

# Washington state sea levels could rise considerably by end of century

17 January 2008

Melting glaciers in Greenland and Antarctica, combined with other effects of global climate change, are likely to raise sea levels in parts of Western Washington by the end of this century, though geological forces will offset the rising water in some areas.

A new report suggests a moderate scenario is for sea levels on the Washington Coast and in the Puget Sound Basin to rise an average of 6 inches by 2050 and 14 inches by 2100.

The analysis, conducted by the Pacific Northwest Climate Impacts Group at the University of Washington and the Washington State Department of Ecology, suggests that a worst-case scenario could raise sea levels in some places as much as 22 inches by 2050 and 50 inches -- more than 4 feet -- by 2100.

"We can't rule out higher rates of sea-level rise, but given what we know now they seem improbable," said Philip Mote, a UW research scientist and lead author of the analysis. Other authors are Spencer Reeder and Hugh Shipman of the Department of Ecology and Alexander Petersen and Lara Whitely Binder of the Climate Impacts Group.

The scenarios are based on projections for worldwide sea-level increases contained in the latest report of the Intergovernmental Panel on Climate Change, a United Nations body that this year shared the Nobel Peace Prize. Mote was a lead author for one chapter of the panel's report.

The new report indicates that some of the sea-level rise in Washington state would be mitigated by rising shorelines, the result of uplift from plate tectonics. That would be especially true along the northwest coast on the Olympic Peninsula. The central and southern coastline and the Puget Sound basin are more likely to see a noticeable sea-level rise.

The authors also examined other factors in sea-level rise -- expansion of sea water because of warming and the addition of water from melting glaciers -- along with local atmospheric circulation changes that could increase tide levels. The authors noted that even a small increase in sea level, when combined with higher tides or large storm surges, could bring more frequent events that inundate the coastline.

The report, "Sea Level Rise in the Coastal Waters of Washington State," is intended to provide planners and policy makers with information they need to consider when issuing building permits, for example, or determining sites for proposed factories or roads.

The authors note that the report is not a prediction of what will occur but rather aims to examine probabilities that can guide planning. They note that three important issues must be considered when making decisions based on sea-level rise estimates -- the location, the length of time the location is to be used and the acceptable risk level.

"If you have a high-value project and low risk tolerance, then you want to plan for the worst-case scenario," Mote said.

"We have had inquiries from coastal engineers who are considering major projects, but we also have heard from at least one retiree who said he was thinking of buying some waterfront property and wondered whether it would be under water."

The risk of rising sea levels might be acceptable for someone such as the retiree, who might only plan to use the land for 10 or 20 years, but that risk might be unacceptable for a city or a corporation planning to build a major plant to last 50 or 100 years, Mote said.

The report can be found online at [www.cses.washington.edu/db/pdf/moteetalslr579.p](http://www.cses.washington.edu/db/pdf/moteetalslr579.p)

[df.](#)

Source: University of Washington

APA citation: Washington state sea levels could rise considerably by end of century (2008, January 17) retrieved 26 May 2019 from <https://phys.org/news/2008-01-washington-state-sea-considerably-century.html>

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