

National Tidal Datum Epoch

Moving from NTDE 1983-2001 to NTDE 2002-2020



NOAA uses the National Tidal Datum Epoch (NTDE) to generate the country's tidal datums. Tidal datums inform vital Federal, state, and local coastal zone activities, including ship navigation, storm hazard mitigation, coastal engineering, marine boundary determination, and beach renourishment.

What is NTDE?

The NTDE is a 19-year time period used by NOAA to collect water level observations and calculate tidal datums. The period represents one full rotation of the Earth's longest [18.6 years] lunar cycle, which influences the world's tides. NOAA rounds to 19 years to account for seasonal and environmental trends (e.g. sea level change), and determines the truest average of tidal conditions. By using a common cycle for the country's tidal datums, NOAA ensures a nationally consistent tidal datum network from Maine to Hawaii. The NTDE is managed by NOAA's Center for Operational Oceanographic Products & Services (CO-OPS).



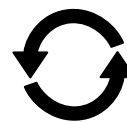
National System

23 States &
14 Territories



130 Primary Stations

Permanent Water Level
Gauges



Updates Required

Accounts for Changes in
Relative Sea Level

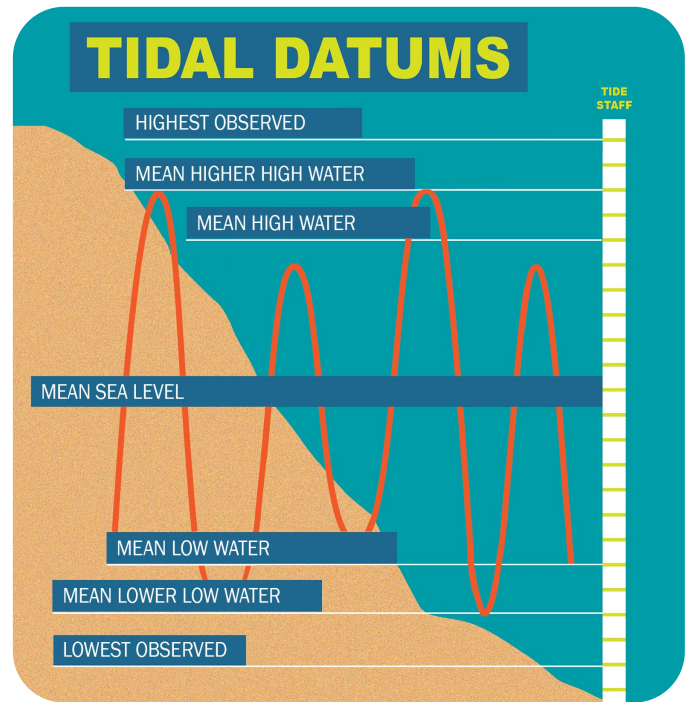
Is NTDE Regularly Updated?

Yes. An NTDE update is triggered when the change in Mean Sea Level at the Nation's coastal tide gauges averages above 0.10ft (0.03m). Historically, this has resulted in the NTDE being updated every 20-25 years. However, long-term sea level trends have shown accelerating rates of sea level rise in many regions (but not all) of the country. This indicates that the current NTDE update schedule may need to be accelerated. A more frequent review of the NTDE would ensure that as sea levels change over time NTDE datums continue to accurately represent conditions on the coast. For modified datums procedures, which are distinct from NTDE, please visit tidesandcurrents.noaa.gov/press/tidaldatum.

Center for Operational Oceanographic Products and Services

Anatomy of a Tidal Datum

A tidal datum is a vertical elevation defined by a phase of the tide. It is used to set values like Mean Lower Low Water (MLLW). MLLW is the average of the lower low water height of each tidal day observed over NTDE. Tidal datums reflect an average of all tidal conditions at a location over time. Every location has its own values. For example, MLLW is -0.82ft/-0.251m relative to Mean Sea Level at Bayou La Batre Bridge, AL but -3.03ft/-0.925m at North Channel, NY. CO-OPS maintains tidal datums and bench mark sheets for 2,000+ locations under NTDE. Visit the CO-OPS [datums station website](#) for the nationwide list of current and past tidal datums.



A NEW NTDE IS COMING

The current NTDE spans 1983-2001. After 2027 it will be replaced by NTDE 2002-2020.

As part of the NTDE update, CO-OPS will recompute over 2,000 tidal datums and bench mark sheets. All new datums and bench mark sheets will be released online at one time (i.e. NTDE 2002-2020 will not be released incrementally by region). When NTDE 2002-2020 is released, new tidal datums and bench mark sheets will supersede those of NTDE 1983-2001. Data for prior Epochs will remain accessible on CO-OPS' website for users.

How is NTDE (2002-2020) Data Collected?

NTDE data is provided by water level stations that make up the National Water Level Observation Network (NWLON). While all NWLON stations provide some data, not all have data that span the 19-year period needed for NTDE. To account for this, CO-OPS relies on control (tide/water level) stations to infer what a 19-year average would look like at non-control stations. CO-OPS refers to this as a 19-year NTDE equivalent datum. This allows all tidal datums to incorporate data from the same epoch, even if actual observations come from another time period - which ensures that NOAA's tidal datums are compared to one another in a meaningful way!

For NTDE 2002-2020, NOAA will automate parts of its tidal datums processing for the first time. This involves rewriting sections of datums computation software and will allow NOAA to accelerate future tidal data computations. Automation will be needed if the NTDE is updated more regularly.