

## **NUCLEAR WASTE SITING IN VIEW OF GLACIAL BEDROCK INSTABILITY AND GEODYNAMICS**

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In the case of nuclear waste siting, we have to consider stability and safety over time periods of 10s to 100s of thousands of years. We can, of course, make no serious predictions of such time periods. In the case of the Fennoscandian glaciated cratonal area, we are able to demask some fundamental factors indicating that the present certainly not is the key either to the past or to the future. At the time of deglaciation, Sweden was a very high-seismic region; in amplitudes as well as in frequency. In fact, this is not at all surprising considering the rates of glacial isostatic uplifting amounting 40-50 cm per year in the north and 15 cm per year in the Stockholm area; i.e. some 1.5 to 0.5 mm per day and about 10 times as high as present sea floor spreading rates). Thanks to the varve chronology, many of the paleoseismic events have been dated as to a single varve-year (in one case even to the season of a varve). In the Stockholm region, we have been able to date an extremely large paleo-seismic event to the autumn of varve year 10,430 BP. This event caused liquefactions and varve disturbances over an area of about 60 x 320 km, which exceeds the liquefaction distribution of the famous Alaska 1964 event. The recording of five successive events (~10,490, 10,469, 10,447, 10,430, ~10,410 BP) is indicative of an unusually high frequency, too. In total, we have some 20 events recorded. At the First Future Ice Age, this seismicity will be repeated, invalidating any long-term safety or stability concept when it concerns nuclear waste siting scenarios.