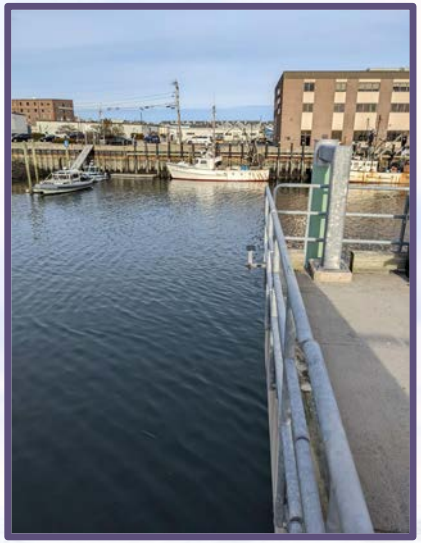
SECOORA SE WL Network

Tools and Products

IOOS SECOORA

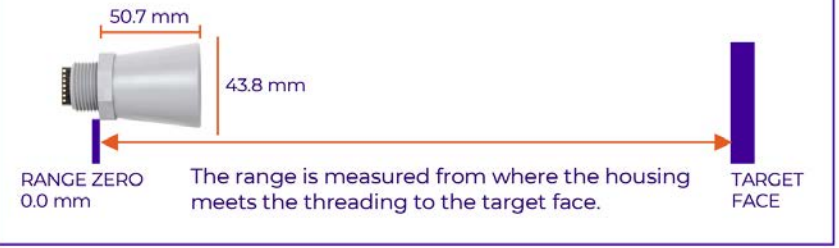
Water Levels in the Southeast
June 13-15, 2023

Maxbotix HRXL 7388 ($125)



- Solar-powered
- Cellular or RF telemetry
- Reading-to-reading stability of 1mm (at 1m range)
- Accuracy is typically 1% or better
- Internal temperature compensation
- Automatic acoustic noise filtering
- Detection range of 50cm–10m
- Resolution of 1mm
- Operating temperature range from -40°C to 65°C
- IP67 rated
- Conditions like ice fog, sea spray, temperature & humidity gradients in the air gap affect accuracy

FIG. 2



The fine print on sampling intervals

Historical

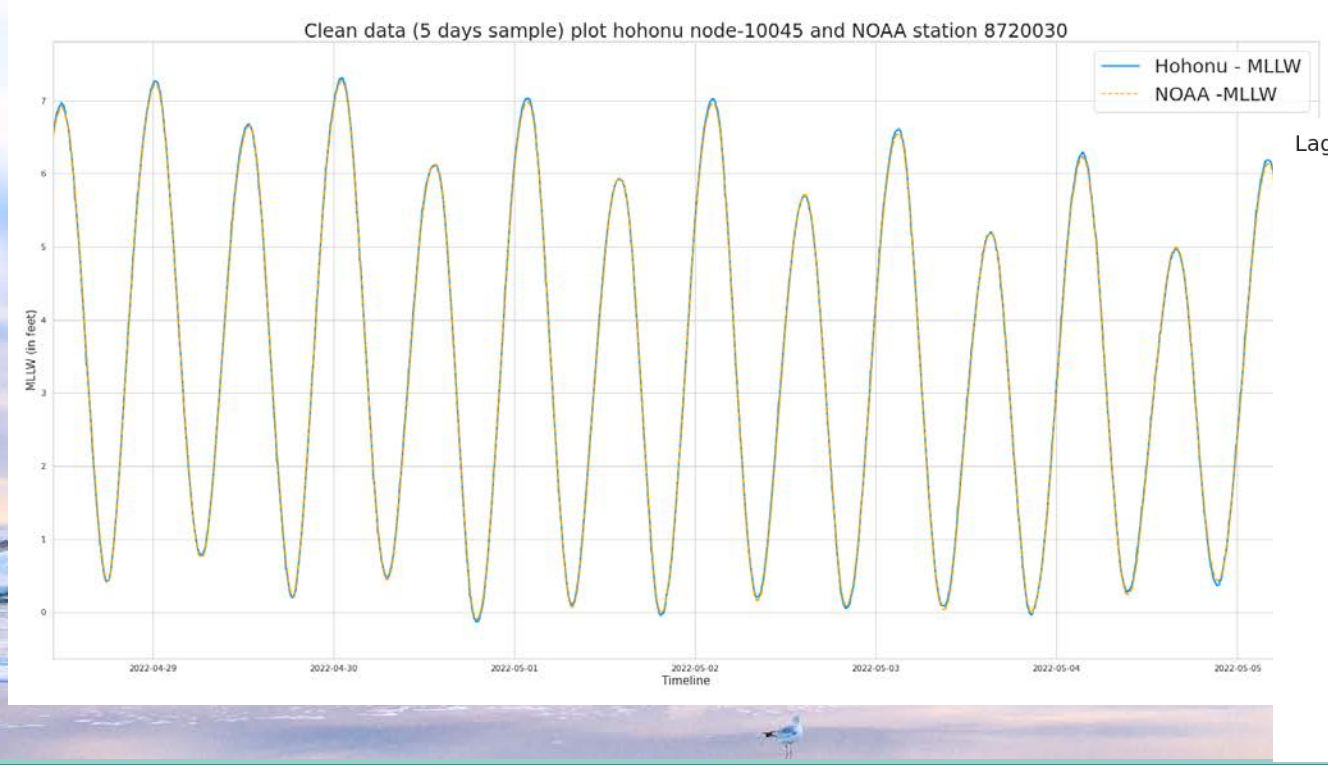
Hohonu water level gauges generally follow NOAA standards, but are fully customizable depending on customer needs. Default configuration: 181 distance measurements are taken at one measurement per second, followed by ~179 seconds of idling. The 181 measurements are averaged into one sample. A transmission is made when two samples have been collected. In other word: one sample every **6 minutes**, one transmission every **12 minutes**, each containing two samples, with each sample being the average of **181** distance measurements.

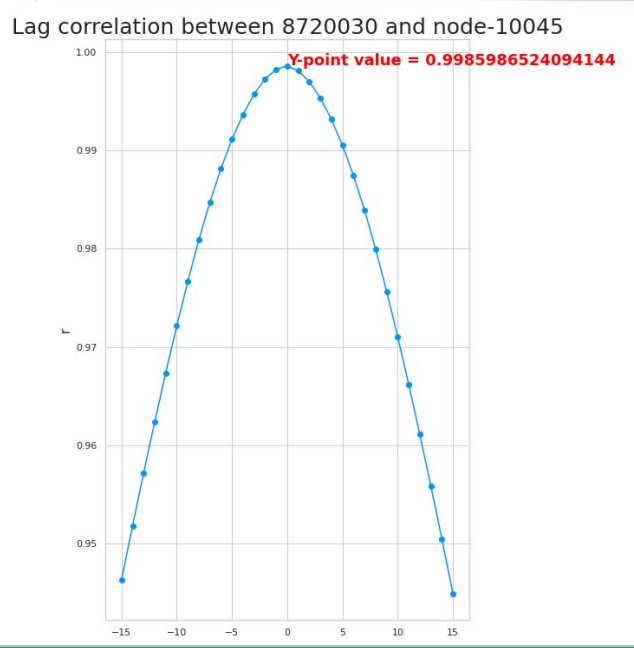
Note about the "averaging": among the 181 measurements, those outside of 3-sigma are rejected. No-target readings are also rejected as well as failed sensor reads (e.g. sensor did not respond within the 1s measurement window; usually indicative of hardware damage such as water intrusion). Average and standard deviation are calculated again for the remaining measurements.

Current

Hohonu water level gauges dynamically adjust sampling interval as power allows (e.g., Alaska vs. Florida vs. Hawaii deployments). Gauges collect measurements at one measurement per second, and transmit averages for 30 sec, 1 min, or 3 min..

Data validation – QARTOD + CO-OPS Reference Sites





OTT RLS ($3000)

Water level measurement

- Measuring range: 0.4 … 35 m
- Accuracy (SDI-12):
  - 0.4 … 2.0 m: ±10 mm;
  - 2.0 … 30 m: ±3 mm;
  - 30 … 35 m: ±10 mm
  - Average temperature coefficient (range: –20 … +60 °C): 0.01 % full scale/10 K
- Accuracy (4 … 20 mA):
  - ±0.1 % full scale
  - Average temperature coefficient: 10 ppm full scale/°C (at 20 °C)
- Measuring time: 2...20 seconds; factory setting: 20 seconds
- Beam angle of antenna (width of beam): 12 °
- Transmit frequency: 25.3 GHz

Vega Puls C-22 ($~1000)

Measuring range - Distance
15 m [Meter - Foot]

Process temperature
-40 ... 80 °C [°C - °F]

Process pressure
-1 ... 3 bar [Bar - kPa - psi]

Accuracy
± 2 mm

Frequency
80 GHz

Beam angle
8°

Materials, wetted parts
PVDF

Threaded connection
G1½, 1½ NPT, R1½

Plug & Play WQ

Designed To Be Expandable

Other Types of Water Monitoring Are Available:

- Dissolved Oxygen
- Salinity
- Turbidity
- Temperature
- Chlorophyll
- Meteorological Stations