Ice-contact deltas investigation using ground penetrating radar (GPR), sedimentology, electrical resistivity tomography (ERT) and , Salpausselka I and II near Lahti, Finland

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In Finland, two large “moraine” ridges (Salpausselka I and Salpausselka II), extending to over 600 km in length, delineate two major stillstand/readvance positions of the Fennoscandian ice sheet during the last deglaciation (Glückert, 1986). They are inferred to be chronologically related to the cold stage known as the Younger Dryas which occurred at the end of the last glaciation. During this time the Baltic ice lobe and the Finnish Lake District ice lobe, constituting a part of the southern margin of the Fennoscandian ice sheet, were grounded in a large proglacial lake, the Baltic ice lake, a predecessor to the modern-day Baltic Sea. The “moraine” ridge is mostly composed of glaciofluvial sands, gravels and boulders rather than diamicton and deposited on crystalline, impermeable bedrock and constitute freshwater aquifer in southern and eastern Finland. The average thickness of ice-contact deltas sediments is estimated at between 20 and 60 meters and is highly variable.

Outcrop studies are combined with GPR and ERT profiles to provide insight into the aquifer architecture at different scales and depths of investigation. This study aims to improve our understanding of such deposits in the subsurface, especially about their internal structure, sedimentary facies distribution and potential barriers and/or baffles to fluid flow and poro-perm characteristics.