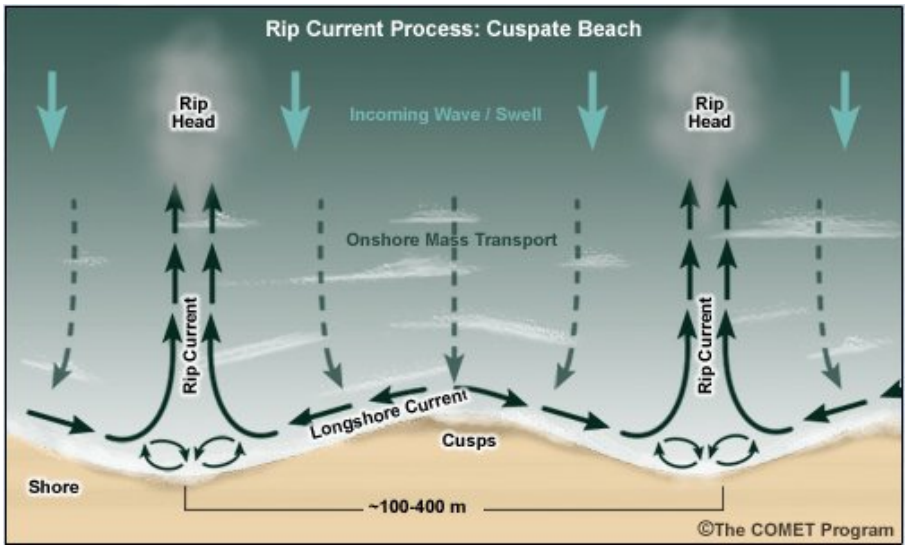
How Do Rip Currents Form?

Water in…water out…
Rip currents form when breaking waves pile water (onshore mass transport) onto the beaches. The amount of mass transported to the beaches must equal the amount of mass transported back into the ocean to be in equilibrium. A transport mechanism back to the ocean is a rip current.

The path of least resistance
After washing up on the beach, the water has no where to go other than flow back into the ocean as a result of gravity. The water flows seaward through paths of least resistance, which are typically breaks in the sand bar. The strength of the rip currents is dependent on the amount of incoming wave energy and the tide level.



Typically, the larger the breaking wave the stronger the rip currents will be. Likewise, when there is less room over the sand bars for the returning water to flow, the flow will become focused/faster along the breaks in the sand bars. Therefore, rip currents are stronger and more common a few hours either side of low tide. When the tide is high the water returning from the beach has more room to flow back across the sand bars and is less focused in the breaks between sand bars.

As a result, stronger rip currents typically occur when large breaking waves occur in the surf and when the tide is within a few hours either side of low tide. It should be reiterated that rip currents can occur any time during any day, regardless of the tidal cycle.