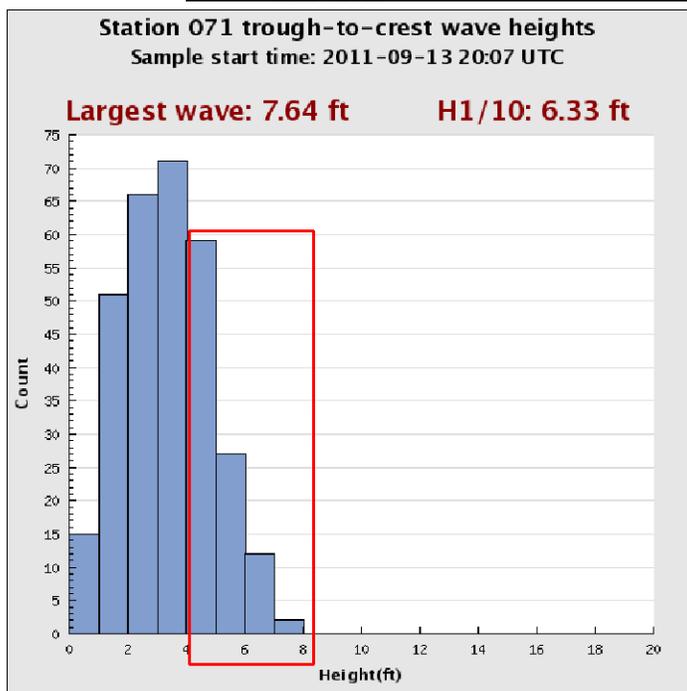
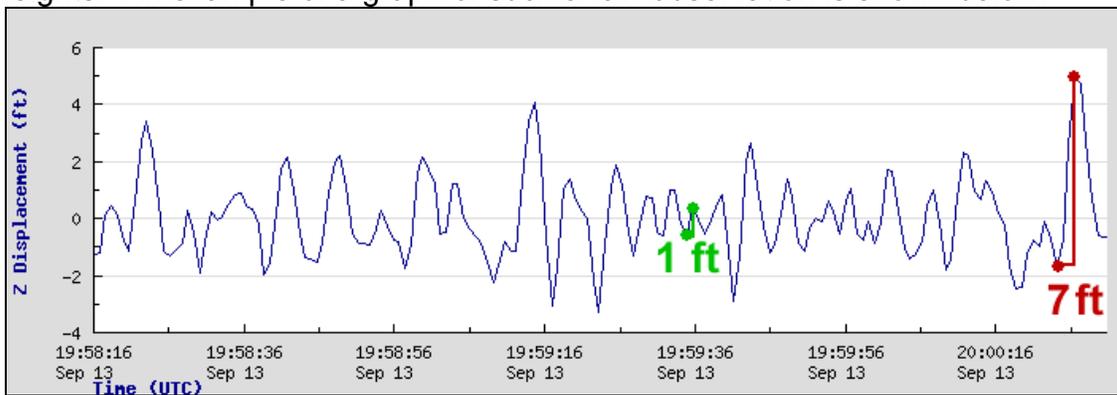


Significant Wave Observations and Forecasts



This short paper will attempt to clarify what buoy wave measurements actually represent.

- **Definition:** Wave height is measured as the height from the **peak** (top of the wave) to the **trough** (bottom of the wave)
- As a weather buoy bobs up and down, it measures waves of a variety of different heights. An example of a graph of such a raw observation is shown below:



After sampling these waves for a period of time, the buoy counts up all the waves by size.

- The figure to the left shows an example of such a graph, plotting the number of waves measured for each one foot range for a 30 minute sample time (about 300 waves total).

Traditionally, significant waves (**Sw**) are reported as the **average of the largest one third** (or 33%) of the counted waves.

- In the example to the left, the significant **wave height reported by the buoy** is the average of the largest 33% of waves (or 100 of the total 300 waves sampled, shown by the red box) - which ends up to be about **5 feet**. This means that most of the waves are smaller than 5 feet, **but a number of waves are larger than 5 feet**. In fact, two waves were almost 8 feet!

What Does All This Mean?

Although a buoy reports a single value for significant wave (**Sw**), it should be understood that **most of the waves are smaller than this value, but a number of waves are larger**.

- **Rough rule of thumb to use:** If you are in the area of a buoy reporting a single significant wave height, to find the **largest wave** you should expect, simply:
 - **Double the wave reported by the buoy, and subtract a couple of feet.**
 - Sig Wave: 5 ft. Max Wave: 8 ft (*double 5ft = 10 ft, subtract a couple=8ft*)
 - Sig Wave: 10 ft. Max Wave: 18 ft (*double 10ft = 20 ft, subtract a couple=18ft*)

The National Weather Service forecasts significant wave height...same as a buoy reports. So a forecast of 5 foot waves should be understood that larger waves exist!

To find real time charts, like those used above, visit the "Buoy Wave Distribution" section at: weather.gov/losangeles/buoys.php