Opening up a Last-Interglacial Sea Level Database for the Southern North Sea area

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As contribution to the ongoing research programmes RISeR (Dr. Barlow, Univ. Leeds, UK), WARMCOASTS (Dr. Rovere, Marum Bremen, GER) and LOSS (Dr. Stouthamer and consortium, Utrecht Univ., NL), and in more general effort to correctly deal with legacy geological data in the current era of Open Science and Geodata Science, we are populating the WARMCOASTS-WALIS database with entries for the Last-Interglacial sea-level indicator data points as available for the Southern North Sea area. This part of the world in in the immediate near field of the Scandinavian-British ice mass centre at interglacial temperate latitudes.

The majority of the sea-level indicator data points are of siliciclastic sedimentary type: transgressive contacts of marine muds over basal peats, insolation basin lakes becoming brackish marine, regressive peats establishing on tidal flat tops and so on. The abundance of peat and tradition of palynological investigation of these beds is important to date stratigraphical levels. The floating varve-count based PAZ-duration chronology for the Eemian vegetation succession in NW Europe (Zagwijn1996:QSR) allows to resolve floating ages to submillenial scale in the transgressive limb (PAZs E1-E4 and subzones), and to millennial scale in the high stand (coincident with PAZ E5) and regressive limb (starting at the PAZ E5/E6 break; Zagwijn1983:GeologieMijnbouw). Chronostratigraphical database entries for each zone and subzone have been filed in the WALIS database, informing on the varve count durations (floating time scale). Absolute age is left more broad, as there is some uncertainty and wiggle room and difference of opinion in the timing of the palynological NW European Eemian relative to that Termination II in the MIS and coral records (SierEtAl2015:QGeochron; LongEtAl2015:QSR).

Sedimentary environment analogies are drawn with the Holocene transgression and high stand to identify and classify localities as being sea-level indicator points (SLIPs), Marine limiting points, or Terrestrial limiting points. Analogies with the Holocene relative sea-level rise reconstruction practice (e.g. Hijma&Cohen2019:QSR) also echo in the protocols followed to characterize and document the vertical position of the indicator. Data entry requires to assess depth of contact (at present, expressed to a specified datum), implied depth position of past mean sea level (factoring in tidal range, palaeowater depth, background vertical movement, (de)compaction), and uncertainties to that depth (added up according to error propagation rules).

We compare our re-assessed and standardized database entries for longer established sites to the originally reported reconstructed sea-level positions (e.g. Zagwijn1983) and to their discussion in later publications (2000s, 2010s). What is one point in Zagwijn1983, often becomes an assemblage

of terrestrial limiting, SLIPs and marine limiting entries in WALIS. We find the North Sea data in some earlier 'table style' global compilations to have suffered from generalisations. We find the protocolised database approaches as established by PALSEA activities (e.g. ShennanEtAl(Eds)2015: Handbook of Sea-Level Research; KahnEtAl(Eds)2019: QSR special issue) a more suitable environment to store and open up regional data for correct in-take and reuse by second/third parties - whether LOSS, WARMCOAST, RISeR, or you.