Paper Number: 4176

Intercomparing the boundaries of the youngest two interglacials: Base MIS1 vs Base MIS5e, Base Holocene vs Base Last Interglacial, Base Middle Holocene vs Base Eemian.

Cohen, K.M.[1,2,3], Peeters, J.[1], Sier, M.J.[1], Hijma, M.P.[3] and Busschers, F.S.[2]

[1]Utrecht University, Dept. Physical Geography, Utrecht, Netherlands, k.m.cohen@uu.nl
[2] TNO – Geological Survey of the Netherlands, Utrecht, Netherlands.
[3] Deltares Research Institute, Utrecht, Netherlands

The two youngest interglacials, the current Holocene and the Last Interglacial, are very widely geologically studied. Dating techniques such as radiocarbon (for the Holocene) and Uranium/Thorium (for the Last Interglacial) allow quite precise numeric dating. Annually layered sequences, such as the Greenland ice core records (for the Holocene) and varved sequences (for the Last Interglacial) provide further dating control, especially where estimating durations is involved. Correlation techniques and event-stratigraphy (whether short-lived climatic events, volcanic eruptions or other semi-instantaneous events such as sea-level jumps) provide yet further control.

In this presentation, we will compare the currently used chronostratigraphic divisions for the Termination I and the Holocene to those in use for Termination II and the Last Interglacial.

Three important events in the former are [1]:

- Base MIS1, at maximum change of benthic $\delta^{18}O$ within Termination I, c. 14.7 ka
- Base Holocene, at maximum climatic change in the North Atlantic incl. Greenland, c. 11.702 B2K
- Base Middle Holocene, following the last major North-Atlantic melt-water pulse, c. 8.2 ka

Three correlative events in the latter may be [1,2,3]:

- Base MIS5e, at maximum change of benthic $\delta^{18}O$ within Termination II, c. 131 ka
- Base Last Interglacial, (?) at maximum climatic change in the North Atlantic (?), c. 126 ka
- Base Eemian, (?) following the last major North-Atlantic melt-water pulse (?), c. 121 ka

The chronostratigraphic definition of some of mentioned boundaries (Middle Holocene, Base Last Interglacial) is currently on the agenda of the ICS' [4] Subcommission of Quaternary Stratigraphy [5]. Besides establishing as accurate and independent as possible numeric ages for the boundaries, correlation of the units to the Marine Isotope Stratigraphy (and the termination midpoints that define the stages) and to regional bio-/chronostratigraphic units such as the NW European Eemian is part of the definition activity. Comparing how we treat our subdivision definitions for the two youngest interglacials may help to reach mutually consistent forms of the wanted definitions. For the youngest stratigraphic intervals this may be very important because these intervals serve as sequence stratigraphic keys to the further past and as calibration period for our understanding of the climate system at Milankovitch time-scales.

References:

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