

Theme 6. Shallow-marine clastic depositional systems**Special Session 6.2.** Mixed process expressions, and controls on sedimentation in tidal systems

Poster presentation

Deltas affected by longshore currents: insights from numerical model

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Deltas are dynamic and sensitive systems that undergo changes of morphology, channel network, and stratigraphic architecture in response to variations in discharge, sediment supply and marine processes. A new and understudied topic is the morphodynamic evolution of deltas prograding into a strait or seaway characterized by longshore currents. These currents can have a variety of origins (meteorological, coastal-oceanic, or tidal). Numerical modeling can help researchers to better understand the evolution of deltas in relatively narrow passageways, where fluvial floods are largely reworked by laterally varying waves and/or tidal processes. This study uses Delft3D to investigate the influence of coast-parallel tidal currents on river-dominated deltas in terms of deltaic morphology and stratigraphic architecture. We have conducted a number of modeling runs to simulate a scenario where two basins are connected by a very short (due to computational constraints) strait. The longshore currents are created by setting tidal phases in the connected basins out of sync and therefore creating a water elevation imbalance between the two. Initial modeling results show the deformation of a deltaic body under the coast-parallel currents occurs even with small differences of water elevation between the connected basins and even small longshore currents might have an impact on the morphology of the deltaic bodies.