



Reflection seismic imaging of the Pärvie and Burträsk end-glacial faults in northern Sweden

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Major questions regarding the end-glacial (or post-glacial) faults of northern Sweden are (1) what was the stress field that caused these ruptures and (2) what is the geometry of the faults at depth? These questions have puzzled earth scientists since their discovery. The mechanics behind the rupture of these faults cannot be properly understood without knowledge of both fault geometry and the causative stress field. To help answer the first of these questions reflection seismic studies have focused on two end-glacial fault systems, the Pärvie (the longest at 150 km) and the Burträsk system (the most active) near the town of Skellefteå. Reflection seismic surveys are required to obtain accurate geometry information in the uppermost few km since the earthquakes generally occur below these depths. With the aim of imaging the upper 5-6 km of crust in the vicinity of the faults systems, 20-25 km long reflection seismic profiles were acquired over the fault systems in two stages, the Pärvie system in 2007 and the Burträsk system in 2008. We present here a review of results from these reflection seismic surveys. First we give a brief overview of the geology of the areas and then present reflection seismic data that show that both sub-horizontal and steeply dipping structures are imaged. We tie the more steeply dipping reflections to the faults and speculate on the origin of the more sub-horizontal reflections. Finally, we place some constraints on the geometry of the faults in the upper crust.