OBSERVING COASTAL EROSION IN ALASKA …..AND THE ALASKA CORPS OF COASTAL OBSERVERS

Howard Ferren
Director of Conservation
Alaska SeaLife Center

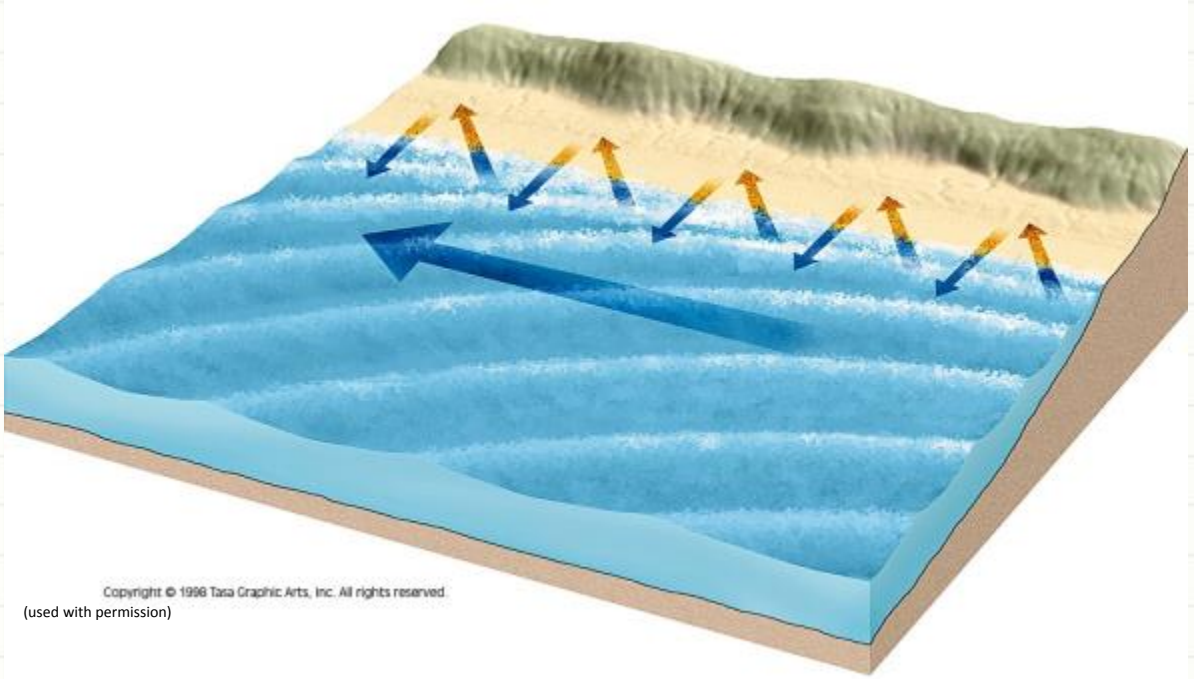
Dr. Orson Smith
Professor, Engineering
University of Alaska Anchorage

Alaska Shoreline Hazards

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

Shishmaref photo by Curtis Nayokpuk

Shoreline Processes



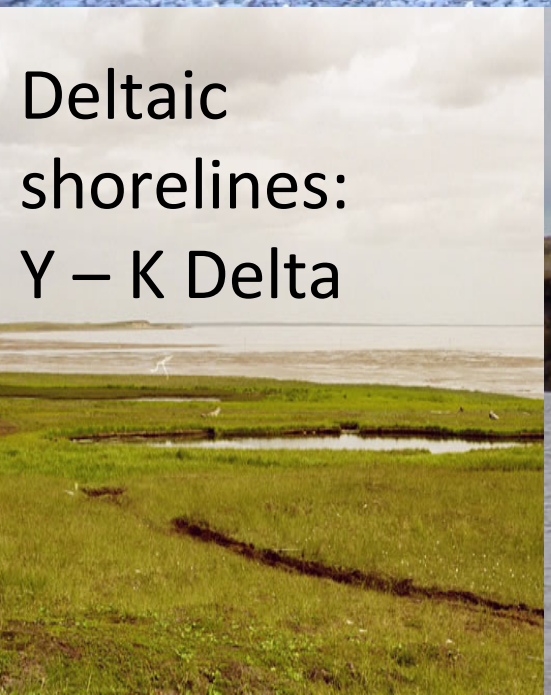
- Wave action
  - Waves are created by wind over water
  - Height varies with wind speed, fetch, and duration
  - Waves breaking obliquely to shore cause longshore movement of beach sediment
  - High water level allows waves to break further inland

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
Google

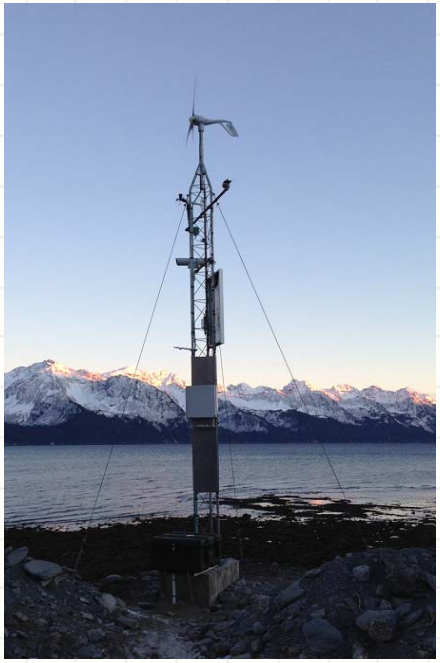
Climate Change in Alaska: Coastal Impacts

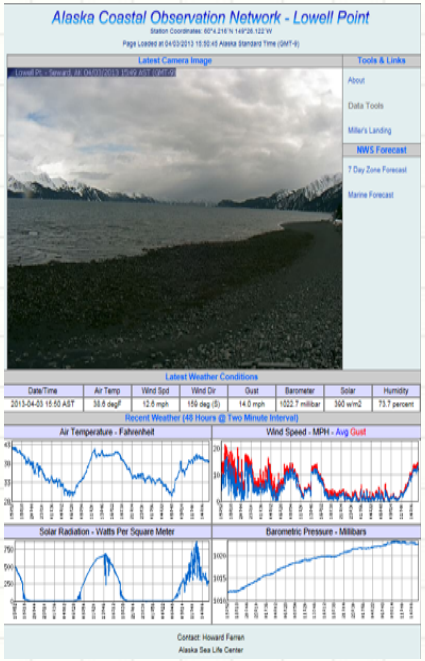
- Southeast and Southcentral Alaska have dropping sea levels (glacial rebound)
- Melting permafrost and coastal thaw subsidence
  - "permanent storm surge"
  - Changes in sediment sources and sinks
- Changes in frequency, intensity, & tracks of storms
  - Recently more apparent
- Reduced winter sea ice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

Prudhoe Bay photo by Orson Smith

Alaska Coastal Observation Network

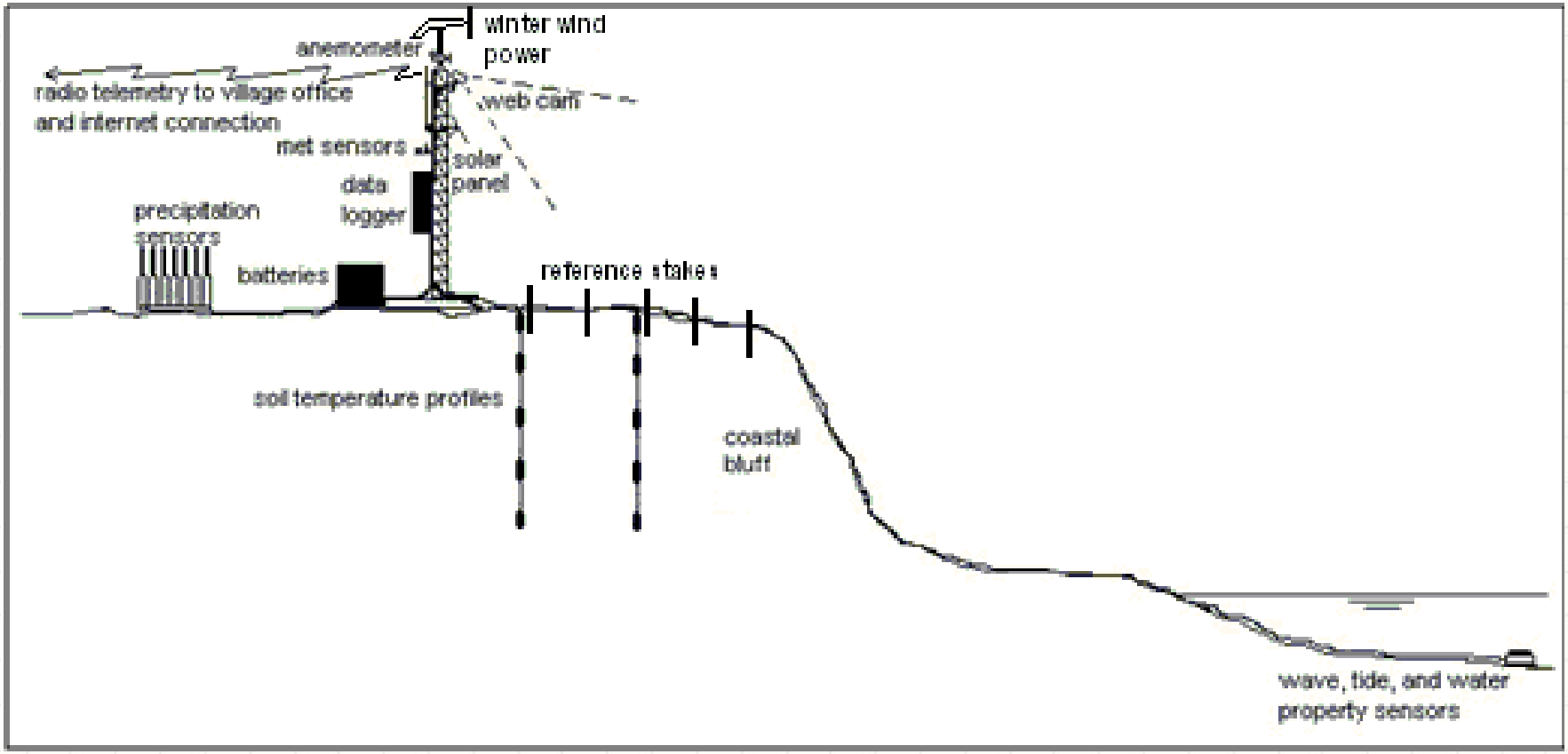
Automated Stations



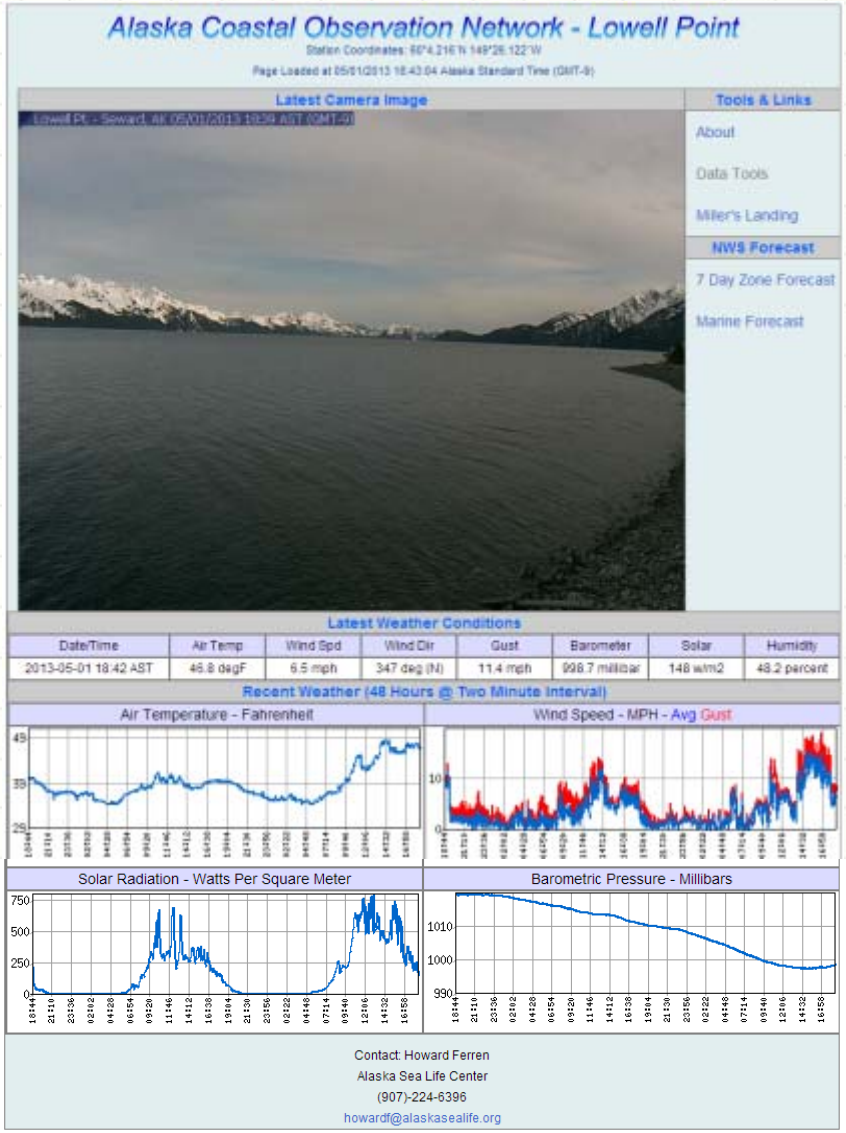


Alaska Corps of Coastal Observers

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.

Alaska Corps of Coastal Observers

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

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.

Alaska Corps of Coastal Observers

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

Contact Us for more information on how to get involved!

Name: _____

Business/Organization: _____

Mailing Address: _____, AK _____

Phone Number: _____

Email: _____

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

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

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

UAA School of Engineering
University of Alaska Anchorage

Alaska Corps of Coastal Observers

AkCCO

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

Alaska Corps of Coastal Observers

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

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

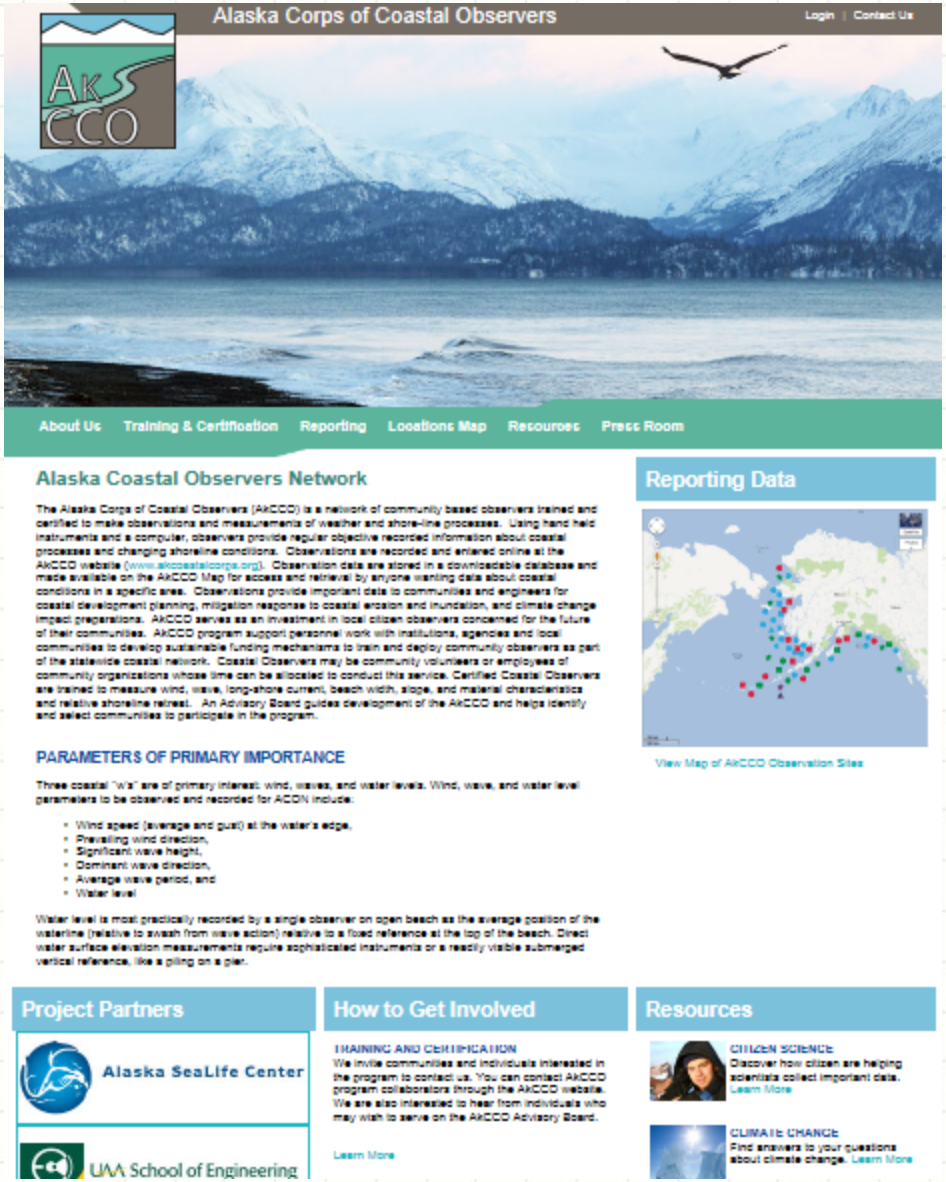
www.akcoastalcorps.org

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.

Alaska Corps of Coastal Observers

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



AkCCO Website

www.akcoastalcorps.org