Geophysical Research Abstracts
Vol. 12, EGU2010-11637, 2010
EGU General Assembly 2010

Are the dimensions of submarine lobe systems independent of allogenic factors?

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Submarine lobe dimensions from six different systems are compared: 1) the exhumed Permian Fan 3 lobe complex of the Tanqua Karoo, South Africa; 2) the modern Amazon fan channel-mouth lobe complex, offshore Brazil; 3) a portion of the modern distal Zaïre fan, offshore Angola / Congo; 4) a Pleistocene fan of the Kutai Basin, subsurface offshore Indonesia; 5) the modern Golo system, offshore east Corsica, France; and 6) a lobe complex deposited in the shallow subsurface, offshore Nigeria. These six systems have significantly different source-to-sink configurations (shelf dimension and slope topography), sediment supply characteristics (calibre and rate), tectonic settings, (palaeo) latitude, and delivery systems. Despite these differences, the lobe deposits share similar geometric and dimensional characteristics. Lobes are grouped into two distinct populations of geometries that can be related to basin-floor topography. The first population corresponds to areally extensive but thin lobes (average width 14 km $\times$ length 35 km $\times$ thickness 12 m) that were deposited onto low relief basin floor areas, like the Tanqua Karoo, the Amazon and the Zaïre systems. The second population corresponds to areally smaller but thicker lobes (average width 5 km $\times$ length 8 km $\times$ thickness 30 m) that were deposited into settings with higher amplitude of relief, like in the Corsican trough, the Kutai basin, and offshore Nigeria. Basin floor topography confining the lobes can be very subtle, and only occur on one side of the system. The two populations of lobe types, however, share similar volumes, in the order of 1 or 2 km3. The largest lobes are observed in the Zaïre fan, where the average lobe volume reaches 3.3 km3 and the smallest lobes are observed in the Corsican trough where the average lobe volume is 0.4 km3. This variation in lobe volume is minor when compared to the variation observed in present-day up-dip drainage systems, which provide sediment to the deep-water depositional systems and their lobes. This suggests that there is a limit to the total volume of sediment that individual lobes can reach before they shift to a new locus of deposition. In otherwords, big systems do not build big lobes, rather more lobes per unit time. Indeed, in the Amazon and the Zaïre systems, lobe life span is estimated to be 600 and 1450 years, respectively, whereas in the Corsican Golo system, lobe life span is $\sim$ 10 times longer, around 10 to 14 $\times$ 103 years. A fundamental control on lobe volume is the propensity for flows to find the lowest topography. We postulate that a fundamental control on all distributive systems is the ratio of lobe thickness to feeder channel depth. The surface gradient from the feeder channel base and lobe top will tend to reduce through time as a lobe builds. This is not sustainable, and when a steeper lateral gradient is present a new depositional low will be used for flows to fill.