

Vacancies in Coastal Research Project

- June – August 2011 internships
- Possibility to extend to one-year project work
- Possibility to be selected for PhD work with thesis at the University of Twente or TU Delft (Netherlands)

LabMath Indonesia wants to make a substantial investment to extend and speed-up our current research on *Coastal Wave Modelling & Simulation*.

We are looking for

students and graduates who can work at our institute for at least 2 months in the period June – August 2011.

Selection of candidates will be based on:

- analytical skills and previous education in mathematics, physics, engineering, geo-science or related education,
- good communication and collaboration skills,
- programming experience with matlab, C or Fortran
- availability for at least 2 months, 4 days/week in the period June-August.

What we offer:

- interesting topics with various applications
- good results will be published internationally
- execution in a stimulating surrounding with close guidance and supervision
- possibility to continue the research for a longer period or with PhD research depending on interest and qualifications
- decent payment depending on education and qualification

Applications should be send to Prof. Brenny van Groesen (groesen@labmath-indonesia.org) **before 28 May** and should include:

- C.V.
- copies of degree certificates,
- transcripts,
- letter of motivation

Personal interviews will take place in the first or second week of June.

Examples of research topics

Extension of simulation codes

In the past years we have developed simulation codes for waves from the deep ocean to the shallow coastal area that seem to belong to the best available at this time. These codes are of Boussinesq-type, i.e. they only compute quantities like the surface elevation and the potential at the surface, without the need to compute the internal fluid dynamics.

We want to extend and verify the underlying models and codes in various directions:

- from uni- to multi-directional waves,
- to include a module to calculate in an analytic way the interior fluid motion to be able to simulate
 - sedimentation,
 - pollution spreading at surface and in interior

Comparison with other existing codes

such as SWAN, SWASH, MIKE21 etc, for

- waves in harbours
- waves over sloping bottoms compared to measurements

Research on freak waves: extremely high waves that suddenly appear; almost nothing is know about their appearance yet

- statistics of highest crests in wind waves
- relation between various special wave forms that lead to extreme waves.

All codes will become open software at the time that we can assure the quality and robustness

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