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## Large magnitude earthquakes of late Holocene age in the Precambrian of Finnmark, Northern Norway

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The 80 km long Stuoragurra postglacial fault occurs within the c. 5 km wide Precambrian Mironjavri-Sværholt Fault Zone in the northern Fennoscandian Shield. Deep seismic profiling and drilling show that the fault dips at an angle of 30-40° to the southeast. The reverse fault can be traced down to a depth of c. 2.5 km on the reflection seismic profile. A total of c. 100 earthquakes has been registered along the fault between 1991 and 2019. Recordings at the ARCES seismic array in Karasjok c. 40 km to the SE of the fault and other seismic stations in northern Norway and Finland have been utilized. The maximum moment magnitude is 4.0. The Stuoragurra fault constitutes the Norwegian part of the larger Lapland province of postglacial faults extending southwards into northern Finland and northern Sweden. The formation of these faults has previously been associated with the deglaciation of the last inland ice. Trenching of different sections of the fault and radiocarbon dating of buried and deformed organic material reveal, however, a late Holocene age (between c. 700 and 4000 years before present at three separate fault segments). The reverse displacement of c. 9 m and segment lengths of 9-12 km of the two southernmost fault segments indicate a moment magnitude of c. 7. The results from this study indicate that the maximum magnitude of future earthquakes in Fennoscandia can be significantly larger than the existing estimate of c. 6.