

# King tides rolling in along the coast Friday

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Ocean waters will reach further inland Friday morning, as one of the year's biggest tides pulls water to its high point.

"King tides," a general term for these regular and predictable events, return in the first of two such extreme tides this year, with the second round occurring in February.

The largest tidal fluctuations of the year will only be a matter of inches from the year's typical high tides, said Gary Griggs, who studies coastal erosion and sea-level rise at UC Santa Cruz. But it reflects future projections of increasing sea levels, where these high tides become a new normal.

"The peak here in Santa Cruz is about 6.2 feet, and that's not that uncommon," he said. "But it's a chance to see what a really high tide does in places that you may not normally know are that close to sea level."

Though ocean water may be lapping at your feet a bit further up the beach, tidal fluctuations are caused by the celestial bodies high overhead. When the sun and moon are aligned during full and new moons, their gravitational pull combines and increases its influence on the Earth's oceans. If this occurs while the Earth is at its closest point to the sun in its orbit, the effect is even greater, and causes king tides.

What goes up must come down. The same forces pulling water further inland will also cause it to retreat further away from the coast during the daily low tide, said Griggs. This provides new opportunities for tide pooling, as areas that are typically underwater will be exposed.

For coastal explorers, Griggs said that places like Fitzgerald Marine Reserve in San Mateo County and Natural Bridges State Beach in Santa Cruz “are wonderful opportunities” for tide-pooling. But he adds, “keep aware of what the tides are doing so you’re not sitting on a rock when the tide comes in.”

Though the increased tides won’t be a tsunami, if large waves accompany them, Griggs said the extra water can become a danger — and is what will cause the most coastal erosion in the future.

“It’s the waves that really do the damage, rather than just filling up the bathtub a few more inches,” he said.

Griggs also notes that low lying areas near the coastline will produce the most dramatic visuals of the tidal increase. During the year’s highest tides, places like the Embarcadero in San Francisco can become flooded.

“That’s what we expect to see with sea-level rise in the next decades,” said Anne Kohut Frankel, the California Coastal Commission’s grants and education coordinator. “What’s being flooded now is going to be vulnerable in the future.”

The current projections for sea-level rise in San Francisco are between 1.1 and 2.7 feet by 2050, according to the State of California Sea-Level Rise Guidance.

While king tides are not caused by sea-level rise, they offer a snapshot of what higher sea levels might look like in the future — and the California King Tides Project wants people all along the coast to submit their photos as they explore the coast. The project, which is in its 10th year, takes these user-submitted photos and pins them to a map, offering publicly accessible visualizations of a future planet with more ocean water.

Frankel said the photos are also used by the California Coastal Commission, as well as its collaborators.

“The photos are useful scientifically and for planning uses,” said Frankel. “They help identify the people and areas that are vulnerable to sea-level rise.”

Last year, the project produced around 800 photos. Those photos are a “consciousness-raising exercise,” she said, adding that the project gets “people thinking and talking and sharing what they observed.”

“As we try and take action on climate change, the more people talking about it and thinking about it,” Frankel said, “the more successful we’ll be as we act on climate change.”