



Sea level: How much can it rise in the next century?

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Uncertainty in future sea-level rise is huge. While thermal expansion of the ocean is projected with strong differences between models, the resulting sea-level rise is considered to be gradual and without major surprises. Mountain glaciers store a significant but limited amount of additional water and statistical compensation reduces uncertainty in the overall projection of this century. Thus the largest unknown are the great ice sheets on Greenland and Antarctica. The dynamics of each of these ice sheets allows for a self-amplifying feedback that might, once triggered, contribute continuously even in the absence of enhanced anthropogenic forcing.

While the initiation of such self-amplification may not be the most likely future evolution of the ice sheets, it is certainly a possibility and thus needs to be a major component in a risk assessment of future sea-level rise. Here we discuss the future contribution of the large ice sheets to sea level with a special focus on these self-amplifications and an upper limit of sea-level rise of the 21st century.