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Laser scanning of Norwegian mass balance glaciers 2007-2011

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Over the period 2007-2011 laser scanning campaigns have been conducted on selected glaciers in mainland Norway. The campaigns include surface mapping of all long-term mass balance glaciers as well as several short-term mass balance glaciers. In most of the campaigns simultaneous air photos have been taken and used to produce orthophotos of the glaciers. The objectives of the surveys are to produce high quality digital terrain models (DTMs) and document the present state of the glaciers as well as to assess mass changes of the glaciers since previous maps of the glaciers. The DTMs and orthophotos provide an accurate baseline for future repeated mapping and glacier change detection. The collected data are now used to calculate geodetic mass balance and are compared with direct mass balance measured by the direct method where available. The new laser data combined with old maps are thus important for an independent check of the direct field method. Preliminary results reveal larger discrepancies between the methods for some glaciers, whereas others have better agreement. The new results will be used to correct and revise the direct measurements where necessary.