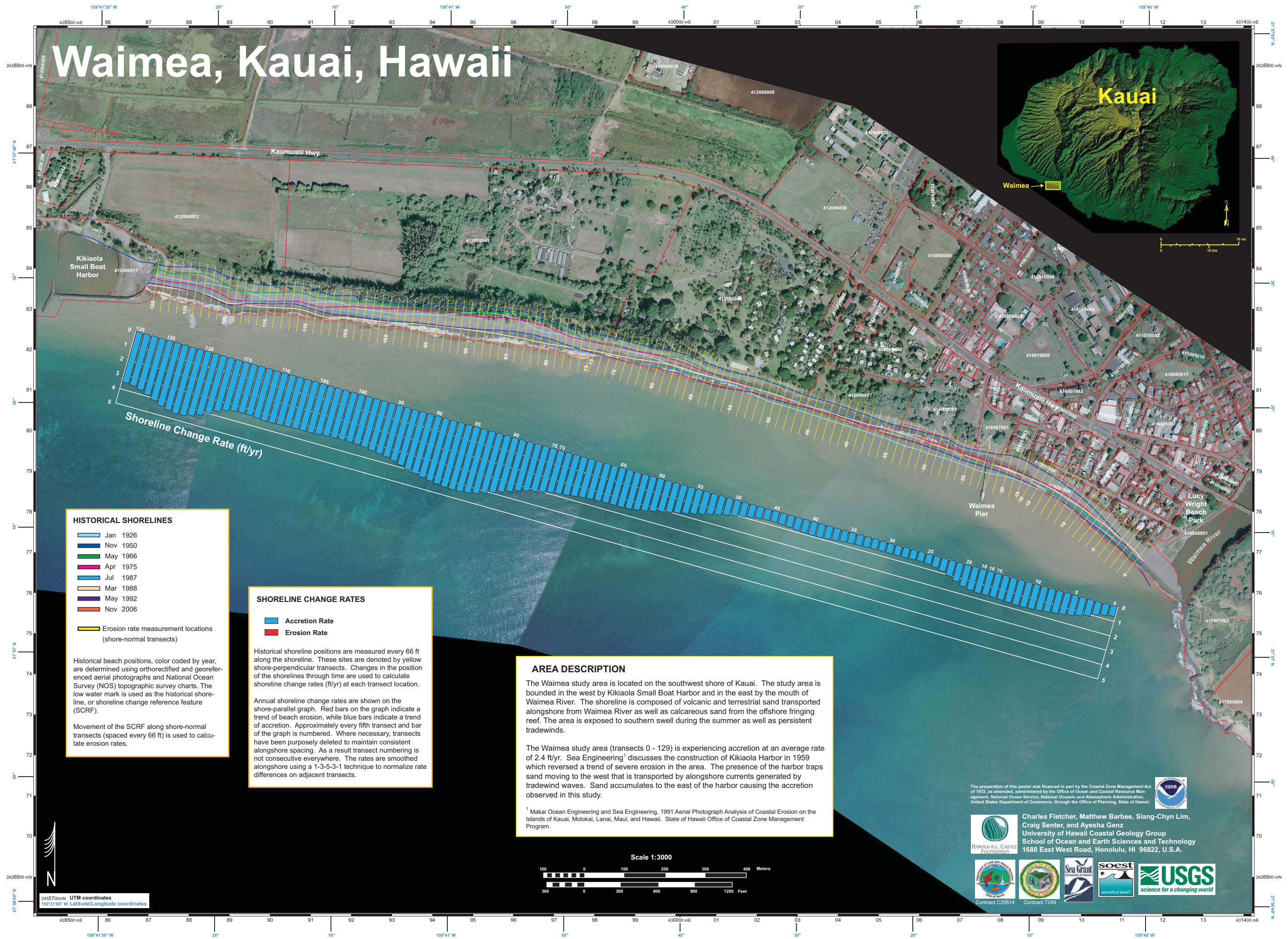
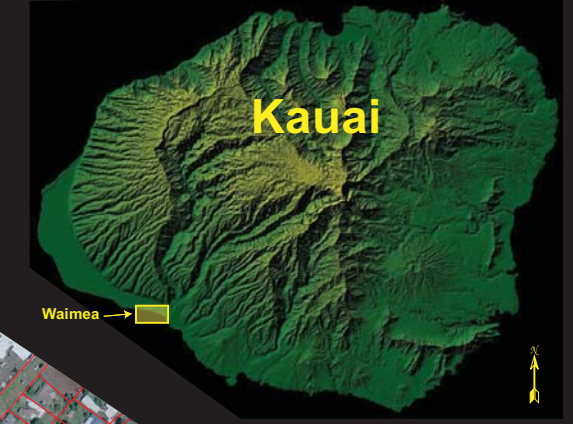


Waimea, Kauai, Hawaii



HISTORICAL SHORELINES

- Jan 1926
- Nov 1950
- May 1966
- Apr 1975
- Jul 1987
- Mar 1988
- May 1992
- Nov 2006

— Erosion rate measurement locations (shore-normal transects)

Historical beach positions, color coded by year, are determined using orthorectified and georeferenced aerial photographs and National Ocean Survey (NOS) topographic survey charts. The low water mark is used as the historical shoreline, or shoreline change reference feature (SCRF).

Movement of the SCRF along shore-normal transects (spaced every 66 ft) is used to calculate erosion rates.

SHORELINE CHANGE RATES

- Accretion Rate
- Erosion Rate

Historical shoreline positions are measured every 66 ft along the shoreline. These sites are denoted by yellow shore-perpendicular transects. Changes in the position of the shorelines through time are used to calculate shoreline change rates (ft/yr) at each transect location.

Annual shoreline change rates are shown on the shore-parallel graph. Red bars on the graph indicate a trend of beach erosion, while blue bars indicate a trend of accretion. Approximately every fifth transect and bar of the graph is numbered. Where necessary, transects have been purposely deleted to maintain consistent alongshore spacing. As a result transect numbering is not consecutive everywhere. The rates are smoothed alongshore using a 1-3-5-3-1 technique to normalize rate differences on adjacent transects.

AREA DESCRIPTION

The Waimea study area is located on the southwest shore of Kauai. The study area is bounded in the west by Kikiaola Small Boat Harbor and in the east by the mouth of Waimea River. The shoreline is composed of volcanic and terrestrial sand transported alongshore from Waimea River as well as calcareous sand from the offshore fringing reef. The area is exposed to southern swell during the summer as well as persistent tradewinds.

The Waimea study area (transects 0 - 129) is experiencing accretion at an average rate of 2.4 ft/yr. Sea Engineering¹ discusses the construction of Kikiaola Harbor in 1959 which reversed a trend of severe erosion in the area. The presence of the harbor traps sand moving to the west that is transported by alongshore currents generated by tradewind waves. Sand accumulates to the east of the harbor causing the accretion observed in this study.

¹ Makai Ocean Engineering and Sea Engineering, 1991 Aerial Photograph Analysis of Coastal Erosion on the Islands of Kauai, Molokai, Lanai, Maui, and Hawaii. State of Hawaii Office of Coastal Zone Management Program.

The preparation of this poster was financed in part by the Coastal Zone Management Act of 1972, as amended, administered by the Office of Ocean and Coastal Resource Management, National Ocean Service, National Oceanic and Atmospheric Administration, United States Department of Commerce, through the Office of Planning, State of Hawaii.

Charles Fletcher, Matthew Barbee, Siang-Chyn Lim, Craig Senter, and Ayesha Genz
 University of Hawaii Coastal Geology Group
 School of Ocean and Earth Sciences and Technology
 1680 East West Road, Honolulu, HI 96822, U.S.A.

Contract C25514 Contract 7249



2455700mN UTM coordinates
 159°21'58" W Latitude/Longitude coordinates