

River, delta and estuary dynamics in the Metronome

Meandering rivers and tidal basins

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Project description

In this project, you will contribute to conducting physical experiments that simulate entire rivers, river estuaries and deltas in the www.uu.nl/metronome in the Earth Simulation Laboratory.

The Metronome is a unique setup in the world that was successfully used to create rivers, estuaries, tidal basins and deltas. We investigate effects of sea level rise and human influence on these systems, both in the present and in the future. We address fundamental questions about the formation and dynamics of river meandering, channel networks, also in response to dike constructions or disturbances such as dredging, and about equilibrium/steady state and tipping points for drowning in these systems. We also work on projects to inform and inspire societal partners such as Rijkswaterstaat and the Dutch Delta Committee. Key in all these problems is unravelling the dynamics of sediment transport in these systems and the effects of the imposed boundary conditions.

You will work on river meandering (on Earth), or lava meandering (on Venus), or on a series of tidal basins, lagoons and spits (to be determined). To prepare for ongoing and future projects, you will conduct experiments in the Metronome and/or mini-Metronome with us to obtain better insights in such dynamics and to improve our experimental technology. You will collect data with our scanning systems, photography and keep your trained eyeballs peeled for surprises. Following the experiments, you will also help in collecting and collating the experiment data. This will be done in Python with ready code. This subject is closely related to cutting-edge research themes of enthusiastic supervisors, a PhD project, MSc theses, and, as successfully done in the past, we aim for publication in a journal. Please contact me for further questions.

Job requirements

Knowledge of river- and coastal morphology and of programming in Python are required. You are willing to work in a well-organised manner in close communication with the supervisor and the technicians, and you are precise in data collection protocols and storage and keep in mind lab safety regulations. Earlier experience with experiments and some background in cooking/baking, gardening or do-it-yourself would be beneficial.