



[Low sea level rise projections from mountain glaciers and icecaps under global warming.](https://arctichealth.org/en/permalink/ahliterature95755)

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Abstract: The mean sea level has been projected to rise in the 21st century as a result of global warming. Such projections of sea level change depend on estimated future greenhouse emissions and on differing models, but model-average results from a mid-range scenario (A1B) suggests a 0.387-m rise by 2100 (refs 1, 2). The largest contributions to sea level rise are estimated to come from thermal expansion (0.288 m) and the melting of mountain glaciers and icecaps (0.106 m), with smaller inputs from Greenland (0.024 m) and Antarctica (-0.074 m). Here we apply a melt model and a geometric volume model to our lower estimate of ice volume and assess the contribution of glaciers to sea level rise, excluding those in Greenland and Antarctica. We provide the first separate assessment of melt contributions from mountain glaciers and icecaps, as well as an improved treatment of volume shrinkage. We find that icecaps melt more slowly than mountain glaciers, whose area declines rapidly in the 21st century, making glaciers a limiting source for ice melt. Using two climate models, we project sea level rise due to melting of mountain glaciers and icecaps to be 0.046 and 0.051 m by 2100, about half that of previous projections.

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