Geophysical Research Abstracts
Vol. 19, EGU2017-1976, 2017
EGU General Assembly 2017

Mind the Gap: Reconstructing the timing and consequences of the blockage of the Humber Gap by the last British-Irish Ice Sheet

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The Eastern England terrestrial glacial sequences are critical to the spatial and temporal reconstruction of the last British-Irish Ice sheet (BIIS). Understanding the Humber Gap area is key as its blockage by ice created the extensive proglacial lakes. Here we use the glacial geomorphology and luminescence based chronologies from the Humber Gap region to establish the extent and thickness of the North Sea Lobe (NSL) of the BIIS. From this we establish the initial maximal ice advance occurred regionally at ∼21.2 ka. The NSL retreated off-shore ∼18 ka (Stage 2). Punctuated in stages in the south of the region whilst in the north retreat was initially rapid before a series of near synchronous ice-advances occurred at ∼16.8 ka (Stage 3). Full withdrawal of BIIS ice occurred prior to ∼15 ka (Stage 4). Geomorphic mapping and stratigraphy confirms the existence of a proto Lake Humber in Stage 1 which persisted to Stage 3 expanding eastward as the NSL ice retreated. It appears wherever during the advance and retreat of the NSL ice encountered low topography and reverse gradients proglacial lakes commonly formed. These lakes through ice draw down and associated streaming/surging may in part explain the dynamism of the parts of the NSL. The above record of ice-dammed lakes provides an analogue for now off-shore parts of the BIIS where it advanced as number of asynchronous lowland lobes.