

## **Testing the waters: the Dutch 'delta' as a sediment-starved estuary under past and future sea level rise**

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Deltas worldwide are already at risk from human-induced subsidence, hydrological change and sea level rise. This points at the urgency of mitigation as well as adaptation, while future conditions have large uncertainty. The Dutch delta is an interesting case in that the level of water and delta technology is high, which means high levels of protection, but also the degree of interference in natural delta-building processes and ecosystem deterioration are extreme due to the high population density and said technology. This lecture is about the Holocene development of the delta under intermediate sea level rise rates, provides an overview of the main positive and adverse effects of a thousand years of waterworks, and looks ahead at regionally different adaptation pathways during this and the next century. A recurring theme will be the transitioning between the delta and the estuary state and the role of plant life, and how we can attain land level rise in our low-lying waterscapes as illustrated by state of the art biogeomorphological numerical modeling and analogue modelling in the Metronome laboratory facility.