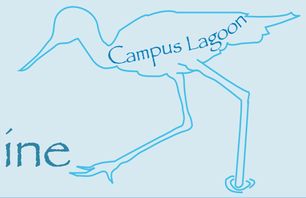
Dune Processes & Seasonal Dynamics
of the UCSB Shoreline



Seasonal Changes
Sand Movement

Winter Beach

In winter, foredune plants are uprooted when storm-generated waves coincide with high tides, during full and new moon phases.

Winter brings storm systems with high wave energy that pull sand from the beaches to off-shore sandbars, exposing cobble and bedrock.

East Depression in Winter

Exposed cobble and extent of washed-up kelp (beach wrack) reflect extreme seasonal impacts.

Summer Beach

Spring rains support dune vegetation that catches windblown sand and stabilizes dunes.

Spring and summer bring low energy waves that carry sand to shore from off-shore sand bars, returning it to the beach.

East Depression in Summer

Calm seas allow saltbush to colonize foredune areas. The beach wrack line is much lower than in the winter.

Brought to you by the students of UCSB through Shoreline Preservation Fund.

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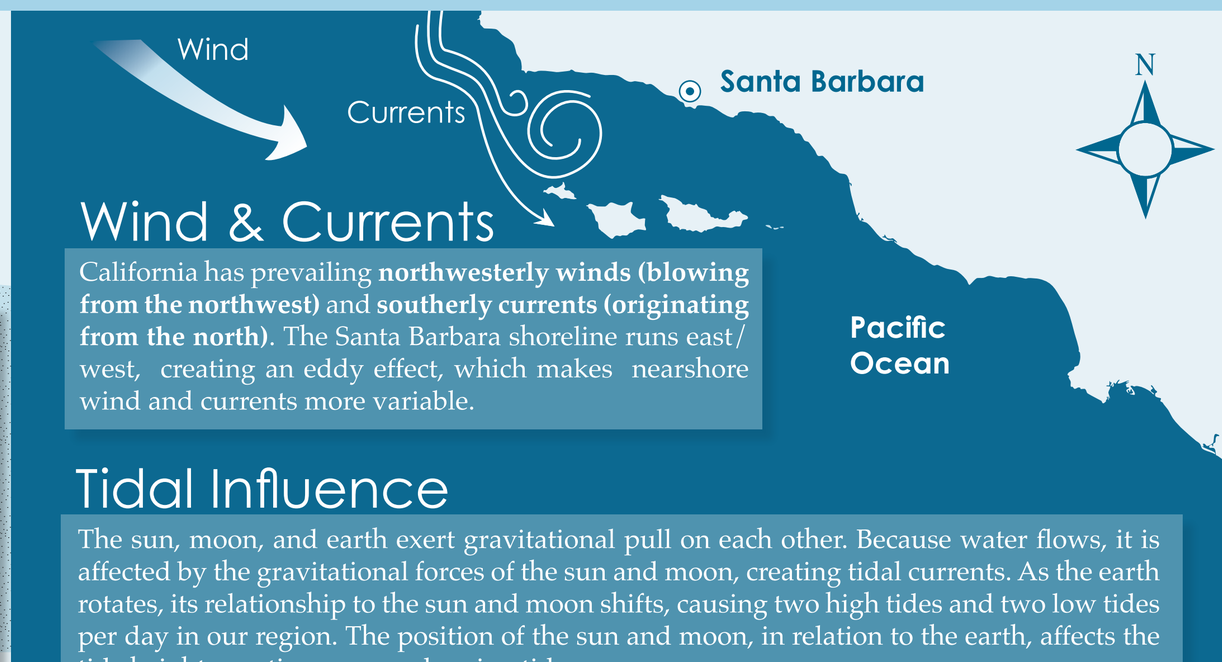
Everyday Impacts
Tides, Wind, and Currents



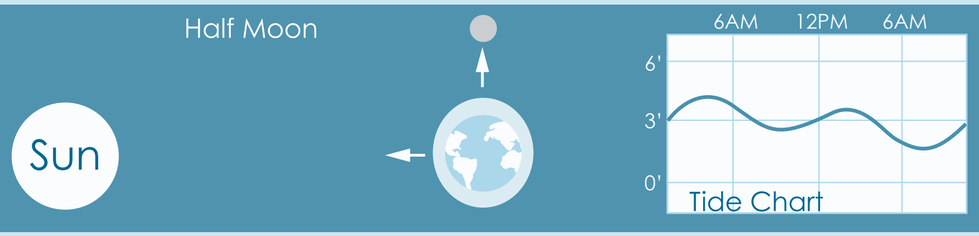
Wind & Currents

California has prevailing **northwesterly winds (blowing from the northwest)** and **southerly currents (originating from the north)**. The Santa Barbara shoreline runs east/west, creating an eddy effect, which makes nearshore wind and currents more variable.

Tidal Influence

The sun, moon, and earth exert gravitational pull on each other. Because water flows, it is affected by the gravitational forces of the sun and moon, creating tidal currents. As the earth rotates, its relationship to the sun and moon shifts, causing two high tides and two low tides per day in our region. The position of the sun and moon, in relation to the earth, affects the tide height, creating neap and spring tides.

Neap Tides: During the quarter moon phases, the sun and moon are at right angles relative to the earth and their gravitational forces effectively cancel each other out, causing lower variation in the high and low tides.



Spring Tides: When the sun and moon are aligned (new and full moon phases), their combined gravitational force maximizes the tidal range, creating higher high tides and lower low tides. These are called "spring tides" although they occur year-round.