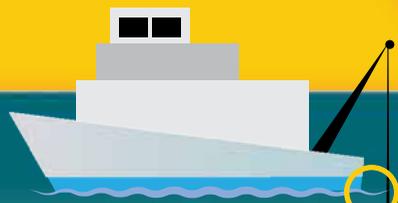




# COASTAL & ESTUARINE CURRENT SURVEYS



## Instrument Deployments

Each year NOAA measures ocean currents at different coastal and estuarine locations by deploying dozens of temporary instruments.

## Currents

**Ocean currents** describe the movement of water from one location to another. Currents are observed at depths throughout the water column and are measured over a period from one to four months.

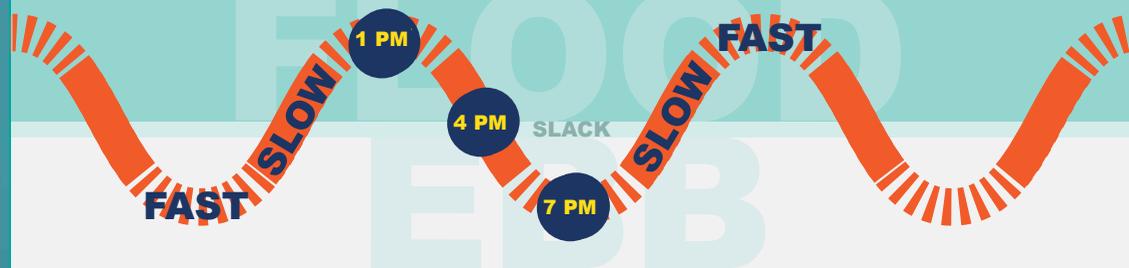
## Acoustic Doppler Current Profiler (ADCP)

This instrument measures the currents by emitting beams of sound, which reflect off of particles in the water and back to the ADCP.



## Harmonic Analysis

After the ocean current measurements are collected, oceanographers download the data and then analyze it through a computer program. A statistical process called harmonic analysis determines the part of the current caused by the tides. This “tidal current” can then be predicted at that location for many years into the future. Other factors that influence the current such as wind cannot be forecast for more than a few days and are not included in the prediction.



## Tidal Current Predictions

In the graph above, NOAA predicts at “Beautiful Bay” the tidal current will flood (flows inland) at 1pm, slack (low current speed) at 4pm and ebbs (flows out to sea) at 7pm. The fastest currents occur at peak flood and ebb.



## How are current predictions used?

Thanks to **NOAA tidal current predictions**, a kayaker attempting to leave “Beautiful Bay” knows to avoid the time of peak flood at 1pm when they would be paddling against the current. Tidal current predictions provide critical information for both recreational and commercial marine navigation. Predictions of the tidal current can be accessed **online** for thousands of coastal and estuarine locations.

[tidesandcurrents.noaa.gov](https://tidesandcurrents.noaa.gov)