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Author: Prof. Kim Binsted
University of Hawaii, United States

HI-SEAS (HAWAII SPACE EXPLORATION ANALOG AND SIMULATION): OVERVIEW OF RESULTS FROM THE FOUR-, EIGHT- AND TWELVE-MONTH MISSIONS

Abstract

HI-SEAS

HI-SEAS (Hawaii Space Exploration Analog and Simulation, www.hi-seas.org) is a habitat on an isolated Mars-like site on the Mauna Loa side of the saddle area on the Big Island of Hawaii at approximately 8200 feet above sea level. HI-SEAS is unique, in addition to its setting in a distinctive analog environment, as:

- we select the crew to meet our research needs (in contrast, at serendipitous analogs, such as Antarctic stations, crew selection criteria are not controlled by researchers); - the conditions (habitat, mission, communications, etc.) are explicitly designed to be similar to those of a planetary exploration mission; - the site is accessible year round, allowing longer-duration isolated and confined environment studies than at other locations; - the Mars-like environment offers the potential for analog tasks, such as geological field work by human explorers and/or robots. The ability to select crew members to meet research needs and isolate them in a managed simulation performing under specific mission profiles makes HI-SEAS ideal for detailed studies in space-flight crew dynamics, behaviors, roles and performance, especially for long-duration missions.

MISSIONS TO DATE As of January 2018, there have been five missions completed at HI-SEAS: two of four months, two of eight months, and one of twelve months in length. The first four-month mission was focused on food and resource utilization; the next three were about crew cohesion and performance; and the recently completed and upcoming missions are developing strategies for crew composition.

RESULTS The just-ending research cycle at HI-SEAS was focused on crew cohesion, function and performance. This presentation will provide an overview of mission conditions and protocols, set the context for these results, and discuss 'big picture' lessons learned.

OPPORTUNISTIC RESEARCH

In order to maximize research return, and to provide HI-SEAS crews with a realistic workload, we welcome proposals for opportunistic research to be carried out during HI-SEAS missions. Proposed projects must a) advance human space exploration by addressing NASA's needs and requirements; b) require a long-duration analog for desired research outcomes; and c) not confound the primary research. If you are interested in submitting an opportunistic research proposal, please contact the first author.