

## Ph.D. researcher in estuarine turbidity research

**Vacancy:** Ph.D. position

**Topic:** Modelling of Estuarine Turbidity in the Pearl River Estuary, China

**Affiliation:** Delft Institute of Applied Mathematics, Delft University of Technology

**Supervisors:** Dr Henk M. Schuttelaars, Prof dr ir Arnold Heemink (TU Delft), dr ir Pieter C. Roos, Prof dr Suzanne J.M.H. Hulscher (University of Twente)

### **Job description**

Estuaries are coastal regions characterised by complex hydrodynamics, involving mixing of fresh and saline water, tidal motion and river flow. This results in transport and entrapment of sediments. Trapping locations (estuarine turbidity maxima, ETM) are sensitive to variations in external forcing (storms, sea level rise, river flooding), site-specific bathymetry (islands, navigation channels, shoals) and sediment characteristics.

Within a joint Chinese/Dutch research project, the ETM dynamics will be investigated using an integrated model approach. The Ph.D. candidate on the Dutch side will be employed by TU Delft and co-supervised by the University of Twente. He/she will develop an idealized model to gain insight in the sediment trapping mechanisms, and their dependency on variations in forcing and geometry. This model will be applied to estuaries such as the Pearl River Estuary (PRE, China) and the Ems Estuary (Netherlands/Germany). In close collaboration, our Chinese partner (prof. Wenping Gong, Sun Yat-Sen University) will simultaneously conduct field measurements at PRE and perform numerical model simulations.

### **The tasks of the Ph.D. candidate**

- Develop an idealized model, based on first principles, for estuarine circulation and sediment trapping.
- Perform a (mathematical) analysis into the effects of variations in forcing and geometry/bathymetry; comparison with field data.
- Compare with both field data (Pearl River and Ems Estuary) and numerical model results.
- Participate in the collaboration with Chinese partner by bilateral visits.
- Contribute to the educational programme of the faculty.

### **Requirements**

Candidates should hold an MSc degree in physical oceanography, applied mathematics or related natural sciences and should have knowledge of (geophysical) fluid dynamics. Experience with numerical modelling and knowledge of morphodynamics are of advantage.

### **Conditions of employment**

The successful candidate will be employed full-time by TU Delft for a fixed period of 4 years within which he or she is expected to write a dissertation leading to a doctoral degree (PhD thesis). The starting salary for a PhD is €2042 gross per month increasing to a maximum of €2612 gross per month in the fourth year. TU Delft offers an attractive benefits package, including a flexible work week, free high-speed Internet access from home, and the option of assembling a customised compensation and benefits package (the 'IKA').

Salary and benefits are in accordance with the Collective Labour Agreement for Dutch Universities.

**Contract type**

Temporary

**Additional information**

Information about this position can be obtained from Dr. Henk M. Schuttelaars ([h.m.schuttelaars@tudelft.nl](mailto:h.m.schuttelaars@tudelft.nl)). Additional information can be found at <http://ta.twi.tudelft.nl/dv/users/schuttel/sinodutch.doc>.

For more information about the Delft Institute for Applied mathematics, please visit the DIAM website [www.ewi.tudelft.nl/live/pagina.jsp?id=0bc80ed0-144f-4526-9343-e046bf8d3b30&lang=en](http://www.ewi.tudelft.nl/live/pagina.jsp?id=0bc80ed0-144f-4526-9343-e046bf8d3b30&lang=en)

**Sending your applications:**

Please send your application including a letter of motivation and curriculum vitae before 31 May 2011 to email: [h.m.schuttelaars@tudelft.nl](mailto:h.m.schuttelaars@tudelft.nl).