

## Middle Pleistocene marine sediments on river Yangarei, arctic European Russia

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Sections of the right bank of river Yangarei, close to the Barents Sea coast at 62°02'E, 68°44'N, present a key to Middle Pleistocene environments of arctic European Russia. They were first described in the 1950-s by mapping geologists who found Cyrtodaria angusta shells in the clay covered by two tills and suggested a Middle Pleistocene age of this warm-water marine formation. We revisited the sections in 2016 to collect samples which have been dated by ESR and OSL methods by A. Molodkov in the Quaternary Geochronology laboratory at Tallinn University of Technology. The shells have been identified by A. Krylov.

The most complete section is Yangarei-1 where grey sticky clay overlain by grey-bluish massive clayey silt were measured in the interval of 60.85-62.30 m a.s.l. The interval of 62.08 – 62.10 m contains fragments of Cyrtodaria siliqua and *Mytilus edulis* which yielded an ESR age  $290 \pm 24.3$  ka (RLQG 508-127). The silt-clay member is topped by sands which were OSL dated upwards in the succession as  $134.7 \pm 10.4$  ka (RLQG 2446-067),  $121.6 \pm 9.2$  ka (RLQG 2447-067) and  $114.8 \pm 8.9$  ka (RLQG 2448-067).

Another exposure of the marine clay Yangarei-17 was described in the left bank some 6 km downstream at 44.0-44.7 m a.s.l. Clay of the lower part of the section contains broken shells and shell debris of *linocardium* sp., *Macoma calcarea*, *Cryptonatica clausa*, *Mya truncata*, *Neptunea* sp. Below the exposure we picked up better preserved shells of Cyrtodaria siliqua, *Astarte montagui*, *Macoma cf. calcarea*, *Mya truncata*, *Hiatella arctica*, *Panomya norvegica*, *Serripes groenlandicus*. The upper part of the sequence is represented by poorly sorted greenish sand with gravel and broken shells. The shells from the clay have yielded an ESR date  $226.0 \pm 8.3$  ka (RLQG 512-127).

We conclude that marine sediments of river Yangarei are left by two interglacial marine transgressions. The clay seems to be deposited in a deeper late Middle Pleistocene sea, and the sand is probably shoreface sediment of the Eemian sea.