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PRE-GLACIAL AND GLACIAL QUARTERNARY SEDIMENTS, HOW HILL NEAR LUDHAM, NORFOLK, ENGLAND.

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ABSTRACT

Trial pit excavations at How Hill near Ludham, Norfolk, have revealed a succession of pre-glacial Quarternary sediments overlain by Anglian till. The pre-glacial deposits consist of sands, and sands and gravels. These are interpreted on the basis of their sedimentary structures, lithologies, particle size distribution and palaeocurrent directions, as having formed in coastal environments with a fluvial input. Palaeocurrents show NNW-SSE trending tidal current flow, associated with a contemporary coastline. Provenance-indicator lithologies show dominant sources of sediments from both the south and north-west, by the Thames and a 'Northern rivers' system. One of the trial pits revealed a water-escape structure within the sorted sediments partially infilled with till, suggesting rapid dewatering of the sands and gravels after glaciation, possibly associated with the decay of permafrost. The absence of any lithologies diagnostic of the glaciogenic sediments of eastern England indicates a pre-glacial origin, and the association of sediments from a Kesgrave Group and 'Northern river's' source suggests that eastern Norfolk was a depositional focus for major rivers of pre-glacial Britain. Glaciation at the site is represented by a weathered till, known locally as Norwich Brickearth, which was deposited during the Anglian Stage

CARBON AND SULPHUR GEOCHEMISTRY AND CLAY MINERALOGY OF THE WEST RUNTON FRESHWATER BED

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ABSTRACT

Weight % organic carbon and weight % total sulphur (C/S) in the Cromerian West Runton Freshwater Bed (WRFWB) of north Norfolk are not simply related to depositional environment as in the classic Berner and Raiswell, (1984) model. This is because the sediment is organic matter-rich, with total sulphur representing a variable mixture of pyrite sulphurs and organic sulphur. In addition, remobilisation of sulphur associated with post-depositional groundwater flow has modified depositional values. In the upper 20 cm of the bed, pyrite sulphur has been oxidised and largely removed. This sulphur was subsequently reprecipitated as later diagenic pyrite at about 40-60 cm in the bed under reducing conditions. Below 60 cm C/S ratios are probably close to depositional values and can be used as palaeosalinity indicators. As expected, C/pyrite-S ratios in this lower part of the bed indicate a freshwater depositional environment.

The groundwater which oxidised pyrite in the top of the bed also destroyed organic carbon and probably dissolved aragonitic shell material. However, preservation of aragonitic shells below 60 cm in the WRFWB defines the extent to which groundwater penetrated the bed.

Smectite is one of the dominant clay minerals in the WRFWB and potassium saturation suggests that the smectite may have had a volcanic orgin. The Eifel region of Germany is a possible source of fine-grained ash or dust at this time