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Boating Tip #9: Tides & Currents

Tides

- Tide is the vertical rise and fall of the ocean level resulting from forces of gravitation
- The moon exerts the primary force on tides
- The sun also exerts a force on tides but less than the moon, because although the sun is larger, it's further away
- High tide is the highest water level in a cycle
- Low tide is the lowest water level in a cycle
- Stand of a tide is the period in the tidal cycle in which the level appears not to change
- Range is the difference between the height of high tide and low tide
- Time difference between one high tide and one low tide is approximately 6 hours and 12 minutes.
- Mean low water is the average of all low tides
- Mean lower low water is the average of the lower of two low tides occurring within a day
- Actual depth of water equals the depth on the chart plus the height of the tide
- Spring tides occur when the sun and moon act together at times of new or full moon. Spring tides occur throughout the year, not just during the Spring season. High tides are higher and low tides are lower than normal during spring tides.
- Neap tides occur when the sun and moon act in opposition. The smallest tide range occurs during neap tides.

Currents

- Currents are the horizontal movement or flow of water between the ocean and coastal waters
- There are two types of currents: ocean currents and tidal currents
- Ocean currents result from effects of winds, salinity and temperature differences in the water (For example: the Gulf Stream, California Current)
- Tidal currents result from tidal changes
- Strength of the current depends on the point in the tidal cycle and land configuration

- Strong currents are predicted when a large amount of water has to move through a small land opening
- Flooding means the current is moving toward shore and the tide is rising
- Ebbing means the current is moving away from shore
- At slack water, there is no detectable horizontal movement of water
- Currents on the North American Pacific Coast typically have diurnal inequality which means there is a difference in two consecutive ebb or flood maximums due to the effect of the moon.
- Usually there are 4 slack currents and 4 maximum currents each day.
- Currents can be altered by wind, weather, or river discharge, so actual speeds and times may vary from what is published.