

# Quaternary chronostratigraphy of south Spitsbergen

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Recent detailed investigations of Quaternary sediments in south Spitsbergen enabled us to choose several key areas in this region (Lindner et al. 1984, 1986; Butrym et al. 1987). Samples collected in these areas were thermoluminescence and radiocarbon dated, and applied for a chronostratigraphic scheme of the Quaternary for this part of Svalbard (Fig. 1).

Marine clays of the Torellkjegla Interglacial are the oldest deposits in this region. They were dated at Holstein, in 413–383 ka B.P. in the Torellkjegla section. They are glaciotectonically

deformed together with the overlying glacial sediments. The younger Wedel Jarlsberg Land Glaciation is well documented by two tills, dated at Saalian 313–284 ka B.P. and 229–189 ka B.P., respectively. The younger till is accompanied by glaciofluvial sands and gravels which were dated at 222–141 ka B.P. A final part of the Wedel Jarlsberg Land Glaciation is documented by glaciofluvial deposits, dated at 161 ka B.P. They are superposed by a weathering-soil horizon that is dated at 143 ka B.P. in the Bogstranda section. According to the authors

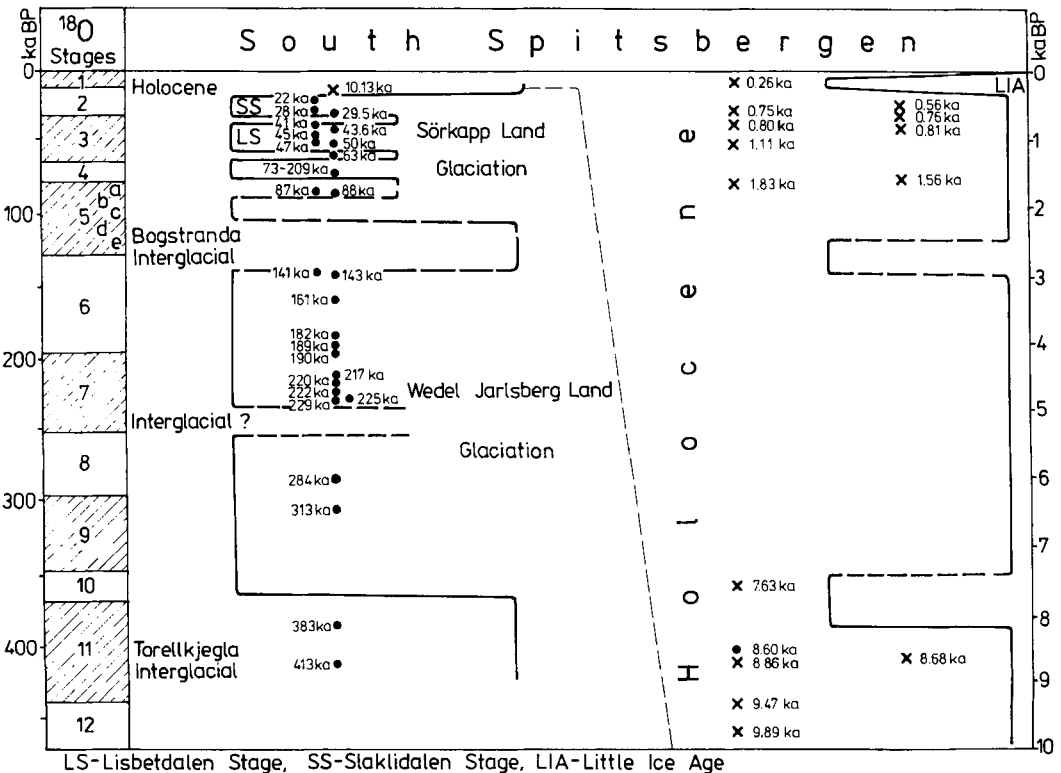


Fig. 1. Chronostratigraphic subdivision of the Quaternary of south Spitsbergen: black dots mark thermoluminescence dates and crosses radiocarbon dates.

this horizon represents the Bogstranda (= Eemian) Interglacial.

The Sørkapp Land (= Weichselian) Glaciation is the youngest Pleistocene glaciation in south Spitsbergen. It is defined by three or four glacial stades. Three younger ones are expressed by tills and glaciofluvial sediments, dated at about 73 ka B.P., 50–41 ka B.P. (Lisbetdalen Stage) and 29.5–22 ka B.P. (Slaklidalen Stage), respectively. Two interstades are represented by marine sediments dated at 88–87 ka B.P. and 63 ka B.P. During the younger interstade a paleosol developed in the Sofiebreen section; it separates tills which were dated at 50–43.6 ka B.P. and 29.5 ka B.P.

The early Holocene warming is represented by marine sediments, mollusc shells which were dated at 10.1–8.6 ka B.P. During the Holocene there were 2–3 glacial advances. The first one occurred about 8 ka B.P. as proved by radiocarbon dates of glacier-redeposited mollusc shells on Treskelen. The second advance is represented probably by glacial sediments in Revdalen, although they could have been deposited during the first early Holocene glacial advance. The late Holocene glacier retreat (about 1.6–0.6 ka B.P.) is proved by numerous radiocarbon data. The last glacial advance (Little Ice Age) started about 0.6 ka B.P. in south Spitsbergen. A maximum extent of glaciers from this time is delimited by present ice-cored moraines. A retreat of the glaciers from the ice-covered moraines started at the end of the 19th century.

Distinguished main chronostratigraphic units of south Spitsbergen can be tentatively correlated with those recorded in other parts of Svalbard (cf. Mangerud & Salvigsen 1984; Miller 1982).

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