

The University of Twente is an entrepreneurial research university. It was founded in 1961 and offers education and research in areas ranging from public policy studies and applied physics to biomedical technology. The University of Twente is the Netherlands' only campus university.

The Faculty of Engineering Technology of the University of Twente has 350 employees and 1700 students within its four clusters: Civil Engineering, Industrial Engineering, Mechanical Engineering and Sustainable Energy. In the Water Engineering and Management Department of the cluster of Civil Engineering a vacancy exists for:

## **PhD position 'Effect of mega nourishment projects on sand supply to the dunes'**

**Background:** Recently a huge shore nourishment has been applied to the Dutch coast in the shape of a peninsula (the 'Zandmotor'). This unprecedented experiment aims to provide long-term safety from flooding, by letting natural processes distribute sand over the shoreface, the beach, and the dunes in particular, thus constituting a climate-robust and environmentally friendly way of coastal protection. Recently, the national technology foundation STW has funded a large research program, NatureCoast, that aims at raising our understanding and predictive capability regarding the various aspects of this type of shore nourishment, up to a level enabling to assess their effectiveness and to export the underlying technology worldwide. The program involves 12 research groups from different disciplines. The Water Engineering and Management group of the University of Twente leads the dune formation subproject, in which we closely collaborate with Wageningen University. The dune formation subproject aims at obtaining predictive understanding of both the impact of mega-nourishments on the spatio-temporal variability in aeolian sediment supply towards upper beach and dunes, and the key processes and conditions for making the transition from a bare beach to a vegetated dune, including associated landforms such as green beaches.

**The challenge:** A mega-nourishment artificially creates the conditions for an accretionary coastline. The sudden availability of a huge surplus of sediment is expected to promote dune formation in the direct vicinity of the nourishment area and, with some delay, at larger distances as well. At present it is unclear how this dune formation will materialize. The aim of the currently advertised PhD project is to describe, analyse and model the effect of a mega-nourishment on the spatio-temporal variability in aeolian sediment supply towards the upper beach and dunes. An important part of this study will consist of developing and applying video-monitoring based methods for tracking sand surface conditions, monitoring occurrence of aeolian transport, tracking depositional areas across the mega-nourishment and the original beach area. Insights obtained from these observations, combined with analyses of other field data, are to be condensed in a new sediment supply function in a coastal dune formation model (in collaboration with Wageningen University). The 'Zandmotor' will be the primary field case in your study, but the research will also include a 3 month stay at the US Geological Survey in St-Petersburg (Florida, USA) to apply and test the model to other cases of dune formation.

The research will be executed at the University of Twente and will be supervised by prof. dr. S.J.M.H. Hulscher (promoter) and dr. K.M. Wijnberg. In addition to Wageningen University and the US Geological Survey, several other parties will be involved in this project, amongst whom Utrecht University, Technical University of Delft, Research Institute Deltares, Rijkswaterstaat (Ministry of Transport, Public Works and Water Management), and Waterboards.

**Profile:** We are looking for a talented, enthusiastic researcher with an active attitude and broad interests covering fieldwork, data analysis and modelling. This person should also be able to put his or her research in a broader perspective, not only internationally but also in relation to other scientific disciplines and in relation to every day practice of coastal management. Candidates should hold, or soon obtain, an MSc degree in Civil Engineering, Physical Geography, Geophysics, or a related field. As he or she will be working in a collaborative setting this person needs to be a team player and have excellent communication skills. Experience in programming (preferably in matlab) is highly desirable, as is a good command of the English language. Comprehension of the Dutch language is beneficial, as is a driving license (for field visits).

**Offer:** We offer a PhD position for 4 years full-time (with an evaluation after the first year) in a stimulating scientific environment. The salary for PhD research starts at € 2042,- gross per month for the first year and extends to a maximum of € 2612,- gross per month in the fourth year (in accordance with the Collective Labour Agreement for Dutch Universities). In addition, the University of Twente offers attractive fringe benefits.

### **Information and applications**

For more information about this vacancy you can contact dr. Kathelijne Wijnberg, (k.m.wijnberg@utwente.nl, telephone: +31 (0)53 - 489 4701). More information about the Water Engineering and Management Department is available at [www.wem.ctw.utwente.nl](http://www.wem.ctw.utwente.nl). The project will start as soon as a suitable candidate is found.

Your application should include a cover letter (emphasizing your specific interest, qualifications and motivation to apply for this position), a Curriculum Vitae, including a list of all MSc courses and grades obtained, and contact information of two references that may be consulted. If applicable, also add a list of publications.

Your application should be submitted through <http://www.utwente.nl/vacatures/en/> no later than the 19<sup>th</sup> of December, 2012. Selected candidates will be invited for an interview on January 8 or January 11, 2013.