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## Ice Thickness and Frontal Ablation of Nine Outlet Glaciers on Novaya Zemlya

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Knowledge of the volume and proportion of ice mass loss due to frontal ablation (the sum of ice loss through calving and submarine melt) from tidewater glaciers on Russian Arctic archipelagoes is very limited. Meanwhile the frontal ablation there is an important factor of current change of glaciers, as well as this knowledge is required for iceberg hazard assessments. We present our estimations of frontal ablation for nine Novaya Zemlya tidewater glaciers, calculated from satellite-derived ice velocities, airborne 20 MHz GPR RES measurements of glacier ice thickness in 2014-2016, and mass change due to changes in terminus position (MCTP). These glaciers are located in northern part on Novaya Zemlya

(5 on its western side, and 4 on eastern side). The average ice thickness at glacier fronts varies from 70 to 250 m, and average ice velocity at fluxgates varies from 40 to 840 m a<sup>-1</sup>.

The total mean rate of frontal ablation for these nine glaciers in 2015-2016 is 2.47 km<sup>3</sup> a<sup>-1</sup> of ice with dominance of western side glaciers (2.08 km<sup>3</sup> a<sup>-1</sup>). The average ratio of MCTP to frontal ablation is 2/5 on western side and 1/5 on eastern side. The most active frontal ablation is found on Inostrantsev Glacier, where it comprises 0.72 km<sup>3</sup> a<sup>-1</sup> (with gate ice flux 0.58 km<sup>3</sup> a<sup>-1</sup> and MCTP 0.14 km<sup>3</sup> a<sup>-1</sup>). On Kara Sea side, the especially active frontal ablation 0.24 km<sup>3</sup> a<sup>-1</sup> is on Vershinsky Glacier. RES data allows also to identify those frontal parts of studied glaciers that are close to the flotation.

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