

X-TREME SCIENCE! EXPLORING OCEANS, VOLCANOES AND OUTER SPACE: A NEW EXHIBIT AT THE BISHOP MUSEUM. T. L. Hicks¹ and K. T. M. Johnson^{1,2}, ¹School of Ocean Earth, Science and Technology (SOEST) University of Hawaii (HIGP/SOEST, University of Hawaii at Manoa, 2525 Correa Rd, Honolulu, HI 96822, hicks@pgd.hawaii.edu), ²Bishop Museum (1525 Bernice Street, Honolulu Hawai'i 96817-2704, kevinj@soest.hawaii.edu).

Introduction: Some of the most exciting and important scientific research in the world is going on in Hawai'i, and is being done by scientists who explore places most of us never have a chance to visit--the deep ocean, volcanoes, and outer space.

"X-treme Science! Exploring Oceans, Volcanoes, and Outer Space," is a fun, hands-on exhibit full of adventure. Crawl into a submarine on an undersea volcano, witness a tsunami, walk across an active lava flow, steer a rover over the surface of Mars, and much more. This exhibit allows visitors to find out about the scientists themselves and what methods they use to make their exciting discoveries! "X-treme Science!", funded by NASA, is the largest exhibit ever developed entirely in-house at the Bishop Museum. The purpose of this exhibit is to introduce the public to some of the explorers and scientists in Hawai'i who are doing astonishing, innovative scientific research in the fields of planetary science, earth science, and ocean science.

The X-treme Science! Exhibit: The main goal of the exhibit is to highlight some of the scientific research that is being conducted in Hawai'i. This will show people in Hawai'i all the extraordinary research that is being conducted by their neighbors, and to help encourage the younger visitors to follow science as a career. The exhibit highlights 32 different people who are scientists in various capacities. Included are principal investigators on major science projects, graduate students who are just starting out, technicians, engineers, computer gurus, public relations officers, and a submersible driver. There will be video kiosks throughout the exhibit, with different questions posed to the highlighted scientists about their work and hobbies, as well as text panels with a brief introduction to each of them. The exhibit is divided into three sections, Oceans, Volcanoes and Outer Space.

The outer space portion will focus on recent studies on the moon, Mars, meteorites, life in extreme environments, satellites, and telescopes atop Mauna Kea. The ocean portion of the exhibit will include a walk-in submersible mock-up with robotic arms, an interactive sonar demonstration, a tsunami tank, hurricane footage, and a section on reefs and beaches in Hawai'i. The remainder of the exhibit will concentrate on volcanoes, specifically Kilauea volcano. Here we will introduce the different methods that scientists study volcanoes in

the field, and what types of information they can gather using remote sensing tools.



Figure 1: Testing out the meteorite glove box in the Outer Space exploration zone.

To ensure that children of all ages are inspired about science, we are also going to have a section for the younger kids (aged five and under). This region will have a space theme, with astronaut costumes, space shuttles, Mars colony tents, toys, puzzles and books. This will ensure that even our smallest visitors to assume the roles of scientists too!



Figure 2: Astronaut role playing in the interactive "Kids Zone".

Education and Outreach: Educational programs include an in-exhibit "Explorers Base Camp", teacher workshops, and a take home teachers guide. The "Explorers Base Camp" is a place for guided activities and demonstrations. Programs associated with the base camp include "Be a Volcanologist" and "Exploring the

X-TREME SCIENCE! EXPLORING OCEANS, VOLCANOES AND OUTER SPACE: T. L. Hicks and K. T. M. Johnson

Deep”, both of which allow school groups to assume the role of scientists in their extreme environments.



Figure 3: Guided remote sensing interactive in the “Explorers Base Camp”.

Two teacher workshops are available, a pre-visit workshop and an X-treme adventure workshop. The preview workshop is for teachers planning to attend the exhibit with their class. This daylong session will provide teaching enrichment in planetary, earth and ocean sciences, as well as hands-on activities and demonstrations to take back to their classrooms. The X-treme adventure workshop is a 3-day event designed to immerse educators into the world of X-treme Science! Activities include a tour of an ocean research facility, a visit to some telescopes on Mauna Kea, and an introduction to the tools scientists use to study Kilauea volcano.

A teacher’s guide is available in three levels for this exhibit, K-2, 3-6, and 7-12. Listed inside are age-appropriate lesson plans, hands-on activities, project ideas, and sources for more information.

Currently under development is an X-treme Science! website. This site will provide information on all of the research areas studied in the exhibit, as well as links to other information sources on the World Wide Web.



Figure 4: A younger visitor “Meets the Scientist” on one of the touch screen activated video kiosks.



Figure 5: An example of a X-treme Science! scientist profile panel.

Additional Information: For more information, please visit the Bishop Museum website www.bishopmuseum.org, or contact Tara Hicks or Kevin Johnson at the addresses listed above.