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The response of Østre Svartisen Icefield, Norway, to 20th/21st century climate change

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Recently deglaciated forelands contain a wealth of geomorphological and sedimentological data that can provide key information about glacier-climate relationships. Mountain glaciers are particularly important indicators of climate change due to their short response times, which means that their forelands provide a sub-decadal record of changes in glacier size and climate-related dynamics. In this contribution, we examine the glacial geomorphological and sedimentological record at Østre Svartisen, an Arctic plateau icefield in Norway, and discuss temporal variations in glacier dynamics and processes of sediment deposition in response to climate warming since the Little Ice Age (c.1750). We focus specifically on the northeastern sector of the icefield and include two separate cirque/valley glaciers immediately to the north. Differences in landform-sediment assemblages are apparent both within and between forelands relating to changes in topography as well as glacier dynamics. Satellite images and old aerial photographs are also used to investigate differences in the rates of glacier demise across the study area. This evidence enables links to be made between landform generation, bed morphology, glacier dynamics, and glacier response to climate change, which furthers understanding of plateau icefield and outlet glacier behaviour in a warming climate.