

## Estimating coastal erosion rates on Hawai‘i Island to inform setbacks

PI: Ryan L. Perroy, Asst. Professor of Geography and Environmental Science, UH Hilo  
Student Co-I: Rose Hart, Tropical Conservation Biology & Environmental Science, UH Hilo

Collaborators: Steven Colbert, Asst. Professor of Marine Science, UH Hilo  
Charles Fletcher, Professor of Geology&Geophysics, UH Mānoa

### Project Summary

Despite its vast coastline and unique coastal ecosystems and resources, Hawai‘i Island has never had a comprehensive shoreline assessment of coastal vulnerabilities or any systematic monitoring of long-term shoreline change rates. Consequently, Hawai‘i Island is in a weak position for adapting to the potential impacts of sea-level rise (SLR), building community resilience, and conserving key coastal resources and environments. This project seeks to quantify historic and current coastal erosion rates for selected priority areas on Hawai‘i Island. Existing shoreline records, including historic aerial photographs and LiDAR coastal surveys, will be combined with new coastal imagery and three-dimensional data sets collected from unmanned aerial vehicles (UAV) and other survey platforms to determine past and current shoreline change rates. These data will then be merged with SLR projections and other geospatial layers to estimate future impacts. The priority areas for this study represent a variety of coastal environments at different stages of development, including sea cliffs (Honoli‘i), low-lying and subsiding coastal lava fields (Kapoho), and calcareous beaches (Hapuna). These data will provide a visualization tool for communities and county workers to understand local impacts of SLR and consider necessary adaptations.

Fig. 1. Rose Hart controls an unmanned aerial vehicle (drone) to collect new coastal imagery on Hawai‘i Island.



Fig. 2. An example of remote coastal exploration: viewing coastal shifts from a drone’s perspective.