

L.A. storms to grow more destructive as sea level rises, study says

The effect of global warming on sea level will worsen coastal flooding and erosion as major storms produce higher tides and bigger waves and storm surges, a city-commissioned study finds.

Tony Barboza, Los Angeles Times, 1-8-14

Major storms will be more destructive to coastal areas of Los Angeles as sea level rise accelerates over the century, according to a new study the city of Los Angeles commissioned to help it adjust to climate change.

[The study](#) by USC took inventory of the city's coastal neighborhoods, roads, its port, energy and water infrastructure to evaluate the damage they would face from a storm under sea level rise scenarios anticipated for mid-century and 2100.

Climate change, experts say, will worsen the flooding and erosion coastal areas already face during big storms as rising sea levels result in higher tides and bigger waves and storm surges.

A moderate storm could inflict \$410 million of damage to buildings in Los Angeles once sea level has swelled by about 1 ½ feet, a mark that could be reached by mid-century, says the report, released Tuesday. Losses would nearly double if the ocean swells up to 4 ½ feet by 2100, [as scientists project](#).

The most vulnerable neighborhoods — including Venice, Wilmington and San Pedro — are at a disadvantage because they have a higher proportion of renters, older housing stock and lower per capita income, the study found.

Though much of Los Angeles sits high enough that it is out of harm's way, wastewater and potable water systems within a few feet of the high-tide line are especially at risk of flood damage, the report says. Critical roads, including stretches of Pacific Coast Highway, could be inundated or washed out, blocking access to emergency services.

The city's power plants are at low risk, the report found, and the Port of Los Angeles can probably accommodate rising sea levels by raising its elevation with periodic construction projects.

For the analysis, USC assembled a team of environmental and social scientists, engineers and emergency planning and coastal management experts. The study cost about \$120,000 and was funded jointly by the university and the city.

As a starting point the group used a January 2010 El Niño-fueled storm that scoured Southern California beaches and flooded some coastal areas. It was considered a 10-year storm, one that has a 10% likelihood of happening in a given year. Using a computer model, researchers estimated how much worse such a storm would be as sea levels rose.

The report also advises the city to draft a plan for adapting to rising sea levels and calls for regular monitoring of the width of Los Angeles beaches, where sand provides a crucial buffer against storms.

"The beaches in Santa Monica Bay are our first line of defense," said Phyllis Grifman, lead author of the report and associate director of the USC Sea Grant Program. "It's a very good defense as long as they're maintained."

Yet some of Los Angeles' widest beaches, including Venice Beach and Dockweiler, are already retreating because of insufficient sand replenishment. "As sea level rise accelerates in the future, these iconic L.A. beaches will undoubtedly narrow at an even faster rate," the report says.

City officials said they planned to use the report's findings to prioritize spending, particularly on wastewater systems and beaches, which attract millions of visitors each year.

Los Angeles in 2007 released a strategy to fight climate change by cutting greenhouse gas emissions, but the city has no official plan to cope with its effects, including sea level rise.

The USC study is a step in that direction, said Matt Petersen, Los Angeles' chief sustainability officer.

"We've crossed the line of being able to stop the march of global warming, and now the reality of needing to adapt and create a more resilient city is here," Petersen said.

The city also has supported research by UCLA that found Los Angeles can expect average annual temperatures to rise 4 to 5 degrees by mid-century and snowfall in the region's mountains to drop by about one-third. Research by both universities will be wrapped into a citywide sustainability plan Mayor Eric Garcetti's office hopes to complete by the end of this year.

Jonathan Parfrey, executive director of Climate Resolve, a Los Angeles-based nonprofit group that works with government agencies to plan for climate change, praised the research as a good first effort.

"The next step is crafting policies that reduce risk and protect the public today," Parfrey said.

Sea level has risen about 7 inches globally in the last century, and that rate is accelerating as the ocean warms and expands and land ice melts because of global warming.

In California, the sea's expansion will become most evident in winter storms that hit at high tide, unleashing big waves, inundating low-lying coastal areas and devouring beach sand, experts say.

Over the next two years USC researchers plan to extend their assessment of rising sea levels to all of Los Angeles County and use a more sophisticated computer model to predict risks from a more severe, 100-year storm.