



Sea level contribution due to loss of floating ice

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We use satellite observations and the results of a coupled ice-ocean model to provide the first estimate of changes in the quantity of ice floating in the global oceans, and the associated fluctuation in global sea level, which arises due to differences in the density and temperature of ice and sea water. Losses associated with Arctic sea-ice retreat and Antarctic ice shelf collapses have been offset by gains of Antarctic sea-ice and thickening of other Antarctic ice-shelves. Altogether, $771 \pm 219 \text{ km}^3 \text{ yr}^{-1}$ of floating ice has been lost since the mid 1990's, a value that exceeds considerably the reduction in volume of grounded ice over the same period. Although the net contribution to global sea level is small ($51 \pm 19 \text{ um yr}^{-1}$), global oceans are expected to warm over the coming century, and so the melting of floating ice should be considered in future assessments of sea level rise.