

Assessing the influence of Alaska glaciers is slippery work

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With an estimated 34,000 square miles of ice, an area about the size of Maine, Alaska's multitude of glaciers have a global impact.

Anthony Arendt, an assistant research professor at the University of Alaska Fairbanks Geophysical Institute, has outlined the complexity and influence of Alaska glaciers in this week's issue of the journal *Science*. In his article, Arendt explains the importance of integrating field observations and more precise glacier simulation models.

"We have used satellites to measure the mass changes of all of Alaska's glaciers, but there are also many glaciers that need to be measured in the field," Arendt said. "We need these field observations to better understand the processes that are controlling glacier changes."

Glacial patterns are difficult to predict — even for current computer models. Alaska glaciers often behave independently of one another. They retreat and surge, and are subject to volcanic and oceanic influences, in addition to changes in precipitation and warming temperatures. Data collected in the field will help refine existing models, so that a more accurate picture of changing [sea level](#) can be drawn.

"Alaska glaciers have been losing mass more rapidly since the mid-1990s than they were several decades earlier," Arendt states in the article.

"Understanding whether this trend continues will require an integration of observations across disciplines, as well as the development of robust glacier simulation models."

According to Arendt, glaciers and ice caps make up a mere three percent of the ice on our planet, yet they account for about half of the sea level contribution. These dynamic chunks of ice are tremendously influential on future coastlines.

"There are many people living very close to the sea in areas where even a small change in sea level would be devastating," Arendt said.

"Developing countries don't have the resources to deal with this change."

To create the best sea level forecasts, Arendt said that scientists need to use [field observations](#) to fill data gaps in current models. With thousands of [glaciers](#) in [Alaska](#), scientists have much more work to do, he said, noting that the research will ultimately help the global community better adapt to sea level change.

More information: www.sciencemag.org/content/332/6033/1044.full

Provided by University of Alaska Fairbanks

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