

OBSERVING COASTAL EROSION IN ALASKAAND THE ALASKA CORPS OF COASTAL OBSERVERS

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Alaska SeaLife Center®
w i n d o w s t o t h e s e a

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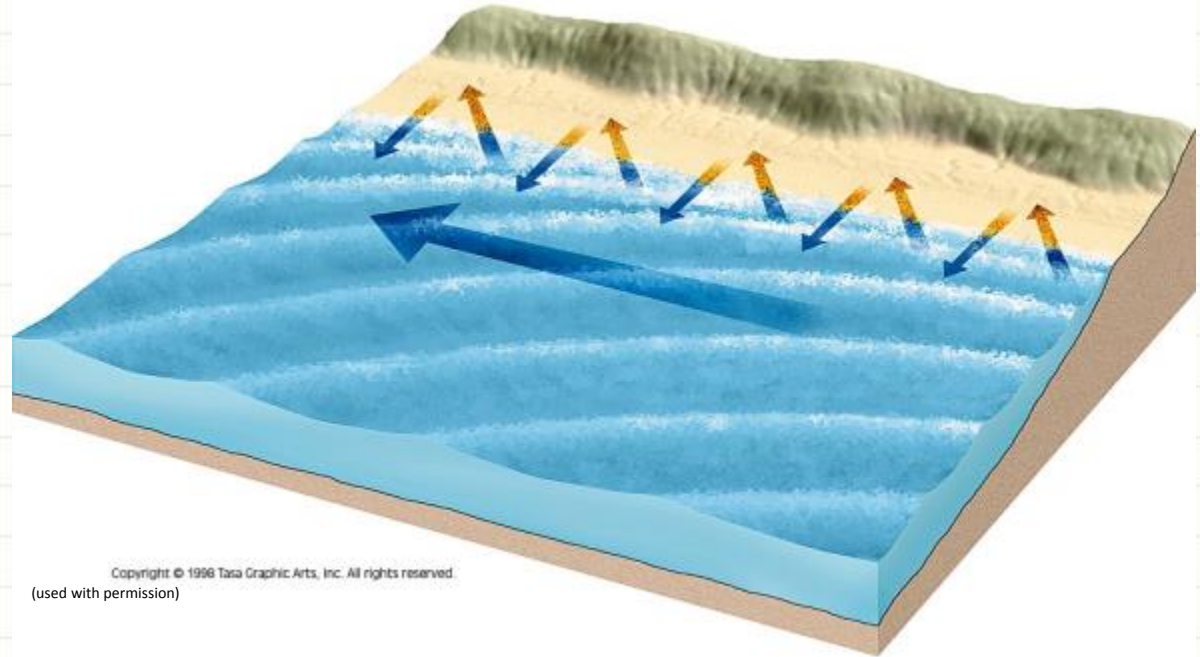
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Alaska Shoreline Hazards

- high winds
- coastal flooding
- earthquakes
- tsunamis
- sea ice
- thawing permafrost
- erosion



Shoreline Processes



- Wave action
 - Waves are created by wind over water
 - Height varies with wind speed, fetch, and duration
 - Waves breaking obliquely to shore cause longshore movement of beach sediment
 - High water level allows waves to break further inland

Parameters of Coastal Erosion

- Wind speed and direction (relative to beach)
- Wave height, period, and direction
- Water level
- Beach width, slope, and orientation
- Sediment size






Fjords & pocket beaches:
Southeast &
Southcentral



Bluff shorelines:
Cook Inlet, Kachemak Bay,
Bristol bay




Deltaic
shorelines:
Y – K Delta



Permafrost
shorelines &
bluffs:

Northwestern
and Arctic
Alaska



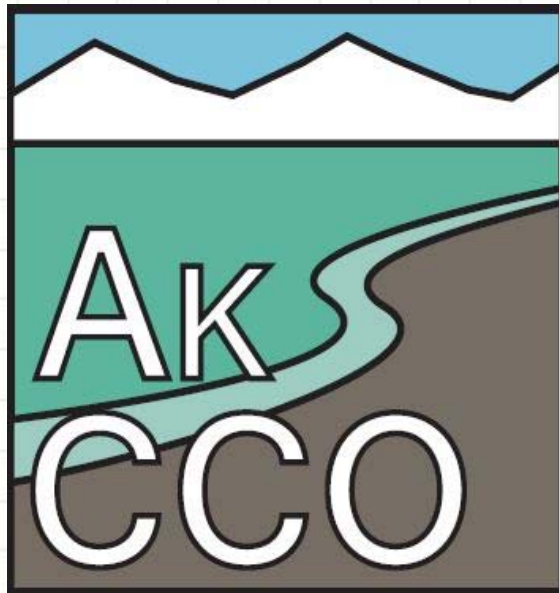
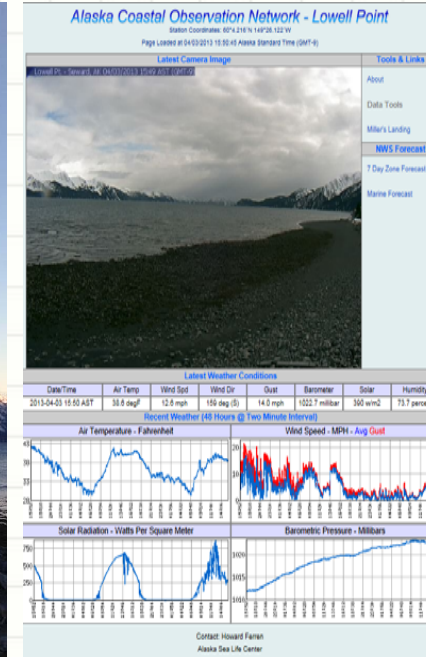
Northwest
Alaska
Barrier
islands

Climate Change in Alaska: Coastal Impacts

- Southeast and Southcentral Alaska have dropping sea levels (glacial rebound)
- Melting permafrost and coastal thaw subsidence
 - “permanent storm surge”
 - Changes in sediment sources and sinks
- Changes in frequency, intensity, & tracks of storms
 - Recently more apparent
- Reduced winter sea ice cover
 - More wave energy reaching the shore

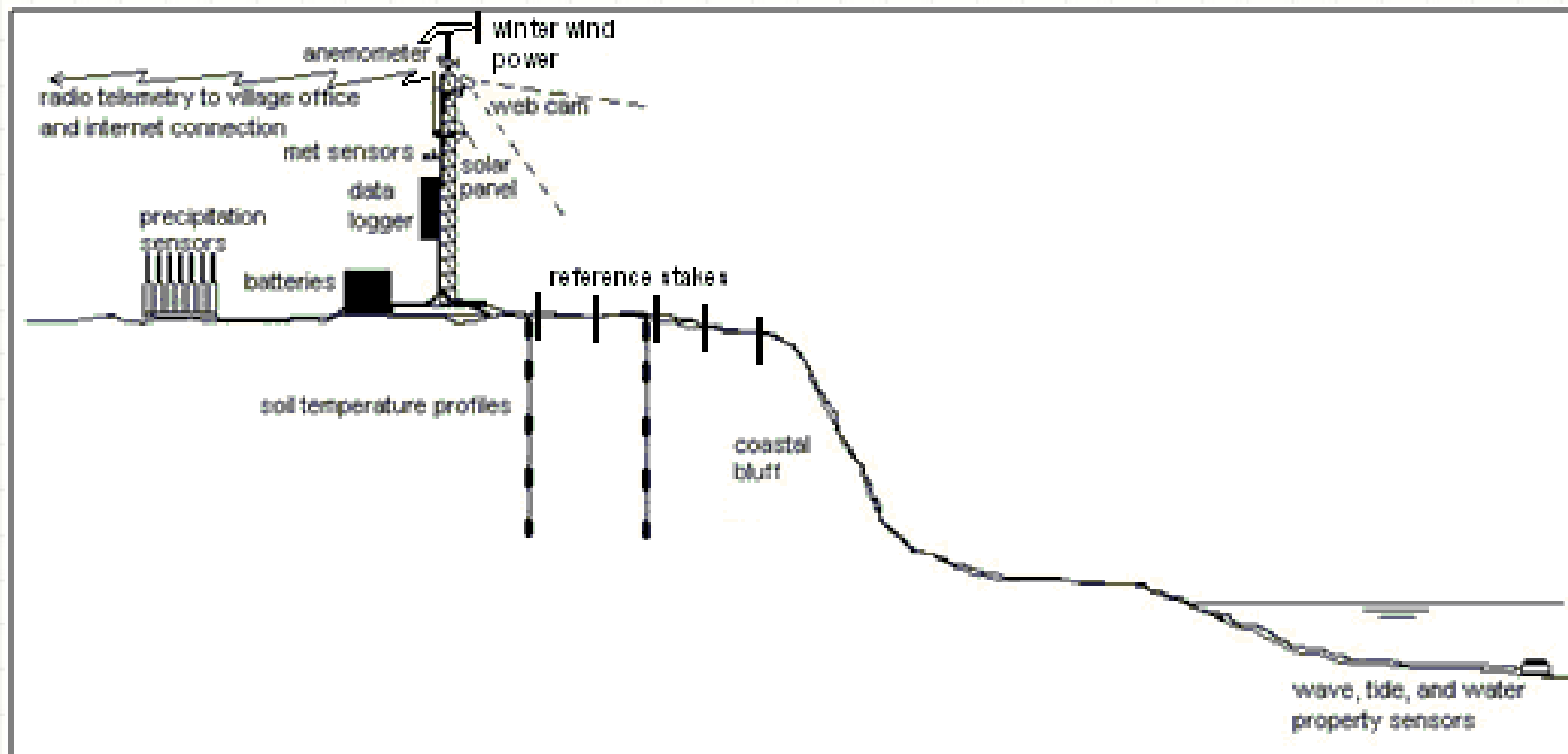
Alaska Coastal Observation Network

Automated Stations

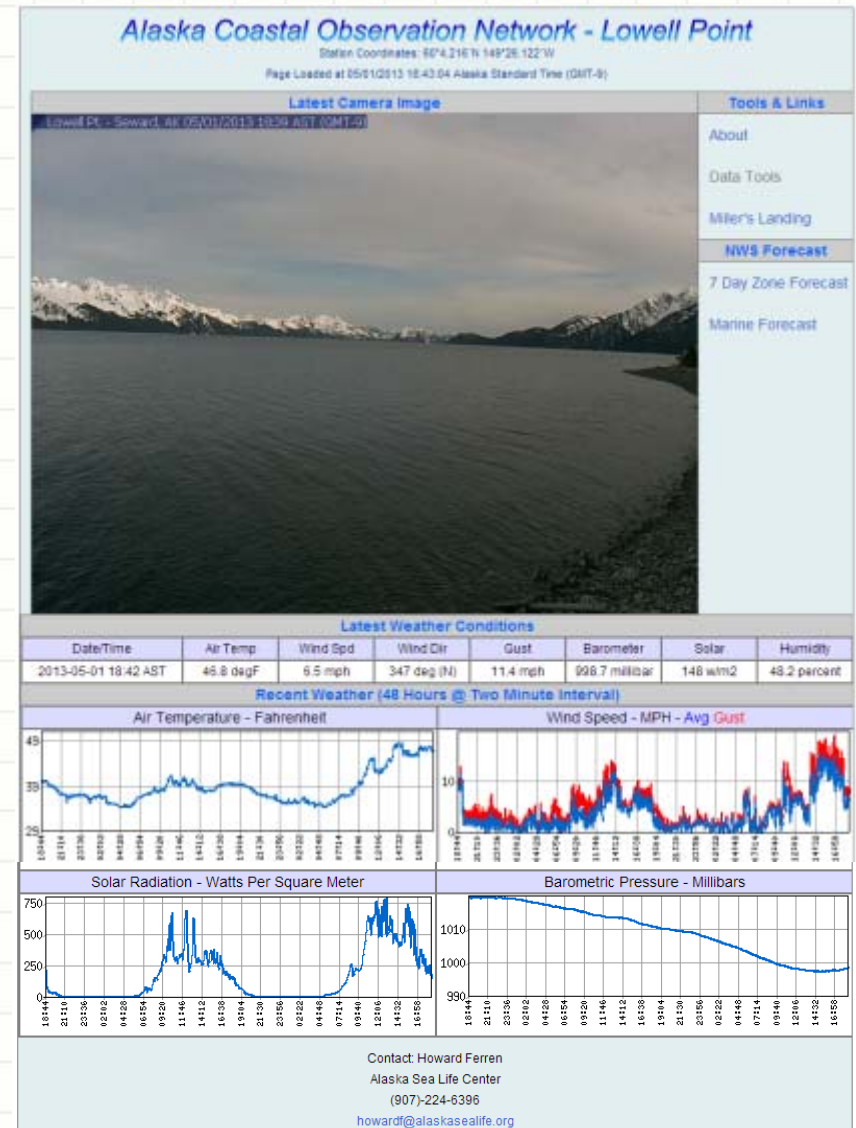


Alaska Corps of Coastal Observers

Concept Proposed



Lowell Point Prototype



Alaska Corps of Coastal Observers



*...a network of community based observers
trained and certified to record and report
shoreline processes data.*



The Alaska Corps of Coastal Observers (AkCCO) is a network of community based observers trained and certified to make observations and measurements of weather and shore-line processes.

The Advisory Board will help establish and maintain sustainability strategies for the AkCCO program and advise management about communities and individuals within coastal communities who may be interested in serving as coastal observers.

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Advisory Board

- | | | |
|----|--------------------|---|
| 1. | Paula Cullenberg | Associate Director, Alaska Sea Grant |
| 2. | Tim Dillon | City Manager, Seldovia |
| 3. | Lee Kayotuk | North Slope Subsistence Regional Advisory Council, Kaktovik |
| 4. | Dr. Nicole Kinsman | Alaska Division of Geological and Geophysical Surveys |
| 5. | Dr. Cheryl Rosa | Deputy Director, U.S. Arctic Research Commission |
| 6. | Harvey Smith | Statewide Coastal Engineer, AKDOT |
| 7. | Moses Tcheripanoff | Alaska Native Tribal Health Consortium |
| 8. | Anne Vanderhoeven | Bristol Bay Economic Development Corp. |

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Contact Us for more information on how to get involved!

Name: _____

Business/Organization: _____

Mailing Address: _____, AK _____

Phone Number: _____

Email: _____

Or email:
Howard- howardh@alaskasealife.org
Orson Smith- opsmith@uaa.alaska.edu

Mail to: Alaska SeaLife Center
Attn: Howard Ferren
301 Railway Ave
Seward, AK 99664



Current Stage of Development:

The Alaska Corps of Coastal Observers website will launch January, 2013.

(www.akcoastalcorps.org)

An AkCCO Advisory Board will be selected in February, 2013 and will convene in April. The Board will advance AkCCO structure, plan and secure sustainability, and select one test site and observer to improve program delivery. The Board is responsible for selecting high priority communities for recruiting, training and equipping Coastal Corps observers.



Alaska SeaLife Center
Nurturing the Future



UAA School of Engineering
UNIVERSITY of ALASKA ANCHORAGE

Alaska Corps of Coastal Observers



A citizen science monitoring program of the Alaska SeaLife Center and the University of Alaska Anchorage developed through support of the Coastal Impact Assistance Program

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Observe Your Coastline

as a citizen scientist

Climate change, sea ice loss, and increased shoreline erosion are factors radically changing the future of Alaska's coastal communities. To track these changes, we are assembling a citizen observer program- the Alaska Corps of Coastal Observers (AkCCO) - designed to directly engage Alaskan communities in assessing local coastal conditions.



The program of one-person manual measurements and visual observations will provide data about coastal processes and shoreline conditions which will subsequently be useful to local, regional, and statewide managers of coastal resources.



We are in need of dedicated individuals that live or work along Alaska coastlines and are able to record a series of daily or weekly shoreline observations:

Wind speed
Wind direction
Wave height
Wave direction
Average wave period
Beach width
Beach slope
Beach material
Longshore current speed
Air and water temperature

Interested?

- Observers are sent to Seward, Alaska to be trained in a classroom/field setting for one week and certified in data collection methods.
- Observers will be supplied with the appropriate measurement instruments and record-keeping datasheets.
- An expert will be sent to the shoreline in the observer's community to determine the ideal location for data collection to take place.
- Observers in the field will be continually supported by the program to answer any questions.
- Shoreline information collected from those involved in the AkCCO will be uploaded to an online database and made accessible to the public.



www.akcoastalcorps.org

Alaska Corps of Coastal Observers

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AkCCO Website

Alaska Coastal Observers Network

The Alaska Corps of Coastal Observers (AkCCO) is a network of community based observers trained and certified to make observations and measurements of weather and shore-line processes. Using hand held instruments and a computer, observers provide regular objective recorded information about coastal processes and changing shoreline conditions. Observations are recorded and entered online at the AkCCO website (www.akcoastalcorps.org). Observation data are stored in a downloadable database and made available on the AkCCO Map for access and retrieval by anyone wanting data about coastal conditions in a specific area. Observations provide important data to communities and engineers for coastal development planning, mitigation response to coastal erosion and inundation, and climate change impact preparations. AkCCO serves as an investment in local citizen observers concerned for the future of their communities. AkCCO program support personnel work with institutions, agencies and local communities to develop sustainable funding mechanisms to train and deploy community observers as part of the statewide coastal network. Coastal Observers may be community volunteers or employees of community organizations whose time can be allocated to conduct this service. Certified Coastal Observers are trained to measure wind, waves, long-shore current, beach width, slope, and material characteristics and relative shoreline retreat. An Advisory Board guides development of the AkCCO and helps identify and select communities to participate in the program.

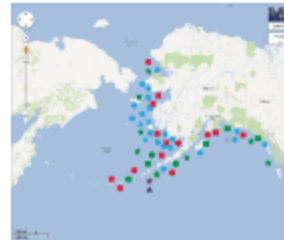
PARAMETERS OF PRIMARY IMPORTANCE

Three coastal "W's" are of primary interest: wind, waves, and water levels. Wind, waves, and water level parameters to be observed and recorded for ACCO include:

- Wind speed (average and gust) at the water's edge,
- Prevailing wind direction,
- Significant wave height,
- Dominant wave direction,
- Average wave period, and
- Water level

Water level is most practically recorded by a single observer on open beach as the average position of the waterline (relative to erosion from wave action) relative to a fixed reference at the top of the beach. Direct water surface elevation measurements require sophisticated instruments or a readily visible submerged vertical reference, like a piling on a pier.

Reporting Data



View Map of AkCCO Observation Sites

www.akcoastalcorps.org

Project Partners



Alaska SeaLife Center



UAA School of Engineering

How to Get Involved

TRAINING AND CERTIFICATION

We invite communities and individuals interested in the program to contact us. You can contact AkCCO program collaborators through the AkCCO website. We are also interested to hear from individuals who may wish to serve on the AkCCO Advisory Board.

[Learn More](#)

Resources



CITIZEN SCIENCE:
Discover how citizen are helping scientists collect important data. [Learn More](#)



CLIMATE CHANGE:
Find answers to your questions about climate change. [Learn More](#)

