

## GSA DATA REPOSITORY 2015251

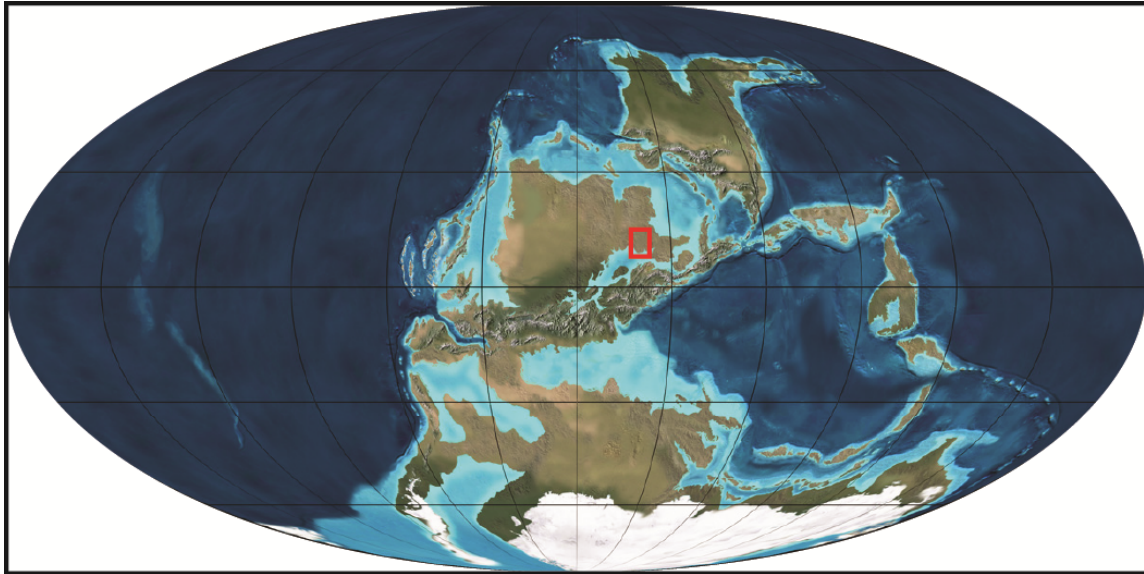


Figure DR1. Global paleogeographic map for the Late Carboniferous (~300 Ma); the red rectangle shows the original position of the Pennine Basin north of the Central Pangean Mountains (map by Ron Blakey, Northern Arizona University).

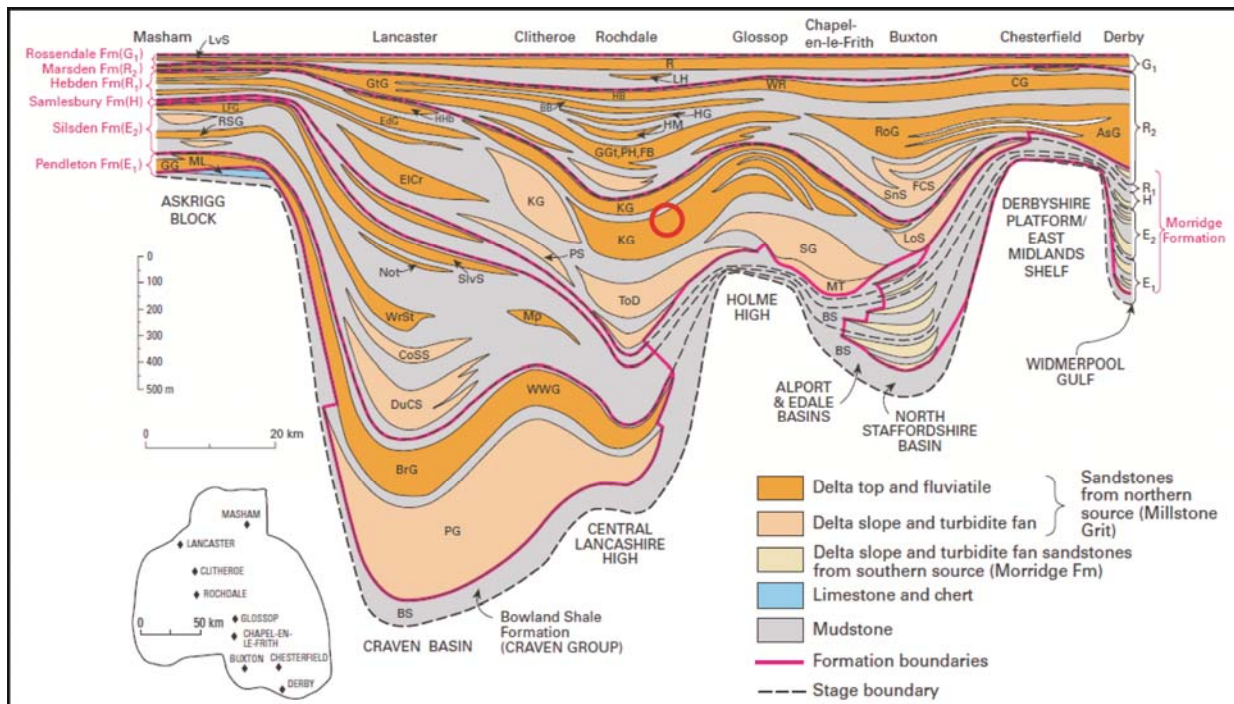


Figure DR2. NNW-SSE section through the Pennine Basin, illustrating spatial and stacking distribution of lithostratigraphic units (indicated in purple at top-left corner) and a reconstruction of major facies-distribution patterns; the red circle indicates the approximate position of the unit discussed in this paper within the general stratigraphic framework (figure modified from Waters, C.N., Waters, R.A., Waters, W.J., and Davies, J.R., 2009, Lithostratigraphical Framework for Carboniferous Successions of Southern Great Britain (Onshore). British Geological Survey Research Report RR/09/01).

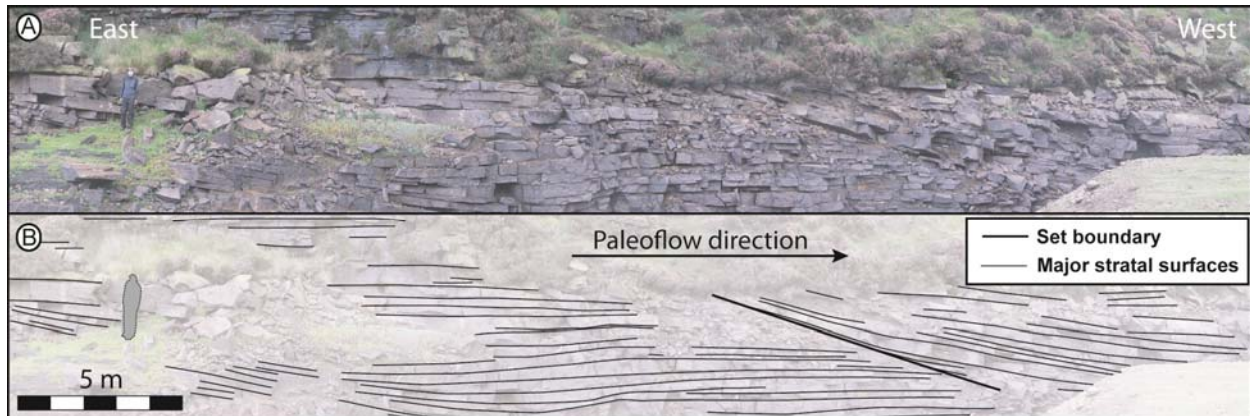


Figure DR3. South-facing panoramic of part of the lower bank of the Booth Wood Reservoir, immediately south of the Derby Delph Quarry, showing a stratal architecture identical to that recognized within the quarry: thick, massive sandstone strata are truncated by a downcurrent-dipping, erosional set boundary, which is in turn tangentially overlapped by sandstone strata.

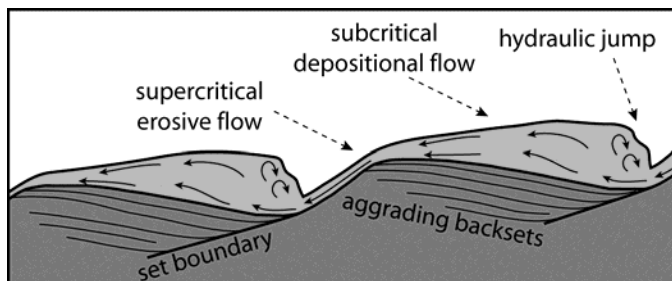


Figure DR4. Flow pattern, bed-surface configuration and internal structure of aggradational cyclic steps (see text for discussion; modified from Postma, G., and Cartigny, M.J.B., 2014, Supercritical and subcritical turbidity currents and their deposits – A synthesis: *Geology*, v. 42, p. 987-990).