

Alaska Water Level Partnership

CO-OPS functionality for Alaska Data



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WL Data Management & Public Interface



NOAA CO-OPS

- Focus is on stringent NWLON WL data products
- Mission to maintain authoritative WL observations
 - Accurate and reliable WL observations = backbone network
 - Legal requirements to support navigation and engineering
 - Official Datums (land ownership & maritime boundaries)
 - Long-term relative sea level trends
- Dedicated to enabling supplemental instrument operation where NWLON operation is not needed or not possible
 - *Policy for Management and Dissemination of External Source Water Level Data – December 2015 (AKA “Tiered Data*

Policy”)

AOOS/CO-OPS WL Partnership

- Leverage partners and external data providers to formally supplement NWLON in Alaska
- A region-led implementation of the Tiered Data Policy
 - 3 Tiers based on accuracy, vertical control, and application

PRODUCTS	A: NWLON	B: ~IHO Standard	C: Other Partner
Real-Time Water Levels	✓ verified	✓ as possible	✓ >24 hr. latency
Harmonic Constants & Predictions	✓ official	✓ unofficial	X
Bench Mark Sheets	✓ official	✓ unofficial	X
Datums	✓ official	✓ unofficial	X
Sea Level Trends	✓ official	X	X
	CO-OPS Data	<i>iGages, GNSS reflectometry, seasonal pressure sensors, WL buoys, etc.</i>	<i>rapid response tools, high water marks, tide staffs, etc.</i>



Win-Win!

CO-OPS Upside

- Expands IOOS/CO-OPS relationship
- Enhances IOOS contributions to blue economy by densifying WL observations beyond NWLON backbone
- Pilots regional implementation of CO-OPS Tiered Data Policy vision
- Encourages use/development of new products and services that put WL evaluation in hands of users (e.g. tidal datum calculators)

Alaska WL Stakeholder Upside

- Public access to additional WL stations in Alaska
- Increased consistency in format and delivery of WL records from a mix of sensors
- Enhanced data discoverability with centralized metadata
- Calculation of unofficial tidal datums

CO-OPS Tools for Water Level Stations (ODIN map)

1. Station Info
2. Data Inventory
3. Water Levels
4. Datums
5. Bench Mark Sheets
6. Harmonic Constituents



CO-OPS Water Level Station Dashboards

Nome, Norton Sound, AK - Station ID:

9468756

Station Info Today's Tides Photos Sensor Information Observations Directions and Map Available Products

Established: Jun 30, 1944
Time Meridian: 0° E
Present Installation: Jul 07, 1992
Date Removed: N/A
Water Level Max (ref MHHW): 8.28 ft. Oct 19, 2004
Water Level Min (ref MLLW): -6.72 ft. Nov 11, 2005
Mean Range: 1.03 ft.
Diurnal Range: 1.52 ft.
Latitude: 64° 29.7' N
Longitude: 165° 26.4' W
NOAA Chart#: 16206
Met Site Elevation: 15.9 ft. above MSL

Today's Tides (LST/LDT)



4:08 AM low -0.4 ft.
11:21 AM high 1.3 ft.
4:39 PM low 0.6 ft.
10:13 PM high 0.9 ft.



Nome, Norton Sound, AK

6 more station photos available, click to view.

Station Info

Sensor Information

Datums for 9468756, Nome, Norton Sound AK

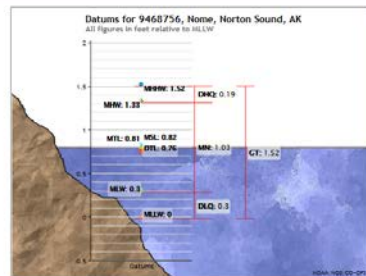
NOTE: All data values are relative to the MLLW.

Elevations on Mean Lower Low Water

Datum	Value	Description
MHHW	1.52	Mean Higher-High Water
MHW	1.33	Mean High Water
MTL	0.81	Mean Tide Level
MSL	0.82	Mean Sea Level
DTL	0.76	Mean Diurnal Tide Level
MLW	0.30	Mean Low Water
MLLW	0.00	Mean Lower-Low Water
NAVD83	-0.61	North American Vertical Datum of 1983
STND	-3.72	Station Datum
GT	1.52	Great Diurnal Range
MR	1.03	Mean Range of Tide
DHIQ	0.19	Mean Diurnal High Water Inequality
DLQ	0.30	Mean Diurnal Low Water Inequality
HRI	1.20	Greenwich High Water Interval (in hours)
LRI	7.36	Greenwich Low Water Interval (in hours)
Max Tide	9.80	Highest Observed Tide
Max Tide Date & Time	10/19/2004 17:42	Highest Observed Tide Date & Time
Min Tide	-6.72	Lowest Observed Tide
Min Tide Date & Time	11/11/2005 02:54	Lowest Observed Tide Date & Time
HAT	1.65	Highest Astronomical Tide
HAT Date & Time	05/21/1990 22:30	HAT Date and Time
LAT	-0.48	Lowest Astronomical Tide
LAT Date & Time	07/14/1987 10:00	LAT Date and Time

Total Datum Analysis Periods

08/01/1997 - 07/01/2004



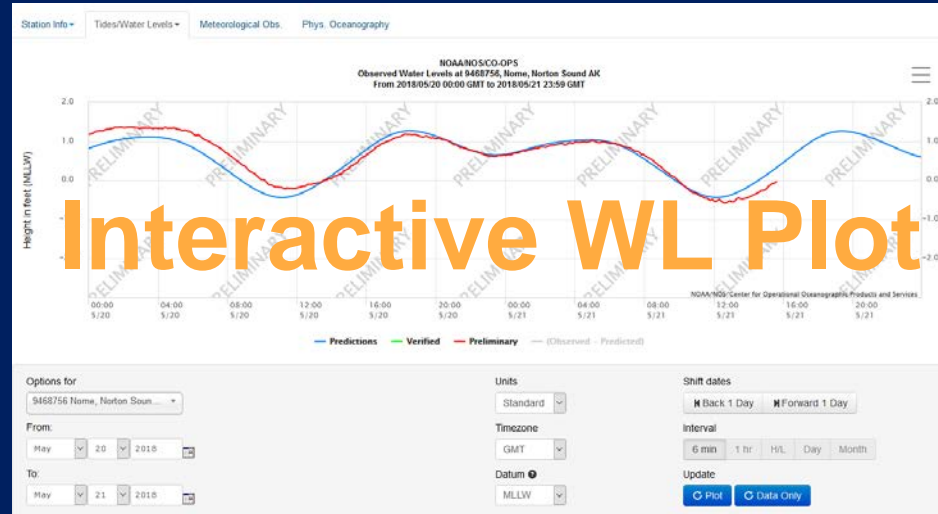
Showing datums for
9468756 Nome, Norton Sound, AK

Data Units ☒ Feet
☐ Meters

Epoch ☒ Present (1983-2001)
☐ Superseded (1950-1978)

Submit

Datums

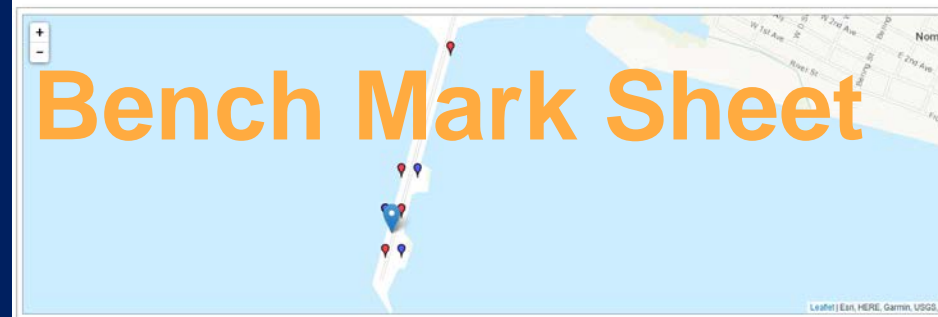


Bench Mark Sheet for 9468756, Nome, Norton Sound AK

Showing Bench Mark Information for

9468756 Nome, Norton Sound, AK

Present Epoch Superseded Epoch



Station Location

Published bench mark

Unpublished bench mark

Bench mark positions only appear on the map if their coordinates in the CO-OPS database are at the precision of degrees/minutes/seconds and tenths of seconds. If the coordinates are less precise, the mark will not appear.

Printable version

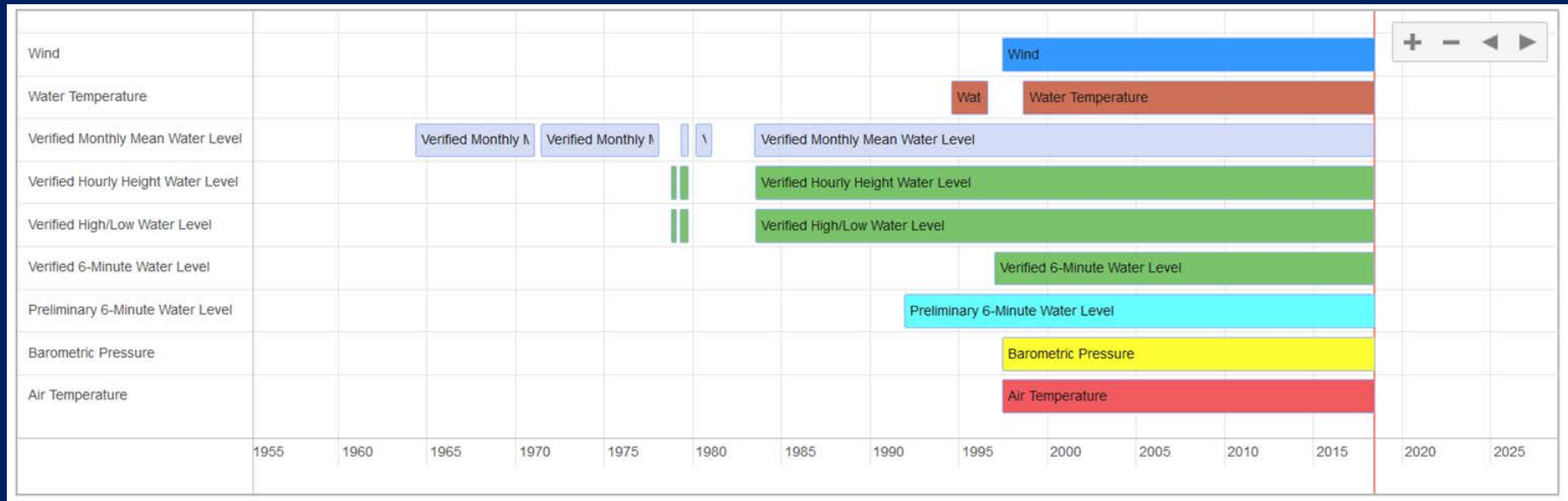
U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Service

Datums Page 1 of 8

Station ID: 9468756 PUBLICATION DATE: 10/05/2017

RSL Trends not shown

CO-OPS Water Level Station Data Inventory



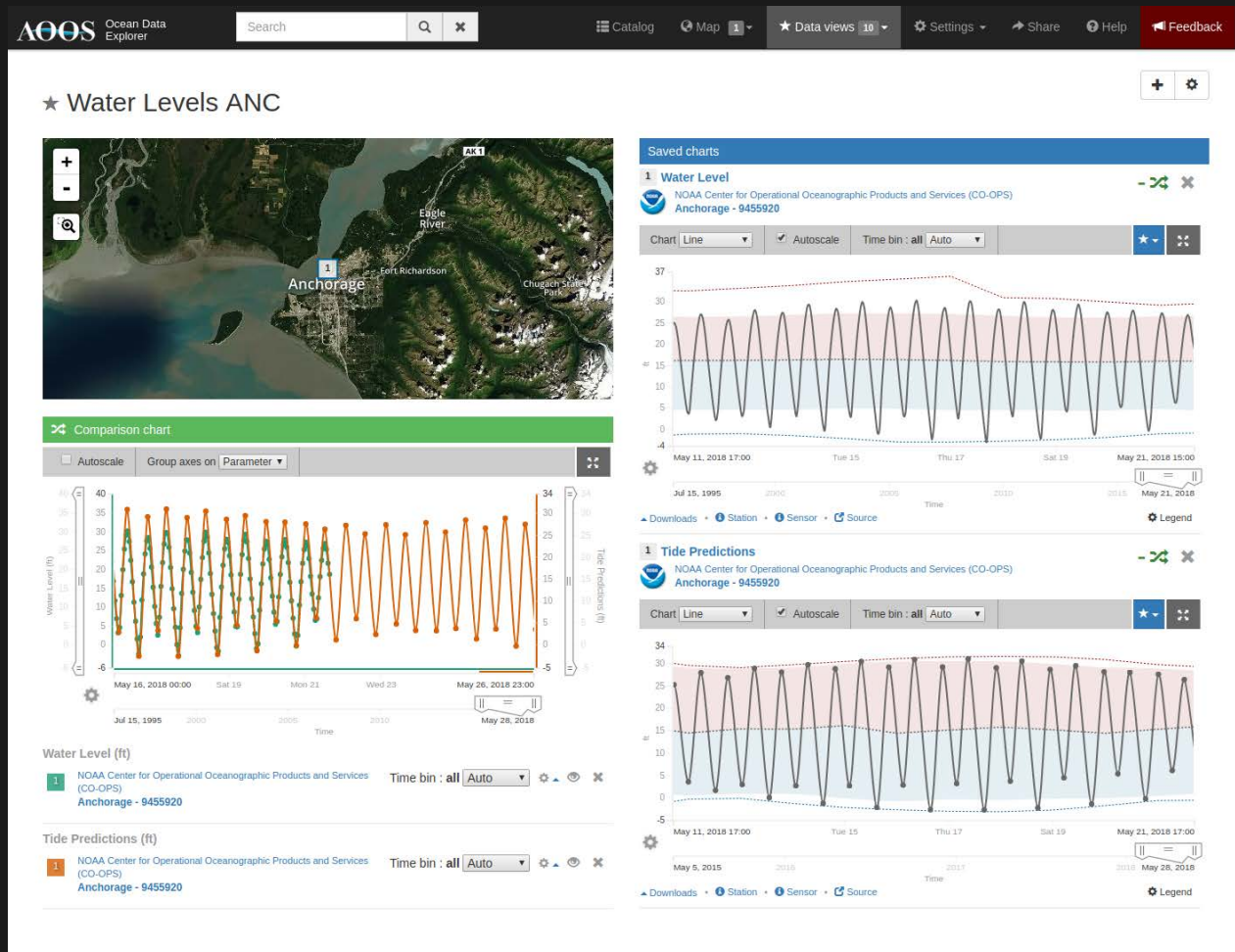
Data Access

Tools:

- Tides & Currents Dashboard/Map
- IOOS Data Portal
- GIS Data Portal
- Data API

AOOS Tools for Water Level Stations

- Interactive graphs
- Interannual statistics
- Anomaly plots
- Data Views

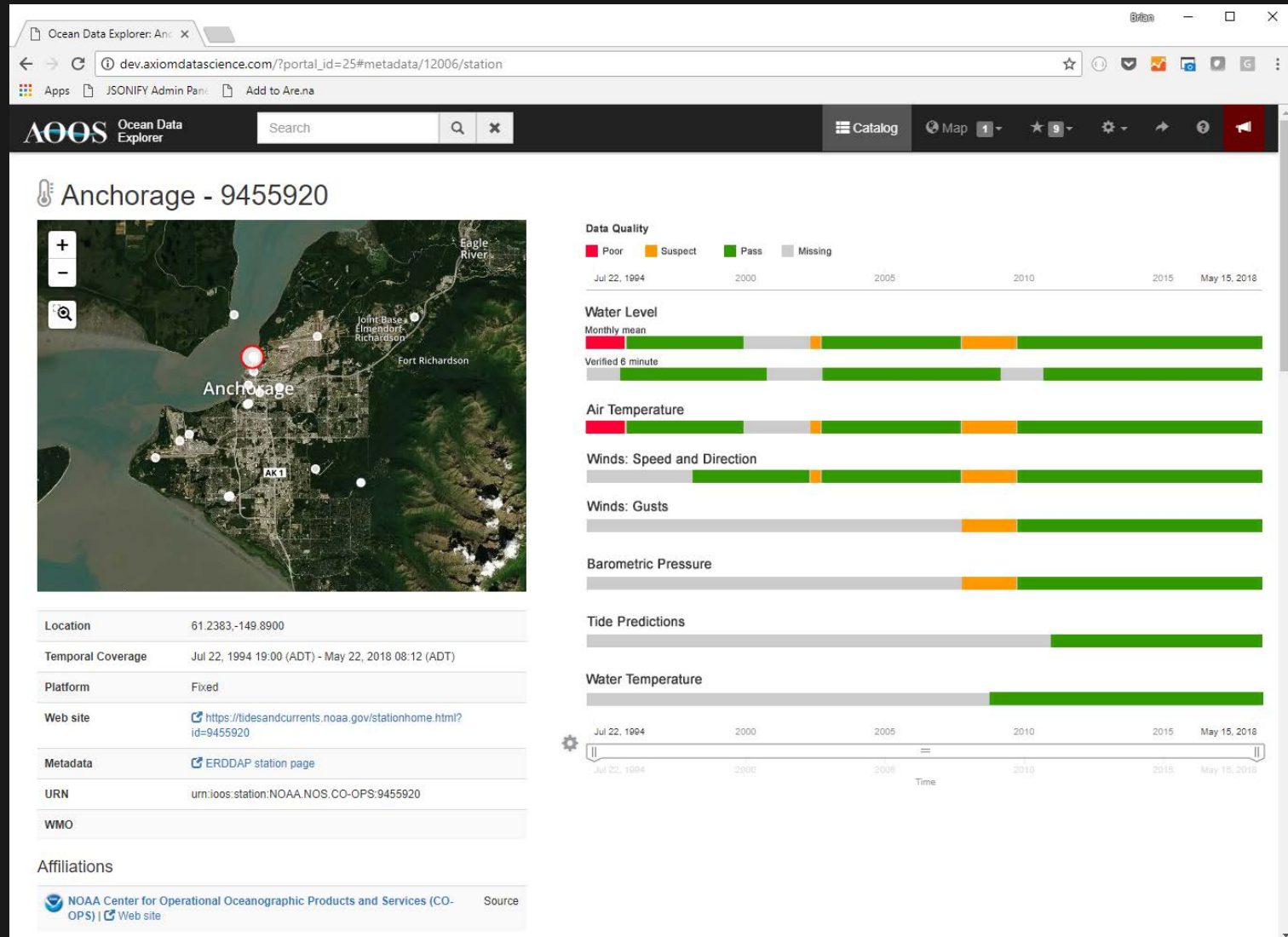




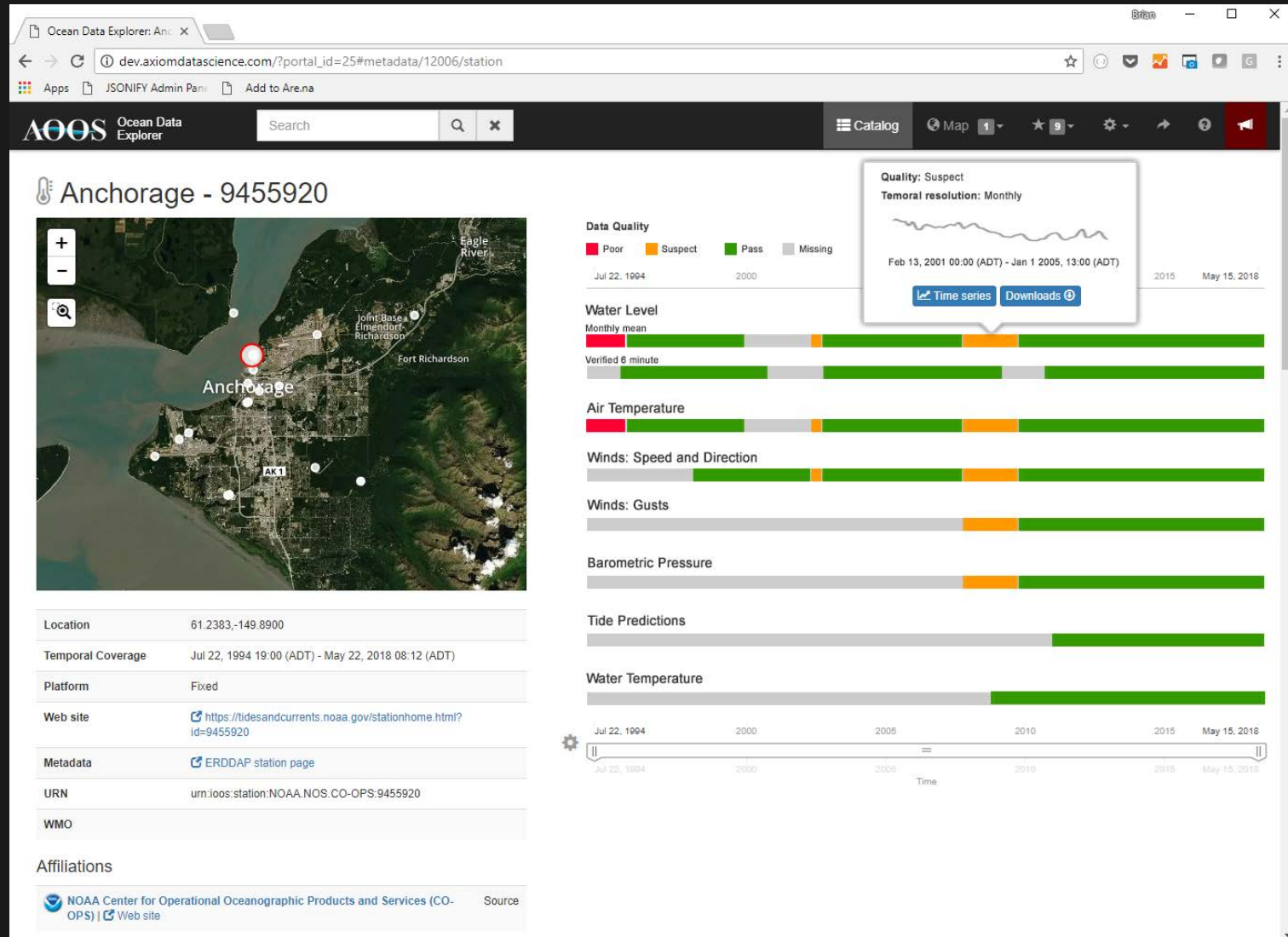
What we have so far

- AOOS has cyberinfrastructure
- And data
- Serving mechanisms through ERDDAP, THREDDS, OPeNDAP, etc.
- QARTOD for quality checks including gap tests
- AOOS API calls already include *Time Strata* fields

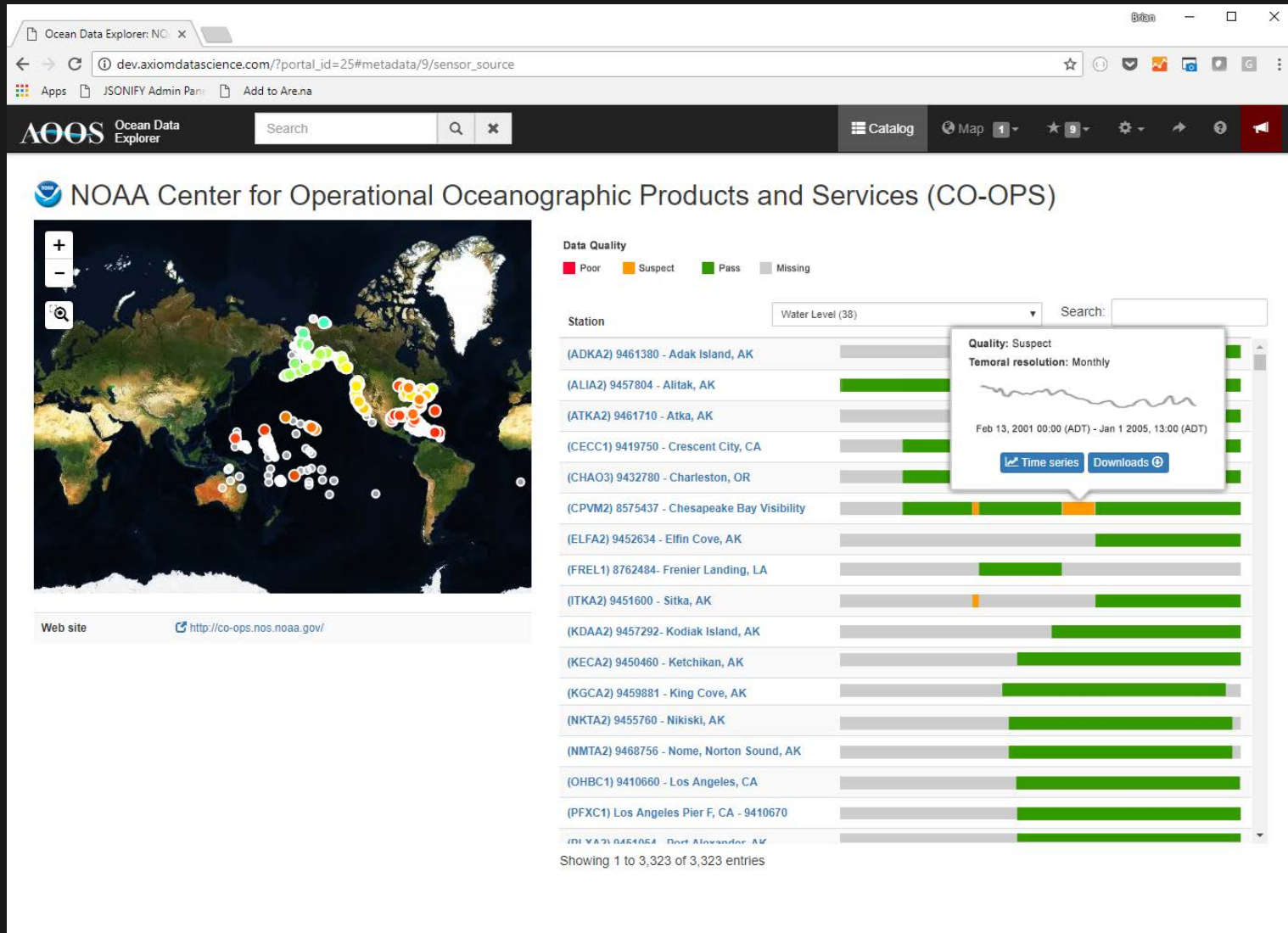
What things might look like



What things might look like



What things might look like





Looking for Feedback

- Is API access to AOOS water level data inventories useful?
- Is seeing inventories across sources or regions helpful?
- Are QARTOD results useful to data creators or users or do most users just use station-reported accuracy values?
 - Water level QARTOD tests: timing/gap, gross range, climatology

Questions for us?

LINKS

<http://portal.aos.org>

<http://erddap.aos.org>

<http://thredds.aos.org>

