ARIA DESCRIPTION

The Kauapea study area (transects 0 - 142) is located on the north coast of Kauai. The shoreline is composed of calcareous sand beach interrupted by basalt headlands with a fringing reef flat offshore. Overall, the area is steadily at an average rate of -0.6 ft/yr. The area tends to be a steady net erosion rate. The eastern portion (transects 97 – 142) has no net trend in shoreline change. The western portion (transects 59 – 142) to the west of Kilauea Point is experiencing erosion at an average rate of -1.2 ft/yr. Kalihiwai Beach (transects 40 – 58) is bounded by Kapukaamoi Point to the west. The beach experiences erosion at an average rate of -0.7 ft/yr. The next section of beach (transects 6 – 39) has experienced erosion at an average rate of -0.8 ft/yr. Kauapea Beach (transects 59 – 142) to the west of Kilauea Point is experiencing erosion at an average rate of -0.8 ft/yr. Kalihiwai Beach (transects 40 – 58) is bounded by Kapukaamoi Point to the west. The beach experiences erosion at an average rate of -0.7 ft/yr. The next section of beach (transects 6 – 39) has experienced erosion at an average rate of -0.8 ft/yr. Overall, the area is eroding at an average rate of -0.6 ft/yr. The area lends itself to division into five portions. The most western portion (transects 0 – 5) is experiencing erosion at an average rate of -0.5 ft/yr. The eastern portion (transects 97 – 142) has no net trend in shoreline change. The western portion (transects 59 – 142) to the west of Kilauea Point is experiencing erosion at an average rate of -1.2 ft/yr. Previous studies did not analyze the Kauapea area.


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HISTORICAL SHORELINES

Historical beach positions are measured every 66 ft along the shoreline. These rates can be divided by annual erosion rate change (12 months X rate in ft/yr X 365 days/yr X 12 months/year) to determine the annual erosion rate change (E). The following equation can be used to determine the annual erosion rate change (E):

\[ E = \frac{A}{12 \times 365 \times 12} \]

where:

- \( A \) is the area between the historical beach positions and the current shoreline.

The annual erosion rate can then be determined by dividing the annual erosion rate change (E) by the width of the area measured (W).

\[ \text{Annual Erosion Rate} = \frac{E}{W} \]

The following equation can be used to determine the annual accretion rate change (A):

\[ A = \frac{B}{W} \]

where:

- \( B \) is the area between the historical beach positions and the current shoreline.

The annual accretion rate can then be determined by dividing the annual accretion rate change (A) by the width of the area measured (W).

\[ \text{Annual Accretion Rate} = \frac{A}{W} \]

The following equation can be used to determine the annual movement of the shoreline change reference feature (SCRF):

\[ \text{Annual Movement of SCRF} = \frac{C}{W} \]

where:

- \( C \) is the distance between the historical beach positions and the current shoreline change reference feature (SCRF).

The annual movement of the SCRF can then be determined by dividing the annual movement of the shoreline change reference feature (SCRF) by the width of the area measured (W).

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