

# Coastal Shoreline Change

## Vital Signs Monitoring- Southwest Alaska Network



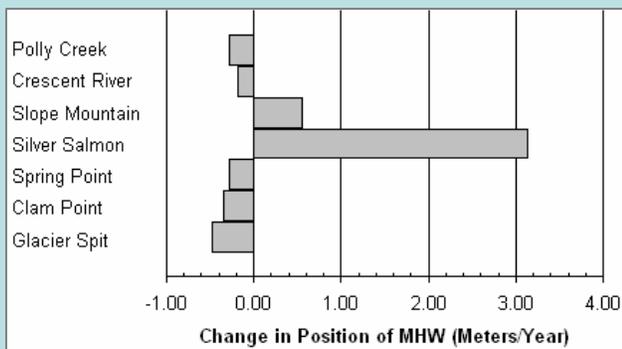
### Importance / Issues

Shoreline change was identified as a vital sign for the Southwest Alaska Network (SWAN) because land loss or gain at the marine edge has important ecological and jurisdictional implications. The physical configuration of the SWAN coastal shoreline is dynamic and constantly changing due to coastal erosion and accretion from natural events, such as storm-driven waves, high tides, nearshore currents, rainfall and runoff, landslides, and earthquakes. Changes in the position of the shoreline affect the composition, relative abundance, and distribution of coastal habitats.



### Status and Trends

To evaluate the type of shoreline changes occurring along the 82 km coastline of Lake Clark National Park and Preserve, 7 of 10 cross-shore beach profiles established in 1992 were re-surveyed in 2004 using rod and transit leveling. Cross-shore beach profiles revealed variation in rates of erosion and accretion along the parks coastline. Erosion, landward migration of the mean high water (MHW), was observed at 5 cross-shore profiles and accretion, seaward migration of MHW, was observed at 2 profiles. Annual average rates of erosion and accretion ranged from -0.18 to -0.50, and 0.55 to 3.13 m/yr respectively.



**Annual rates of erosion and accretion at cross-shore beach profiles, Lake Clark National Park-Cook Inlet Coastline, 1992-2004.**

### Future Monitoring

The availability of sufficiently high-resolution geospatial datasets, satellite imagery, and other remote sensing products – now makes it possible to economically and comprehensively quantify shoreline change in space and time. In 2006, William Manley, Institute of Arctic and Alpine Research (INSTAAR), University of Colorado, will develop a strategy for long-term coastal shoreline change analysis of SWAN coastal Parks (1950's-2006) using a time series of rectified aerial photographs and satellite images.

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