



## **Analysing calving activity and front geometry of a marine terminating outlet glacier over five years using direct observations**

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We observed an outlet glacier in West-Greenland over five years by using a terrestrial radar interferometer, pressure sensors in the fjord and a time-lapse camera. A combination of these technologies provides us with displacement and topographical data with a spatial resolution of 5 meters in one minute intervals during five multi-day field campaigns, water level data in the fjord with a temporal resolution of several seconds over five years and images of the glacier front every 10 seconds for four days. This very detailed dataset enables us to get new insights of the calving process and changes in the front geometry. We use these data to establish detailed calving event statistics over five years, which are compared to environmental forcings like tides or weather conditions. By identifying source areas and ice volumes of individual calving events we quantitatively investigate the relationship between calving front geometry, calving rate and potential drivers. Additionally, identifying changes in the front geometry, the ice flow velocity pattern and the crevasse characteristics and comparing them with potential drivers enables us to improve our understanding of the ongoing observed changes of calving glaciers.