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Avulsion, Autogenic or Allogenic Controlled?

Because avulsion is an intrabasinal process it is generally considered to be autogenic. However, the avulsion process is not only controlled by autogenic but also by allogenic processes.

The Rhine-Meuse delta is without doubt the most extensively studied delta regarding avulsion processes on the timescale of the Holocene. Data suggesting an autogenic nature for the *timing* of avulsions are: (1) the interavulsion period in the Rhine-Meuse delta on average appears to be constant (~ 945 cal yr), (2) the natural levees of all avulsed channels have a constant elevation relative to groundwater levels, suggesting that the critical superelevation for avulsion remains constant through time, and (3) a weak 500 ^{14}C yr cycle seems to be present in the avulsion frequency.

However, the avulsion *locations* are not randomly distributed over the delta. Avulsion locations are related to allogenic factors, interacting over time and space. Eustatic sea level rise and glacio-hydro-isostasy played a dominant role from 7500-4500 ^{14}C yr BP, (local) tectonics from 4500-2800 ^{14}C yr BP and discharge/sediment load changes from 2800-1000 ^{14}C yr BP. After 1000 ^{14}C yr BP avulsions are controlled by humans.

In conclusion, it seems that avulsion is controlled by both autogenic and allogenic processes. The same processes play a role in other deltas in the world. However, the relative importance of these processes varies over time and space and leads to different alluvial architectures.