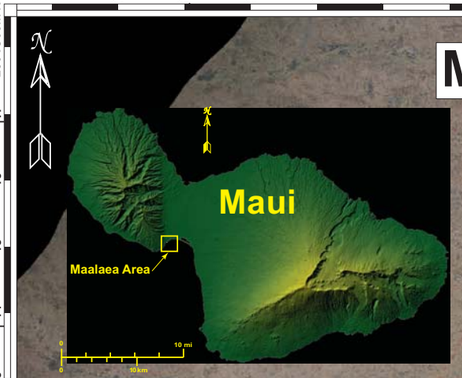
Maalaea Harbor, Maui, Hawaii



Honoapiilani Highway
Maalaea Road
Hauoli Street
Maalaea Harbor
Shoreline Change Rate (ft/yr)

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 along-shore spacing. As a result transect numbering is not consecutive everywhere.

The ST method is used to calculate shoreline change rates for the study area. The rates are smoothed along shore using a 1-3-5-3-1 technique to normalize rate differences on adjacent transects. For more information on erosion rate methods and results see: http://www.soest.hawaii.edu/asp/coasts/oahu/index.asp

HISTORICAL SHORELINES

1910
Nov 1949
Oct 1960
Feb 1950
Mar 1975
Jul 1987
Mar 1988
Nov 1992
May 1997
April 2007

Erosion rate measurement locations (shore normal transects)

Historical beach positions, color coded by year, are determined using ortho-rectified 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).

For situations in which there is coastal armoring or rocky shoreline seaward of any vegetation, the vegetation line is drawn along the seaward side of the rock or armoring. If there is no sandy beach in these areas, both the vegetation line and the SCRF are delineated along the mean high water line.

Movement of the SCRF is used to calculate erosion rates along shore-normal transects spaced every 20 m (66 ft) along the shoreline. The 1987 SCRF is not used in the calculation of the AEHR, however it provides a gauge of seasonal uncertainty.

Shoreline Change Rate (ft/yr)

TRANSECT	ST(ft/yr)	SETBACK(ft)
913	-0.6	54.2
914	-0.5	47.8
915	-0.4	43.3
916	-0.3	42.4
917	-0.4	43.3
918	-0.4	43.3
919	-0.4	43.2
920	-0.4	43.3
921	-0.4	43.6
922	-0.4	44.5
923	-0.4	44.1
924	-0.4	44.5
925	-0.5	49.3
926	-0.6	56.4
927	-0.7	62.4
928	-0.8	65.3
929	-0.8	67.0
930	-0.9	68.0
931	-0.8	67.2
932	-0.8	66.0
933	-0.9	68.2
934	-1.0	73.8
935	-1.0	77.2
936	-1.0	76.4
937	-1.0	74.3
938	-1.0	74.3
939	-1.0	75.3
940	-0.5	49.8
941	-0.5	48.8
942	-0.5	47.9
943	-0.4	46.9
944	-0.4	46.0
945	-0.4	45.0
946	-0.4	42.8
947	-0.3	42.2
948	-0.4	44.3
949	-0.5	47.8
950	-0.5	49.9
951	-0.6	52.6
952	-0.6	56.3
953	-0.7	60.2
954	-0.7	61.0
955	-0.7	59.6
956	-0.7	57.9
957	-0.7	58.5
958	-0.7	61.2
959	-0.8	65.7
960	-0.9	71.4
961	-1.1	78.6
962	-1.1	81.9

TRANSECT	ST(ft/yr)	SETBACK(ft)
963	-1.0	76.9
964	-0.8	62.9
965	-0.6	53.6
966	-0.5	49.4
967	-0.6	54.1
968	-0.8	66.2
969	-1.2	85.1
970	-1.4	97.1
971	-1.6	102.9
972	-1.6	104.5
973	-1.6	105.6
974	-1.7	108.2
975	-1.7	110.7
976	-1.7	111.0
977	-1.7	111.5
978	-1.8	116.0
979	-1.9	118.6
980	-1.8	115.7
981	-1.6	103.6
982	-1.5	97.5
983	-1.5	98.2
984	-1.6	106.1
985	-1.8	114.5
986	-1.9	118.7
987	-1.7	110.6
988	-1.4	93.5
989	-1.0	73.3
990	0.3	NO EROSION
991	0.1	NO EROSION
992	-0.1	31.1
993	0.0	NO EROSION
994	0.0	NO EROSION
995	0.1	NO EROSION
996	0.1	NO EROSION
997	-0.5	47.6
998	-0.4	45.7
999	-0.4	46.9
1000	-0.5	48.7
1001	-0.5	50.5
1002	-0.3	41.8
1003	-0.3	41.8
1004	-0.3	37.8
1005	-0.2	35.8
1006	-0.2	33.0
1007	-0.1	32.0
1008	-0.2	32.9
1009	-0.2	33.4
1010	-0.2	33.2

AREA DESCRIPTION

The Maalaea Harbor study area (transects 913 - 1010) is located on the south shore of the Maui isthmus. The Maalaea shoreline is composed of basalt and limestone rock and calcareous sand. The area is exposed to south swells during summer months. Easterly tradewinds blow offshore in this area year-round. Maalaea Harbor and breakwall were constructed in 1952.

Overall, the Maalaea shoreline is characterized by chronic erosion and beach loss. The beach was lost to erosion at transects 959 – 960 prior to 1988, at transects 961 – 963 and 969 – 979 prior to 1975, and at transects 980 – 988 prior to 1960. Waves break against artificial revetments in these areas at high tide. For areas where the beach has been lost to erosion, rates are calculated up to and including the first shoreline with no beach and depict the speed at which the beach disappeared. The remaining beach in the east of the study area (transects 913 – 958) is eroding at up to 1 ft/yr (around transect 935), threatening further beach loss. Several small pocket beaches in the west of the study area (transects 993 – 1010) have been approximately stable to moderately erosive (up to -0.6 ft/yr, around transect 1002).

Scale 1:3000

100 0 100 200 300 400 Meters

300 0 300 600 900 1200 Feet

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2299600m E UTM coordinates
20° 46' 40" N latitude/longitude coordinates