

Tsunami Interactive Web Guide Data Component

- **Option #1: Students look at tide gauge data from Cape Disappointment (near Ilwaco):**
 - <https://tidesandcurrents.noaa.gov/map/index.html?id=9440581>
 - Check the 'Plot Data' to look at a 24-hour graph of water level predictions and measurements. Water levels are always changing, so what are they in reference to (known as the datum)? These water levels are relative to MLLW: mean lower low water (look at the images below and read more about mean lower low water here: <https://noaanhc.wordpress.com/tag/mlw/> and here: <https://tidesandcurrents.noaa.gov/datums.html?id=9440581>).

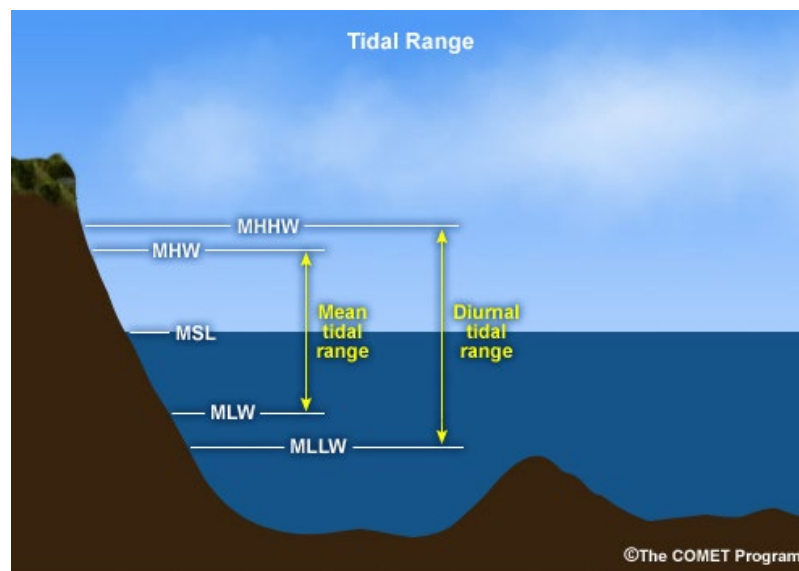


Figure 1 Image from NOAA blog post *Inside the Eye* written by Robbie Berg on January 29, 2016 <https://noaanhc.wordpress.com/tag/mlw/>

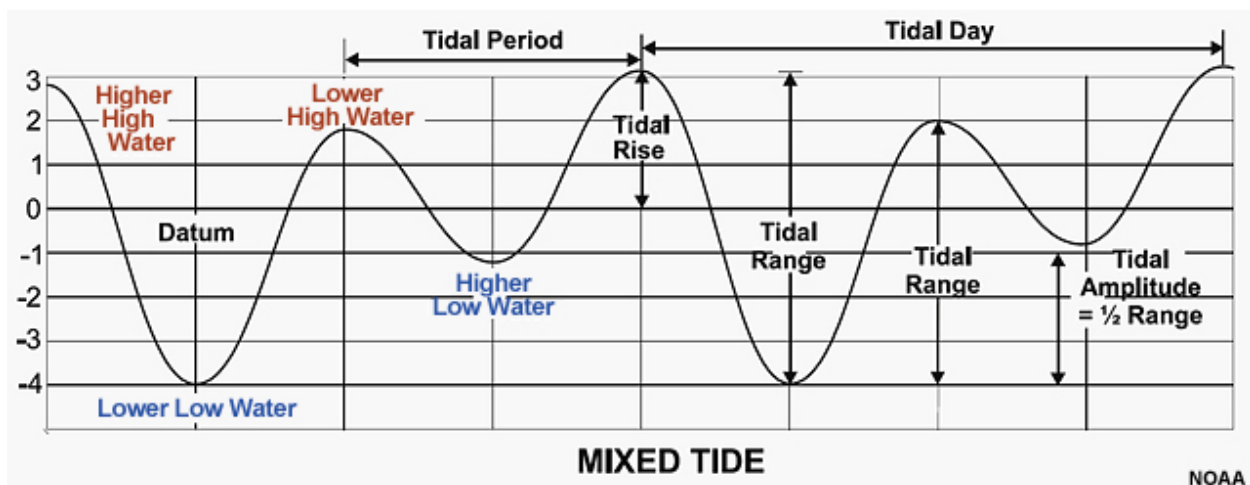


Figure 2 Image from NOAA blog post *Inside the Eye* written by Robbie Berg on January 29, 2016 <https://noaanhc.wordpress.com/tag/mlw/>

Ask the students what they know about tides. Why do tides vary? How do they vary? Are there patterns to the tides?

- Have students think about why there is a difference between the ‘Predicted’ and measured ‘Water Levels’ shown on the graph
- Ask students what they think a tsunami would look like on this type of graph, then show them an example like the image below (link to original image here: <https://www.times-standard.com/wp-content/uploads/2021/08/north-spit-tide-gauge-1.jpg?w=1280>)

NOAA Tide Gauge – North Spit

tsunami begins ~3:30 AM PDT

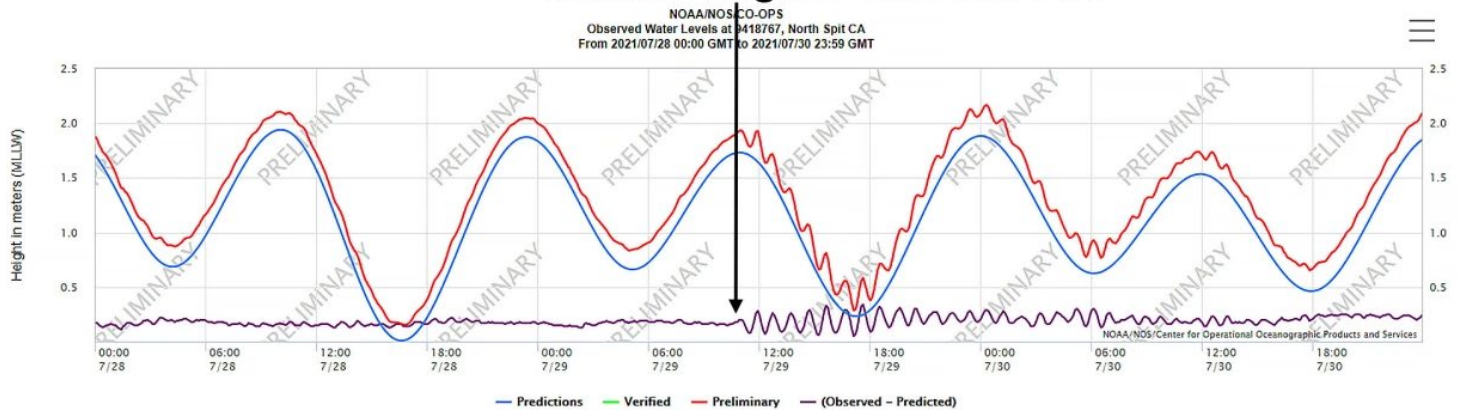


Figure 3 Image from article in the Times-Standard on August 8, 2021: <https://www.times-standard.com/2021/08/08/lori-dengler-this-is-the-third-time-in-the-last-year-the-national-tsunami-warning-center-has-left-us-dangling/>

- **Option #2: Students compare data for the same event from local and distant tide gauges**
 - Global tsunami propagation forecast and amplitude graph from an event: https://tsunami.gov/previous.events/03-11-11_Honshu/Images/Honshu_MA.jpg
 - For example, looking at a local gauge from Japan: https://tsunami.gov/previous.events/03-11-11_Honshu/Images/hanaA_03-21-2011.jpg
 - vs. one from Westport, WA: https://tsunami.gov/previous.events/03-11-11_Honshu/Images/wpwaA_03-15-2011.jpg
 - vs. one from Hilo, HI: https://tsunami.gov/previous.events/03-11-11_Honshu/Images/hiloA_03-22-2011.jpg
 - vs. one from the Philippines: https://tsunami.gov/previous.events/03-11-11_Honshu/Images/davoA_03-18-2011.jpg
 - Ask the students to look at the tide gauges and compare how the tsunami max wave heights vary for these areas (look at Residual data)
 - Ask them how long the tsunami lasts for (look at Residual data)
 - Have them make a graph of distance from source vs. wave height. What do they observe when they do that?