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Poster

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Holocene sedimentation from chirp sonar data and IMAGES coring in northeastern Skagerrak

High-resolution chirp sonar profiling in northeastern Skagerrak shows acoustically stratified sediments with several internal parallel reflectors draping a rough-surfaced substratum. The 32- meter long IMAGES core MD99-2286 retrieved in 1999 from the profiling area represents a high- resolution record of the entire Holocene and uppermost Pleistocene sediments. The AMS C-14 dates indicate reworking in the top ten meters of the core, and possibly also below this depth. Four seismic units have been defined in the chirp sonar profiles. The lowermost stratified sequence is interpreted as glacial marine sediments rapidly deposited below or close to a calving shelf ice during the last deglaciation. A prominent seismic reflector separates the upper relatively transparent units from the underlying stratified sequence. The age of this sharp reflector has been previously assumed to represent the Pleistocene/Holocene boundary. The informal working definition of the Holocene/Pleistocene boundary is 10 000 C-14 years BP (=11 500 cal y BP), according to IUGS/ICS. The age model of core MD99-2286 is based on 25 AMS C-14 dates, and shows that the base of the core has an age of 12 040 cal y BP. The core thus reaches slightly into the Pleistocene, ending somewhere in the bottom half of seismic Unit C, and above reflector 3. Previous interpretations of the Holocene/Pleistocene boundary, based on seismics in the Skagerrak, suggest a position that corresponds to reflector 3 of this study. It follows that that position is too old if using the boundary definition of IUGS/ICS. Therefore, the Pleistocene/Holocene transition at 11 500 cal y BP occurred when the ice had retreated onshore, during conditions of increasingly normal marine deposition gradually replacing the distal glacial marine sedimentation. Accordingly, there are no significant seismic impedance contrasts present at this transition at 11 500 cal y BP when adopting the age model of this study. The uppermost seismic units represent Holocene marine sediments deposited with an increasing sedimentation rate in an environment characterised by more or less modern oceanographic conditions.