



Understanding Coastal Flooding Terminology

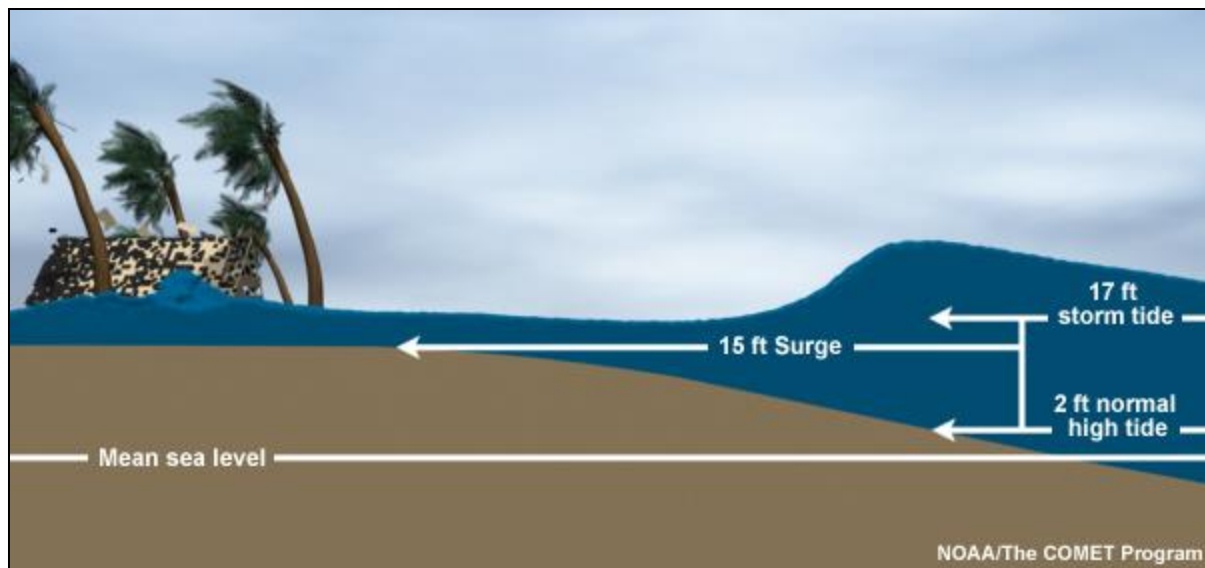
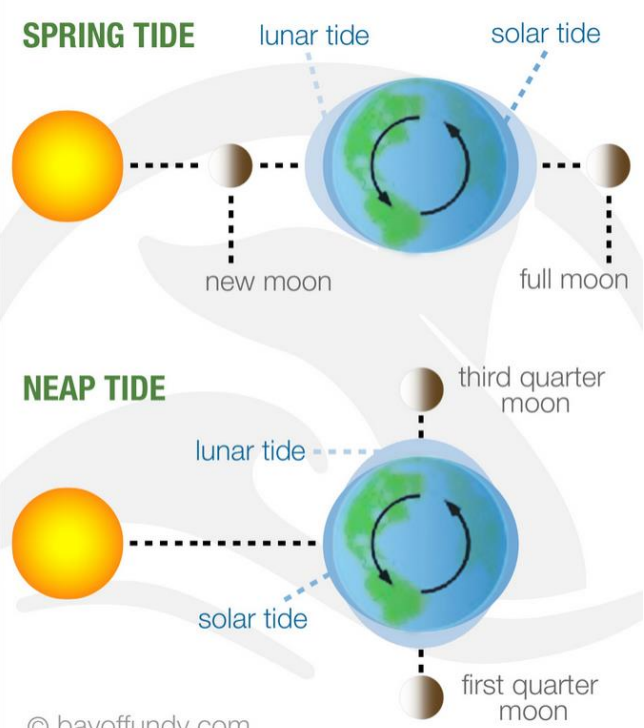
- Storm Surge vs Storm Tide
- Total Water Level
- Inundation
- Erosion, Overwash, Inundation
- Datums
 - Geodetic
 - Tidal





Storm Surge vs Storm Tide?

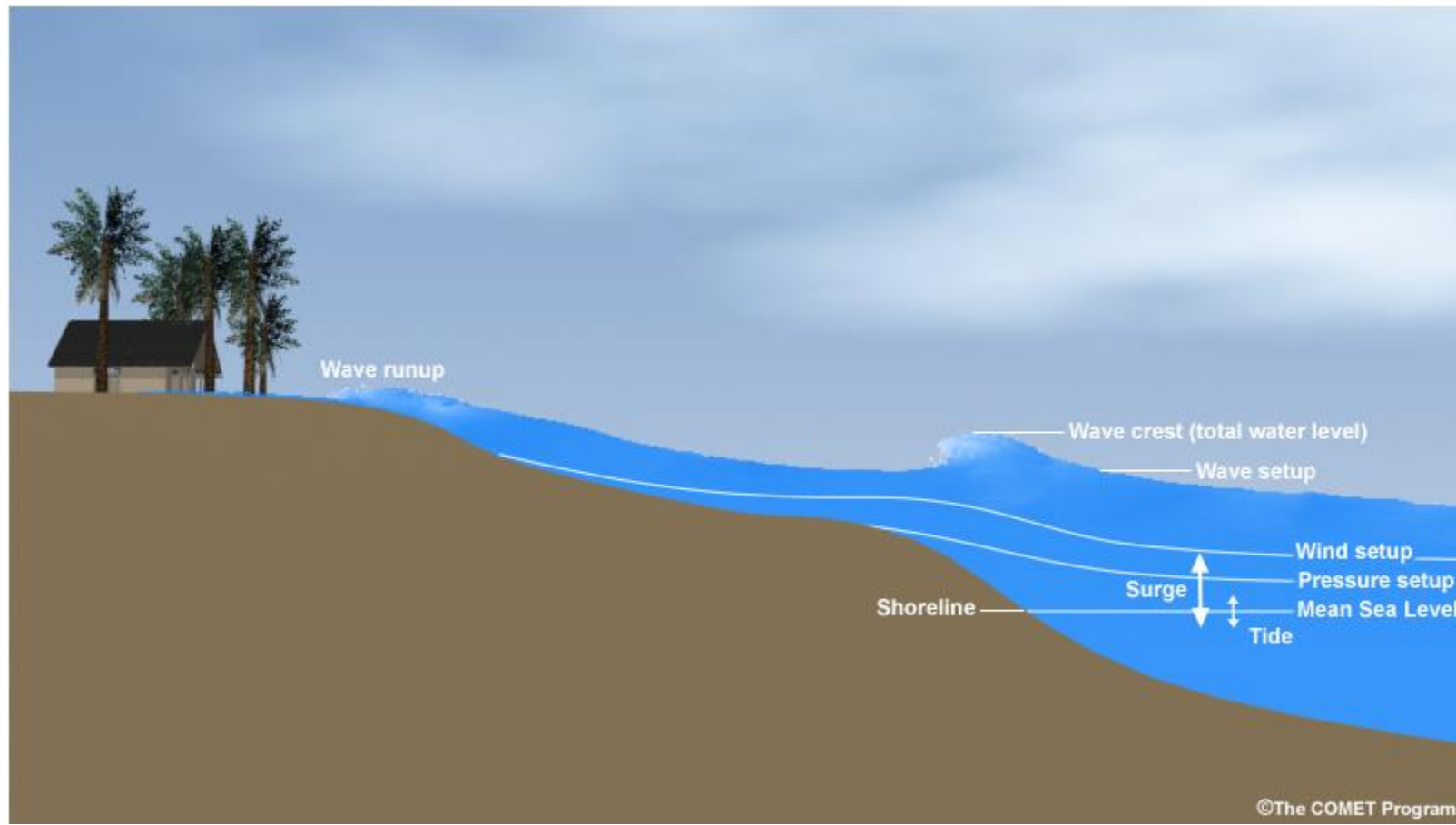
- **ASTRONOMICAL TIDE** - The twice daily alternating rise and fall of sea-level produced by gravitational attraction of the moon and sun.
- **STORM SURGE** – An abnormal rise of water generated by a storm, over and above the predicted astronomical tide.
- **STORM TIDE** –The water level rise during a storm due to the combination of storm surge and the astronomical tide



NOAA/The COMET Program



Total Water Level



Total water level = Storm surge + Tides + Wave runup/setup + Freshwater



Inundation

This is what most people are interested in...

Inundation - Water covering normally dry land.

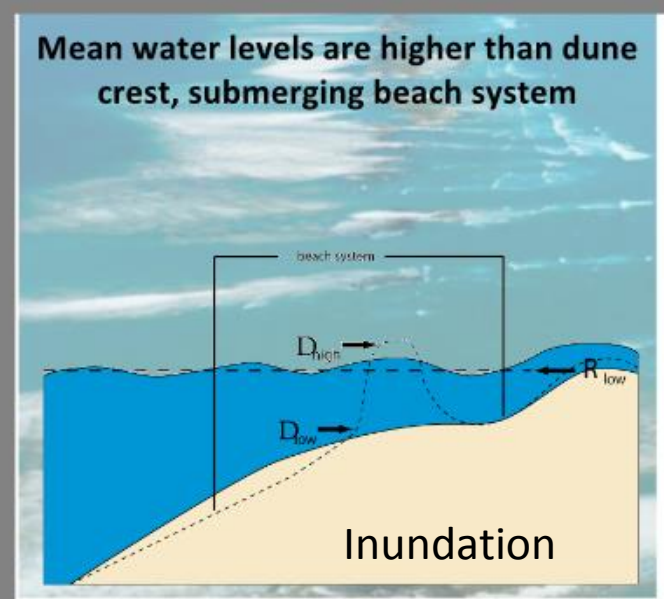
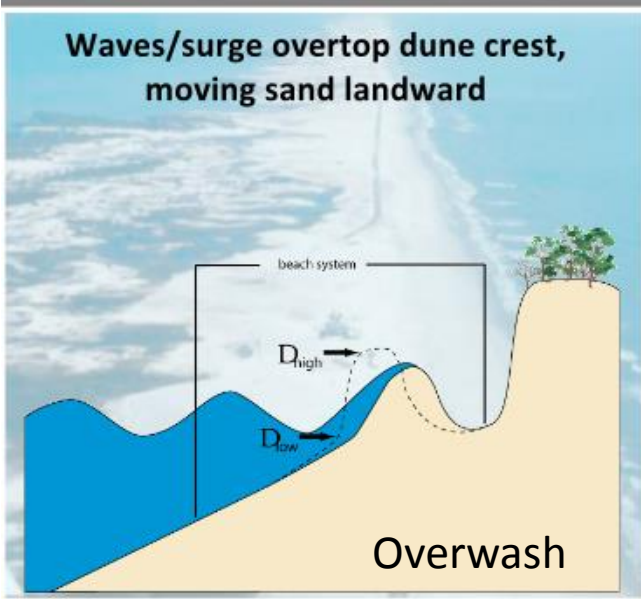
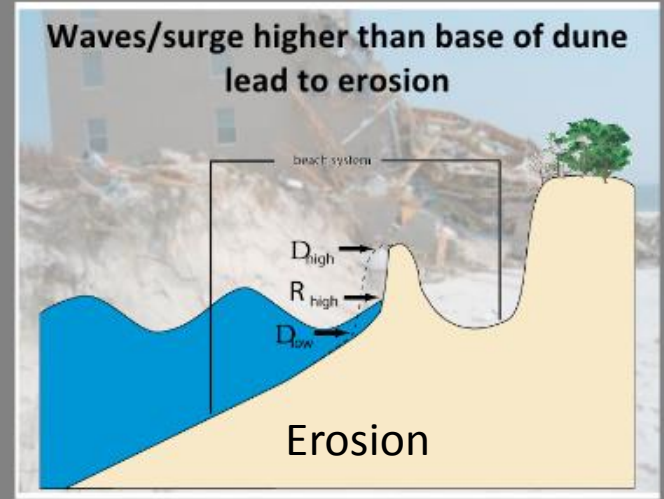
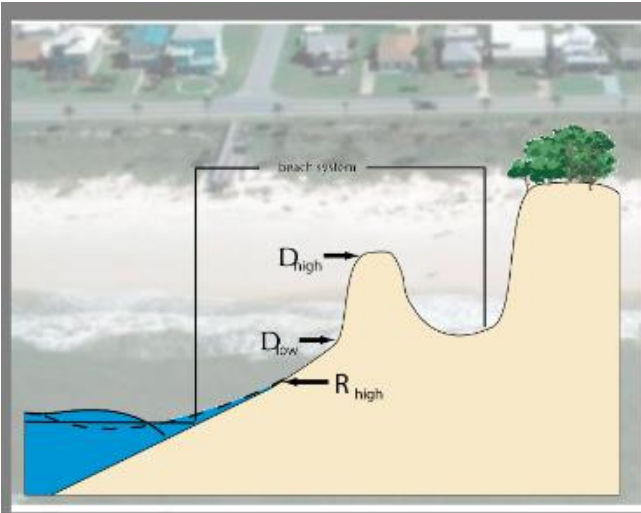
- Inundation events are among the more frequent, costly, and deadly coastal hazards that can impact coastal communities in the U.S.
 - Riverine and coastal inundation causes the highest number of natural-hazard-related deaths.

How can we better provide you inundation info and communicate the impacts?





Erosion, Overwash, Inundation along Beaches



Courtesy of USGS

Sallenger 2000



Datum Confusion



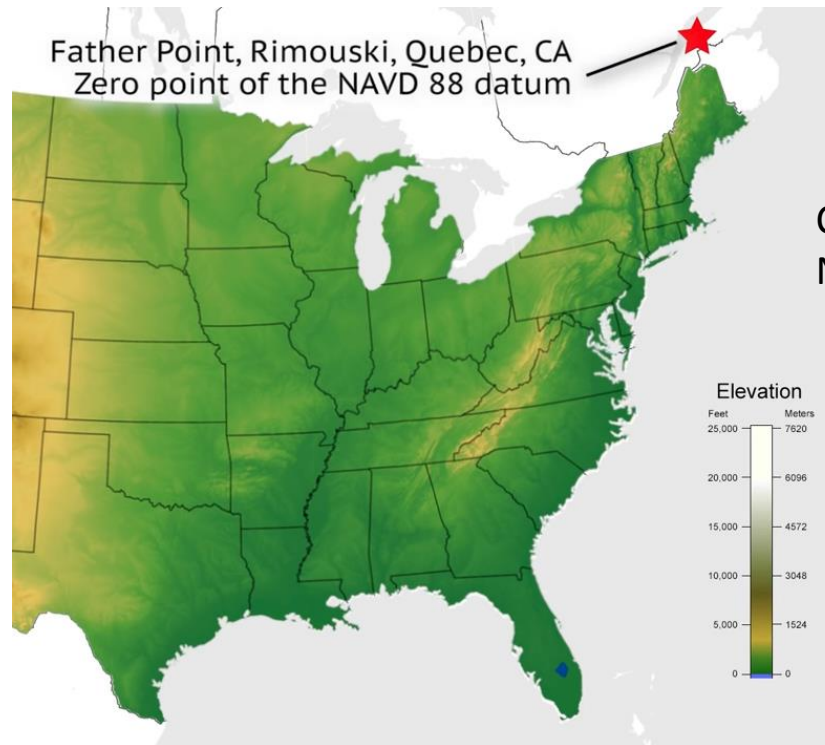
What does a stormtide of 6...7...8 ft mean to you?

- Water levels need to be referenced to a vertical datum.
 - Tidal Datums vs Geodetic datums

- A vertical datum is simply a reference level, a zero level, to which stormtides are referred.

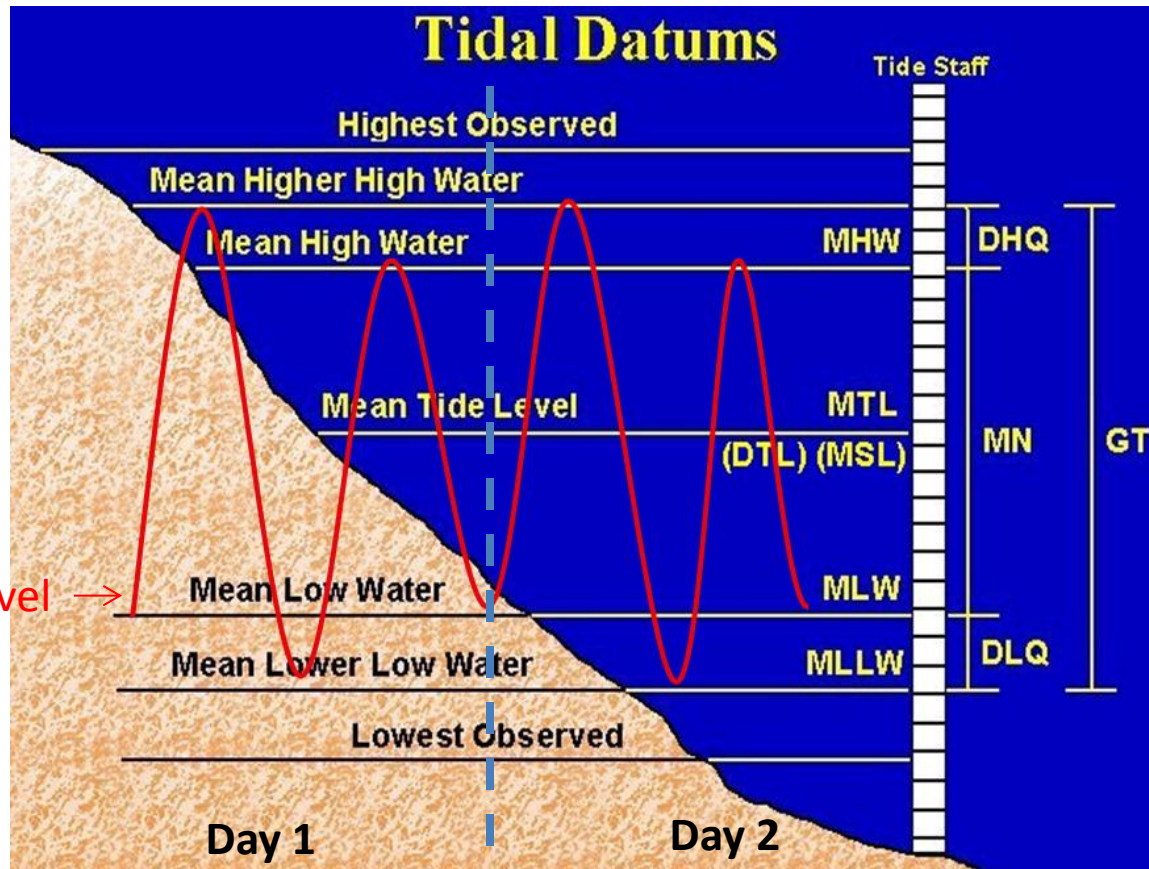
- Be very careful when converting between datums
 - NOS Vdatum Tool

Geodetic Datums



- Geodetic Datums
 - Based on a simplified surface (lot of geodetic and mathematical calculations) that represents the Earth's shape and size
 - National Geodetic Vertical Datum of 1929 (NGVD29) (Old)
 - North American Vertical Datum of 1988 (NAVD88) (New)
 - Referenced to a single tidal station. It is the official vertical datum for the United States.

Tidal Datums



Courtesy of
NOS COOPS

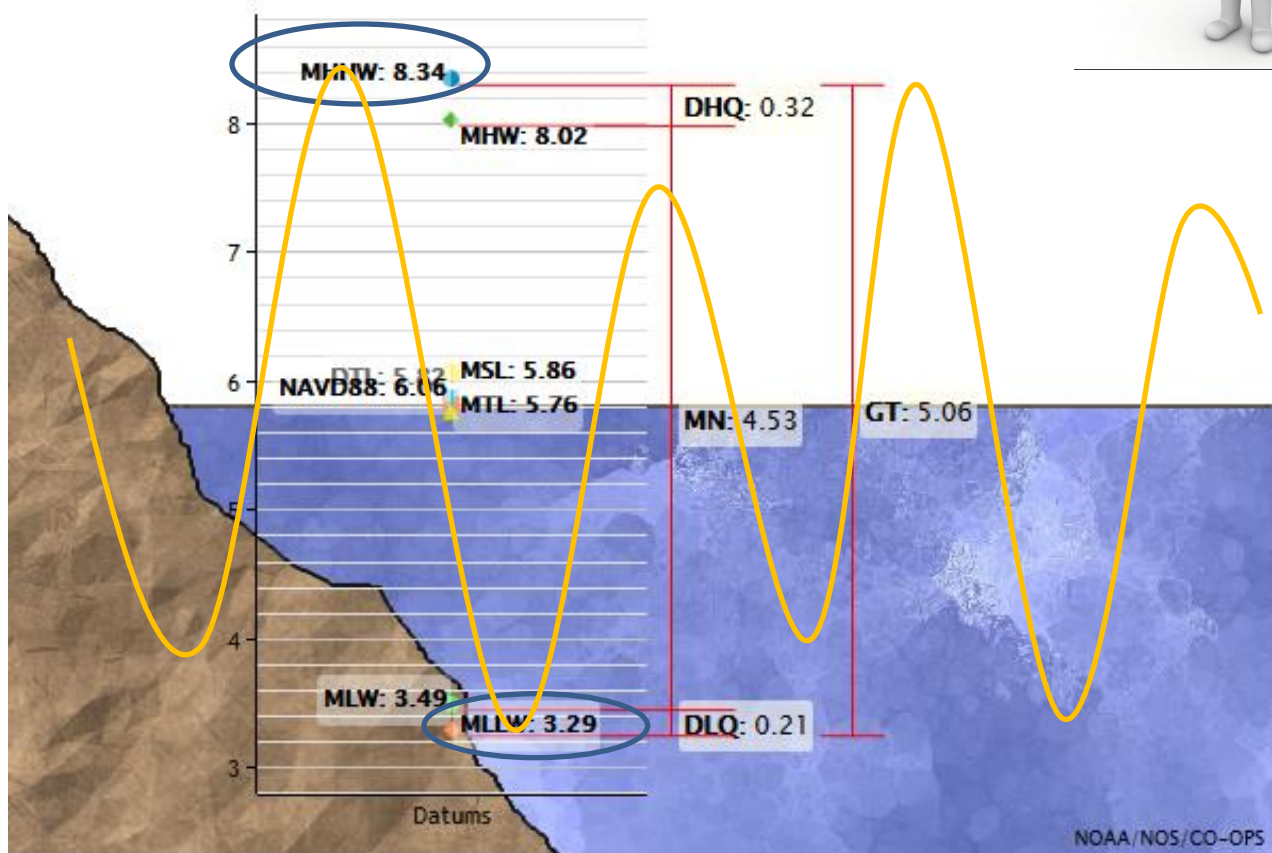
- Tidal Datums
 - Reference water levels defined by a phase of the tide
 - MLLW, MSL, MHW, MHHW, HAT
 - Based on data recorded in that specific area for 19 years (tidal epoch).



Datum Clarification



Datums for 8518750, The Battery, NY
All figures in feet relative to station datum



When in doubt, rely on the NWS!

- Currently forecasts are referenced in MLLW...but looking to move to MHHW
 - Proxy for start of inundation across the most vulnerable coastal areas
 - Easier to conceptualize water above normal high tide levels.