

**Event deposits in the Bude Fm. (U. Carboniferous, S.W. England) -
turbidites, tempestites, or both?**

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*In: Sedimentology of Shelf Sands and Sandstones. Canadian Society of
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Program and Abstracts, p. 42*

... and ...

*In: R.J. Knight & J.R. McLean (eds), 1986, Shelf Sands and Sandstones.
Canadian Society of Petroleum Geologists, Memoir 11, p. 340 (abstract).*

The Bude Formation consists of at least 1 km of interbedded mudstones, siltstones and very fine sandstones, showing no obvious cyclicity, deposited in a foreland-basin epeiric sea which embraced much of southwest England. Many of the sandstones are thin (< 30 cm), with sharp bases, grading, and other features indicative of deposition during a single, waning-energy event. Other sandstones are composite units, up to 10 m thick, consisting of amalgamated event deposits. Marine fossils are very scarce, suggesting poor oceanic connections.

Based upon an abundance of graded beds showing the vertical sequence "sharp base ± massive texture ± parallel lamination ± asymmetrical ripple cross-lamination", and upon a perceived lack of evidence for wave activity or subaerial exposure, several workers have concluded that the sandstones were deposited as turbidites beneath storm wave base. However, recent field observations by the author cast doubt, firstly, upon the authenticity of many of the supposed turbidites, and, secondly, upon the validity of the deep-water model, by revealing that most of the ripple cross-lamination in the Bude Formation is of an asymmetrical, wave-influenced variety. Furthermore, mud-filled scours and hummocky cross-stratification, typical of "wave-dominated" offshore successions, seem to be common.

It is suggested, therefore, that deposition took place mostly above storm wave base. Those event beds containing hummocky cross-stratification and/or wave-influenced ripple cross-lamination are interpreted as tempestites, deposited during storms under the joint influence of sediment-supplying unidirectional currents and wave-induced oscillatory flow. Event deposits showing only massive texture and/or parallel lamination could be either tempestites or turbidites, since both of these sedimentary structures can form under unidirectional, oscillatory, and (presumably) combined flows.