

## **Big ice and sea level rise**

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The large ice sheets of Greenland and Antarctica contain so much ice that they would rise global sea level by about 65 m, if completely melted. A relatively modest 10% mass loss would mean that large parts of the Netherlands and other deltas worldwide would be permanently flooded. Just several decades ago, not much was known about the mass household of these big ice sheets, and only rough estimates existed of how much snow falls in their interior, and how much meltwater and ice flows into the surrounding oceans. In their first assessment report published in 1990, the Intergovernmental Panel on Climate Change (IPCC) predicted that these ice masses were not expected to contribute significantly to future sea level rise. But 15 years later the Gravity Recovery and Climate Experiment (GRACE), a pair of satellites that continuously monitor the gravity field of the earth, discovered that these giant ice sheets are losing mass, and are contributing significantly to ongoing sea level rise. A few years later it became clear that the mass loss from both ice sheets was accelerating, even further increasing the scientific research into their potential instability. In this lecture we discuss the recent progress that has been made in our knowledge of the big ice, what the greatest remaining uncertainties are and what this means for the future of low-lying regions around the world.