



On the evolution of ice sheets and their interaction with the ocean (Arne Richter Award Lecture for OYS)

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Under the current changing climate, the ice sheets in Antarctica and Greenland responded with an increase in mass loss resulting in a significant contribution to sea level rise. In order to quantify and understand these changes, it is essential to monitor the glacier dynamics. Using remote sensing techniques, I will highlight ongoing (significant) changes of two regions far apart from each other: North-Eastern Greenland and the Amundsen Sea Embayment in Antarctica. Both regions have encountered ice shelf weakening, retreat of the grounding line, acceleration of the ice streams, and finally sustained increase in mass loss than can be attributed to either the direct or indirect effects of the surrounding warm oceans. In light of the existing observations, it seems unlikely that the current changes will stop, or even attenuate, in a near future. I conclude on the need of high-resolution models coupled with the ocean, sea ice and the atmosphere capable of understanding and projecting the evolution of these rapidly changing regions.