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Lobe- and Sheet-Form Depositional Elements and Channel Avulsions and Occurrence in Deepwater Settings—Allocyclic Versus Autocyclic Controls

Lobe- and sheet-form depositional elements form at the channel termini or adjacent to channel bends both in open-ocean and intra-slope basin deepwater settings. The lobeforms at the channel bends may be washover fans, crevasse splays and 'harps'. The lobeforms at the channel termini consist of either single lobes or several lobes that coalesce to form a lobe complex. The lobeforms have commonly channels in various degrees of development within them. Classical sequence stratigraphic models envision that the lobeforms form during maximum low stands of sea levels with channel elements becoming prevalent during the early rise of sea level. Although sea level falls would certainly favor deepwater deposition, occurrence of channels versus lobes or lobes with channels depends on the seafloor gradients, sediment caliber and supply, and flow volumes and not on the precise sea level changes. There are in fact some examples of lobeforms in deepwater setting that formed during the high or relative high stands of sea level. Also, the number of 'harp' sheet-forms and the channel avulsions exceeding the number of sea level falls during the last glacial-interglacial cycle suggests the importance of autocyclic rather than allocyclic controls on their occurrence.