



Making Progress: Integrated Coastal Water Level Observation Network in Alaska

Introduction & Welcome

The background of the slide features a vertical strip on the left side showing a close-up of a blue ocean wave with white foam. The rest of the slide has a solid dark teal background.

Background

- First meeting held in May of 2015
- Progress on goals set at original meeting
- New technologies and opportunities for collection
- Better positioned to develop a build-out plan



Water Level Data Broad User Base

- Promote safe navigation in tidally-influenced areas
- Document peak water levels for storm surge model validation and flood mapping
- Provide tsunami warnings, watches, and advisories
- Inform environmental incident planning and response to minimize resource damage
- Support ocean search and rescue operations
- Establish tidal datums, standardized vertical reference surfaces for use in coastal engineering, shoreline and flood zone mapping, and regulatory boundary definitions
- Quantify long-term relative sea level trends arising from climate change and spatially variable patterns of tectonic uplift and subsidence
- Analyze temporal trends in coastal storm frequency, magnitude, and duration
- Guide the prioritization of coastal and cultural resource management actions
- Facilitate intertidal habitat mapping, coastal ecosystem research, and waterfowl/fisheries management decisions
- Derive tidal constituents for use in ocean hindcast/forecast modelling and improvements to total water level predictions
- Correct bathymetric and shoreline survey measurements, including those necessary for boundary definitions and land management
- Ensure locally-relevant data for science education and outreach in schools



2018 Attendees

Presentations from

- State of Alaska Department of Natural Resources
- NOAA NGS, CO-OPS, NWS, OCS
- ASTRA
- UNAVCO
- JOA Surveys, LLC
- Alaska Ocean Observing Systems
- Axiom Data Science Center
- University of Notre Dame
- National Park Service
- HDR, Inc.
- Tsunami Warning Center

Attendance by

- ANTHC
- State of Alaska DCCED
- State of Alaska DHSEM
- Kawerak
- Bristol Bay Native Association
- Alaska Sea Grant
- Harbormaster
- Oregon State University
- Alaska Institute for Justice
- NOAA Office for Coastal Management

Goals

Day 1

Map locations where particular water level sensing capabilities could be used.

Identify gaps in water level sensing technology and collaborative frameworks as they apply to Alaska conditions.

Day 2

Map locations where water level sensors are needed.

Determine primary users and uses of water level data by geography.

In Summary

Version 2.0 of Coastal & Nearshore Water Level Observations in Alaska

Build-Out Plan

Reporting Out

Hydrographic Services Review Panel (HSRP)

Governor's Climate Action Team

COASTAL & NEARSHORE WATER LEVEL OBSERVATIONS IN ALASKA



Alaska Coastal Water Level Sensors



New Types of Water Level Data Collection in Alaska



Geodetically referenced staff at community location that experiences flooding. Able to document maximum water level from storm events.



Rapid Response Sensors.

New Types of Water Level Data Collection in Alaska



ARGUS cameras for measuring total water level time series. Planned installations for 2018 under review.



Alaska Water Level Watch

Alaska Water Level Watch



UAF Deploys Storm Surge Monitoring Tripods in Three Northwest Coastal Communities

Northwest Alaska is no stranger to large fall storms. From October until the sea ice arrives, the region experiences multiple coastal storms each year that heavily impact the region leading to inundation and coastal erosion.

1 2 3 4

[Alaska Water Level Watch Features archive](#)

Welcome

The Alaska Water Level Watch (AWLW) is a collaborative group working to improve the quality, coverage, and accessibility to water level observations in Alaska's coastal zone.

Water level data has many applications that contribute to safe navigation, storm modeling and mapping, tsunami warnings, watches, and advisories, incident response, search and rescue operations, tidal datums, sea level trends, storm trends, and [much more](#).

Resources

Observations

- [NWLON Tide Gauges](#)
- GPS Reflectometry
- [Community-Based Observation Data Sheets](#)
- [Rapid Deploy Sensors](#)

Real-Time Data

- [Real-Time Data Portal](#)

Tidal Datums

- [About Tidal Datums](#)
- [Convert Between Datums](#)
- [Compute Tidal Datums from Water Level Time Series](#)

Published Resources

- [Coastal & Nearshore Water Level Observations in Alaska: Challenges, Assets, Gaps, and Next Steps](#)
- [2011 DGGs Bering Sea Storm Report](#)
- [Storm water level feature extraction from digital elevation models using intra-storm photographs](#)
- [DGGs Coastal Hazards Program Website](#)

Tools

- [Color-Indexed Elevation Maps for Flood Vulnerable Communities](#)
- Coastal Elevation Profile Tool

<http://www.aos.org/alaska-water-level-watch/>

f AWLW Kotlik



AWLW Kotlik

Closed Group

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Shortcuts



Harold Okitkun

May 2 at 1:24pm

This was April the 30th at about 12:15 pm. The tide peaked at about 11:30. Not too often we get big tides like this in the spring, our floods usually happen in the fall here at Kotlik.



Schedule Day 1

Phone Line: 855-257-8693
participant code: 1846457

Time	Title	Presenter
8:30-9:00	Arrivals: Refreshments	
9:00-9:15	Introduction & Welcome	Jaci Overbeck Alaska Department of Natural Resources
9:15-9:30	2015-2018 Alaska Water Level Retrospective	Nic Kinsman NOAA NGS
9:30-9:45	Monitoring Ocean Water Level in Remote Shoreline Locations Using GPS Reflectometry	Geoff Crowley ASTRA, LLC
9:45-10:00	Geodetic Infrastructure to Support GPS Reflectometry	Ken Austin UNAVCO
10:00-10:15	Sensors Under Development for Rivers	Crane Johnson NWS Alaska, Pacific River Forecast Center
10:15-10:30	Break	
10:30-10:45	Alaska NWLON Infrastructure	Rob Loesch NOAA CO-OPS ED
10:45-11:00	CO-OPS Water Level Sensors in Development	Bob Heitsenrether NOAA CO-OPS ED OSTEP
11:00-11:30	Water Level Sensors in Use for Alaska Waters & Capabilities for Expanding	Nathan Wardwell JOA Surveys, LLC
11:30-11:45	Break: Lunch Provided	
11:45-1:00	Working Lunch Group Discussion	What are the current gaps in Alaska- capable water level sensing technology? Outstanding conversion tools or subsidiary data products? Where would particular sensing technologies work? (printed maps will be made available for this discussion)

Schedule Day 2

Phone Line: 855-257-8693
participant code: 1846457

Time	Title	Presenter
8:30-9:00	Arrivals: Refreshments	
9:00-9:10	Introduction & Welcome	Molly McCammon Alaska Ocean Observing Systems
9:10-9:20	Overview of Water Level Sensing Technologies (Day 1)	Jaci Overbeck Alaska Department of Natural Resources
9:20-9:45	AOOS/CO-OPS Alaska WL Partnership	Nic Kinsman & Will Koeppen NOAA NGS & Axiom Data Science, LLC
9:45-10:00	Using WLs: Storm Surge and Wind Wave Modeling	Joannes Westerink University of Notre Dame
10:00-10:15	Using WLs: Coastal Storm Impact Forecasting	Becki Heim Marine, Sea Ice, Tsunami & Coastal Hazards, NWS Alaska
10:15-10:30	Break	
10:30-10:45	Using WLs: Hydrographic Survey, VDatum, Shipping & Navigation	Bart Buesseler NOAA Office of Coast Survey
10:45-11:00	Using WLs: National Park Service	Joel Cusick and Tahzay Jones National Park Service
11:00-11:15	Using WLs: Coastal Engineering Projects	Ronald McPherson HDR, Inc.
11:15-11:30	Using WLs: Tsunami Warning Center	Michael Burgy NOAA Alaska Tsunami Warning Center
11:30-11:45	Break: Lunch Provided	
11:45-1:00	Working Lunch Group Discussion	What geographic areas are priorities for water level sensors and why? (printed maps will be made available for this discussion) Are there opportunities for funding or collaboration to improve water level sensing capacity in Alaska?