## Watershed in a Sandbox (POST 708)

An augmented reality sandbox will be available for visitors to project a real-time updated topography map, hillshading, and a real-time water flow simulation onto the sand surface.

## Flowing Beneath Our Feet: The Science of Groundwater (POST 708)

The exhibit will show how groundwater is stored in subsurface and how freshwater pumping affects groundwater storage in subsurface.

## Radioactivity Around Us (Outside POST 708)

Visitors will construct atoms and learn which are stable or radioactive. Everyone will have an opportunity to measure radioactivity in common items like kitty litter, bananas, and nuts.

## Magnetic Materials, Paleomagnetic and Petrofabrics Laboratory (POST 715 & 716)

Gain insight into materials you might not have known are magnetic such as rocks, ceramics, meteorites, and deep-sea sediments.

## Student Projects: Satellites and Rockets at Hawaiʻi Space Flight Lab (POST 823)

Undergraduates from the Ke Ao Satellite Team and the Ka Hui o Kalele Rocketry Team will demonstrate their research, showcase the student lab, and help keiki make straw rockets to take home.

## The Geophysical Time Machine (POST 834)

Journey through the Geophysical Time Machine to explore Earth's past and present. Discover tools used by early geophysicists to measure the Earth's magnetic field and seismic activity, and then fast-forward to the modern era with cutting-edge technology.