



## **The importance of accumulation in Greenland ice sheet mass loss in record-setting melt years**

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Point measurements from automatic weather stations (AWSs) combined with satellite observations offer a unique insight into the climate-ice sheet interaction on the full spatial scale to provide a comprehensive understanding of the processes important for ice sheet mass loss. Here, we present annual ablation observations from the Programme for Monitoring of the Greenland Ice Sheet (PROMICE) network for the years 2008 to 2012. We observed record-setting ablation on the Greenland Ice Sheet in the warm years 2010 and 2012, where 2012 is recognized as the year with larger mass loss. By combining AWSs and The Gravity Recovery and Climate Experiment (GRACE) data, we show that more mass accumulated along the margin during winter except for the north, northwest and southeast compared to 2010. GRACE 2012 also indicates less mass had accumulated in the interior of Greenland compared to 2010, which we suggest to explain a major part of the mass loss deficit between 2010 and 2012.