



Dra. Jantien Rutten  
Postdoctoral researcher  
Unidad Académica Sisal, Instituto de Ingeniería  
Universidad Nacional Autónoma de México  
Email: [JRutten@iingen.unam.mx](mailto:JRutten@iingen.unam.mx)

## Research area

Swash zone and surfzone morphodynamics; sediment transport; sandbar behaviour; image processing

## Summary

Jantien Rutten got her bachelor degree in Earth Sciences at Utrecht University. Here, she also completed her masters and PhD, both in Physical Geography. Within her masters, she went for a six-month internship with Northwest Research Associates in Seattle. For her PhD she stayed for a short period at Université de Bordeaux and Universidad Politécnica de Cataluña to collaborate. Currently she is working as postdoc in UNAM with Alec Torres-Freyermuth.

One of her interests is the use of remote sensing imagery to explore morphodynamic behaviour in the nearshore zone. She tested two depth-inversion algorithms to estimate wave characteristics and water depths using data collected by an X-band radar and optical video station. Next to that, she used time-averaged imagery of ocean-exposed and semi-enclosed sites (Gold Coast, AU; Benson Beach, USA; Sand Engine, NL) to detect sandbar movements and their effects on the shoreline. Along the man-made curved coast of the Sand Engine, she observed intriguing differences in sandbar patterns. This inspired to further explore their dynamics using the morphodynamic numerical model developed by Dubarbier et al. (2017) that accounts for both cross-shore and alongshore processes.

Within her current post-doc project, she quantifies how bed level changes and sediment transport in the swash zone are affected by uncertainty in offshore boundary conditions (hydrodynamics and morphology).

She published as first author (2) and co-author (4) in peer-reviewed journals and presented her work at national and international conferences. She participated in several field campaigns in both tide- and wave-dominated coasts.

## Publications

- Rutten, J., Dubarbier, B. Price, T.D., Castelle, B., Ruessink, B.G., in review at *Journal of Geophysical Research: Earth Surface*. Simulating crescentic sandbar behaviour along a curved coast.
- Rutten, J., Ruessink, B.G., Price, T. D., 2018. Observations on sandbar behaviour along a man-made curved coast. *Earth Surface Processes and Landforms*, 43: 134-149.
- Rutten, J., Dubarbier, B. Price, T.D., Castelle, B., Ruessink, B.G., 2017. Crescentic bar patterns along curved coasts: Observations and modelling. *Proceedings Coastal Dynamics 2017*: 1832-1842.
- Rutten, J., De Jong, S.M., Ruessink, B.G., 2017. Accuracy of Nearshore Bathymetry Inverted From X-Band Radar and Optical Video Data. *IEEE Transactions on Geoscience and Remote Sensing*, 55 (2): 1106-1116.

### Co-authored publications

- Splinter, K.D., Gonzalez, M.V.G, Oltman-Shay, J., Rutten, J., Holman, R.A., 2018. Observations and modelling of shoreline and multiple sandbar behaviour on a high-energy *meso-tidal beach*. *Continental Shelf Research*.
- Arriaga, J., Rutten, J., Ribas, F., Falques, A., Ruessink, B.G., 2017. Modeling the long-term diffusion and feeding capability of a mega-nourishment. *Coastal Engineering*, 121: 1-13.
- De Schipper, M.A., De Vries, S., Ruessink, B.G., De Zeeuw, R.C., Rutten, J., Van Gelder-Maas, C., Stive, M.J.F., 2016. Initial spreading of a mega feeder nourishment - Observations of the Sand Engine pilot project. *Coastal Engineering*, 111: 23-38.
- De Schipper, M.A., De Vries, S., De Zeeuw, R.C., Rutten, J., Ruessink, B.G., Aarninkhof, S.G.J., Van Gelder-Maas, C., 2014. Morphological development of a mega-nourishment; first observations at the sand engine. *Proceedings of Conference on Coastal Engineering*, 34: 1-6
- Van de Lageweg, W.I., van Dijk, W.M., Baar, A.W., Rutten, J., Kleinhans, M.G., 2014. Bank pull or bar push: What drives scroll-bar formation in meandering rivers? *Geology*, 42 (4): 319-322.
- Price, T.D, Rutten, J., Ruessink, B.G., 2011. Coupled behaviour within a double sandbar system. *Journal of Coastal Research*, SI 64 (Proceedings of the 11th International Coastal Symposium): 125-129.