



OSL dating of the Garding core —a deep terrestrial archives in Northern Germany

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A 240 m deep sediment core was taken from Garding in Schleswig-Holstein, north-western Germany. The core sediments contain one of the most complete successions of Quaternary terrestrial climate archives, and are of great importance for Plio-Pleistocene stratigraphic correlations in Northern and Central Europe. The aim of this drilling project is to reconstruct the sedimentary and palaeoclimate history recorded in the sediments, and to provide a better understanding of Quaternary climate evolution and the mechanisms of the environmental changes. For these research aims, a robust and reliable chronology of the sediments is of crucial importance. In the last few decades, luminescence dating has been proved to be a powerful technique to obtain the ages of terrestrial sediments for the time period from a few years to several hundred thousands years.

In the current study, both optically stimulated luminescence (OSL) of quartz minerals and infrared optically stimulated luminescence (IRSL) of feldspar minerals will be applied to construct the chronology of the sediment succession from the Garding core. For the uppermost 30 m core sediment, samples for AMS ^{14}C dating were also collected. The comparison of OSL and ^{14}C dating for the young (<40 ka) sediments will thus be carried out. Furthermore, IRSL method will be used beyond the radiocarbon upper dating limit to extend the OSL based chronology of the Garding core. The chronostratigraphy of this core can be used to recover the history of landscape evolution at glacial-interglacial timescale. The existing records of glacial-interglacial cycles from ocean or other terrestrial archives can be used to check the reliability of the constructed luminescence chronology. The results will be also helpful to correlate the North and South German stratigraphical units including the glacial-interglacial cycles, and to correlate to the marine isotope stages (MIS).