



## Changing Hawaiian seascapes and their management implications

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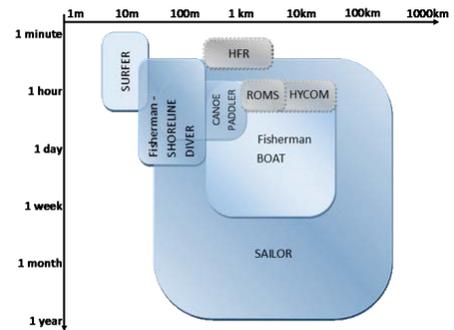
*View across Hilo Bay. Photo by Anson Chappell/ [CC BY-NC-ND 2.0](#)*

Hawaiian shorelines and near-shore waters have long been used for cultural activities, food gathering and fishing, and recreation. In Hilo Bay examples of community use can include swimming, diving, fishing, surfing, and canoe paddling. Many of the individuals and groups involved have been engaging in the same activities for decades. All of these groups interact with the surrounding environment differently, and use areas are delineated- either spatially or temporally or both. This diverse set of experiences over varying scales of space and time can provide valuable information about long-term changes in the physical and cultural/social components of the local seascape. These historical perspectives are especially important since shoreline areas are experiencing alteration due to climate change. By integrating local knowledge with physical data we can better understand and manage seascapes holistically.

Our work used surveys as well as interviews to gather information about spatial scales of observation and perceptions of change over time by different users. We also collected historical data on public beach use over time and biophysical data from monitoring buoys and weather stations located in and around Hilo Bay. We found

variation in the way that different individuals perceived currents and processes in the bay on temporal scales, but patterns were identified based on observations of spatial scales and boundaries of ocean activities. Social changes over time seemed as important as physical changes over time in influencing perceived change overall.

A seascape is both a physical and human space. By better integrating the cultural and biophysical dynamics of seascapes we can improve multi-use management as well as have a better baseline of data that can be used in resilience and adaptation planning. Increasing communication between the scientific and recreational communities also allows for better feedback on how to target further research at relevant spatial and temporal scales, and encourages better communication between environmental researchers and ocean users who are experiencing environmental changes directly.



*Scales at which users interact with the seascape vary by activity.*

## Quick Summary

- Sociocultural aspects of shore use will be affected by changing climate, but there is a paucity of research on the scales and timelines in which users interact with the environment. Better integration of local community viewpoints and experiences can help improve holistic understanding of seascapes and allow for better multi-use adaptation management and planning.
- We used interviews and surveys to determine the scales at which different use groups experienced environmental change in Hilo Bay, and connected these with biophysical data from sensors and climate change projections.
- Recreationists who regularly interact with their environment are natural environmental monitors with key insights into environmental change on important social scales. This knowledge can inform future research scale and focus, and should be integrated into adaptation, resilience, and management plans.



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