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Dynamics of the last Scandinavian Ice Sheet's southernmost sector revealed by the pattern of ice streams

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The Polish sector of the last Scandinavian Ice Sheet is a key area for studying ice sheet drainage and decay from its local Last Glacial Maximum (LGM) extent, as it is located at the terrestrial terminus of the large and dynamic Baltic Ice Stream Complex. Geomorphological mapping, based on a 0.4 m LIDAR digital elevation model, revealed about 940 streamlined bedforms, many of which are shown for the first time and consisting of mega-scale glacial lineations and drumlins. The lineation flow-sets together with associated landforms were used to identify seventeen ice streams, occupying 80% of the study area. We demonstrated that subtle topographic variations played an important role in influencing ice sheet dynamics. Variations in ice dynamics were a response to external climatic forcing that controlled deglaciation at the ice sheet scale as well as internal reorganisation due to the influence of topography, subglacial hydrology and glacier thermal regime. During the local LGM, the southern sector of the Scandinavian Ice Sheet in Poland was dominated by four simultaneously operating ice streams, likely active for several millennia, followed by fast active recession interrupted by three main periods of ice stream stagnation. Increased ice flow

dynamics during the period of the Young Baltic advances is suggested to be caused by variations in subglacial hydrology and the polythermal structure of the ice sheet.