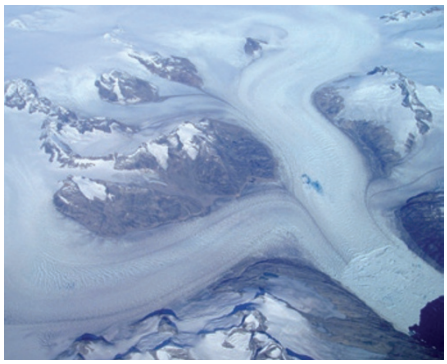
Nuances of glacier speed

Establishing rates of sea-level rise for the next century and beyond is a critical goal: maintained over the span of decades, even small rates of rise can require significant modifications in coastal development practices, or could even force relocation of some island dwellers. One critical component in this effort is establishing how quickly Greenland's glaciers are moving toward the sea and melting. This goal has proven more challenging than expected.

A study led by the University of Washington (*Science* **336,** 576–578; 2012) finds that the velocities of Greenland's glaciers are, on average, slower than some past work suggested. As a result, the team concludes that Greenland's contribution to future sea-level rise is likely to be substantially lower than previously feared, although still substantial.

The research addresses one of the stickier issues in establishing reasonable projections for future climate change impacts. When the Intergovernmental Panel on Climate Change released its most recent full report in 2007, potential contributions from glacier melting were so poorly established (due, in part, to inadequate satellite data) that the group excluded that factor from its sea-level rise projections.

Researchers once assumed that glacier movement was uniformly slow. Then, analyses of a few isolated glaciers revealed not only that some Greenland glaciers were moving more rapidly than anyone realized, but also that rates for a subset of the glaciers studied were rapidly accelerating.



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When researchers extrapolated such results to all of Greenland's hundreds of glaciers, the results were alarming. One key paper (*Science* **321,** 1340–1343; 2008) considered a range of hypothetical scenarios and concluded that sea-level rise during this century due to Greenland glacier dynamics alone could fall between about 9 and 47 cm.

The new study does not contradict those results *per se.* Instead, the team took a broader approach that placed previous work in better context. The researchers combine data from multiple satellites to analyse velocities for more than 200 Greenland glaciers between 2000 and 2005, and then annually to 2010. This broader view yielded very different projections for the future.

The team found that there is substantial variability in velocities from one glacier to the next, and even for the same glacier from year to year. Past studies had documented some individual glaciers whose velocities doubled in the span of a few years, but the overall movement averages to a roughly 30 per cent speed-up from 2000 to 2010.

Based on these analyses, the researchers estimate that sea-level rise this century from melting Greenland glaciers should be below 9 cm, the lower bound of the earlier estimate. That is still a lot of water, especially when considered with other key factors such as Antarctic glacier melt and the oceans' thermal expansion as temperatures warm. So, although not exactly good news, it is at least improved news. ❐

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The journalist's take

Although some pundits will say that it is mainly bias that determines what stories get told, the driving factor is generally much simpler. Editors love anything that smacks of controversy. If something new is, or can at least be played up as, contrary to an existing perception, it is an easy sell. A potential tie to death or mayhem doesn't hurt either.

The story about Greenland's slower-than-thought glaciers has hints of both, and thus enjoyed wide coverage by hundreds of publications, including significant outlets such as The Washington Post, National Public Radio and The Guardian.

Even though the paper suggested the situation is not as bad as previously feared, the results still included more than enough glacier acceleration and associated sea rise to cover the mayhem angle for those so inclined, and many headlines stopped there. Other outlets could not resist that hint of controversy, and focused on the contrast between the new study and past projections.

Many readers and publications have grown weary of climate change stories, so it is unlikely the story would have been so widely distributed without those attractive angles. Had this more in-depth study confirmed earlier projections of rapid glacier movement, it would have been hugely significant scientifically, but it is doubtful such news would have got much attention.

Another key factor in the media prominence of this story was simple availability. Both the Associated Press and Reuters distributed stories, meaning easy access for editors around the world. Because most publications have long obliterated their in-house science writing, these wire services have become the main source for science stories at most smaller publications.

Taken in isolation, the range of headlines might have been quite confusing. One said, "Greenland's ice melting more slowly than expected," whereas another warned, "Greenland's glaciers melting faster." But the accompanying articles tended to handle fairly well the nuances that made both descriptions true; they largely described the science in ways that induced little wincing among the lead researchers. Nonetheless, a headline at the Vancouver Sun referring to "racing glaciers" probably elicited some chuckles.

A lack of significant distortions, despite some potentially confusing context, was probably due, at least in part, to good preparation. The researchers have been through media training, so when the press started calling, they had already established talking points that they came back to time and again during interviews.

Without that prep work, the press attention might well have taken a more frustrating turn. For instance, too much focus on the lower estimates for future sea-level rise, and a little less recognition of the significant velocities the team did measure, could have led to some very different headlines. Greenland ice might even have been declared a non-threat, prompting some to conclude they should commence building ocean-front cottages as close to the high tide line as they please.