

## **\*On the importance of flood-generated shelfal sandstone lobes**

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In ancient fluvio-deltaic systems of tectonically active basins, shelfal deposition is almost entirely recorded by graded sandstone beds most of which contain HCS. Vertical and lateral stratigraphic relationships reconstructed from many ancient basin-fills ranging in age from Paleozoic to Pleistocene indicate that these beds were deposited by hyperpycnal flows derived from catastrophic floods in alluvial basins.

Although essentially overlooked in most literature and commonly misinterpreted for storm-dominated deposits, shelfal sandstone lobes are the most genuine expression of fluvial-dominated delta systems. High-momentum and long-duration hyperpycnal flows actually represent the only process through which substantial volumes of sand can escape deposition at river mouths and be thus directly transported farther seaward by density currents. Deposition at river mouths is essentially restricted to coarse-grained facies left behind by bypassing flows or finer-grained deposits laid down by small-volume hyperpycnal flows which could not overcome friction and density contrast when entering seawaters.

Shelfal sandstone lobes and associated mouth-bar facies comprise huge sedimentary accumulations in fluvio-deltaic systems dominated by catastrophic floods. These sediments are typically organized in high-frequency cyclic stacking patterns that can be clearly related with Milankovitch climatic cycles.