

Call for 8 PhD Positions under Project SEDITRANS

The project SEDITRANS entitled “Sediment transport in fluvial, estuarine and coastal environment” and funded under the Marie Curie FP7-PEOPLE-2013-ITN program of the European Union will provide an elaborate and interdisciplinary training-through-research program to Early Stage Researchers (ESRs) leading to a PhD degree.

At this time, SEDITRANS invites applications for 8 ESR positions to start on February or March 2014. Information about SEDITRANS, the participating partners, the description of each position and the rules of the program (for example, about eligibility and salary) can be found at the temporary [website](#) of SEDITRANS. Interested applicants are encouraged to contact directly the corresponding scientist of each position and apply before **November 25, 2013**.

Note that in order to be eligible for these positions, applicants must meet the following mobility criterion: *at the time of the relevant deadline for submission of proposals, or recruitment by the host organisation, depending on the action, researchers shall not have resided or carried out their main activity (work, studies, etc) in the country of their host organisation for more than 12 months in the 3 years immediately prior to the reference date. Compulsory national service and/or short stays such as holidays are not taken into account.*

Questions about the program may also be directed to the SEDITRANS coordinator.

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1. PhD Position at the University of Louvain, Belgium

A PhD scholarship is available in the Institute of Mechanics, Materials and Civil Engineering of the University of Louvain (UCL) in Belgium. The research projects focuses on the fundamental aspects of two-phase flows of heterogeneous mixtures with application to sediment transport in coastal and river flows. Emphasis is given in the development of mathematical models for the flows of interest and in their theoretical and numerical analysis. This project is funded by the European Union under an Initial Training Network (ITN) program.

Successful candidates will have a MSc degree or an equivalent diploma of a 5year programme of studies (300 ECTS). They must also have a good background and interest in fluid mechanics and/or partial differential equations. Good knowledge of English () is required. UCL is one of the oldest universities in Europe and the largest in Belgium. It is a research university offering BSc, MSc and PhD degrees in all areas of Humanities, Exact Sciences and Life Sciences and has a strong international recruitment policy. Its campus is located in Louvain la Neuve, 25 kms south of Brussels.

Information about UCL, its programs of doctoral studies, and the research team can be found at
<http://www.uclouvain.be/envisiteurinternational.html>
<http://www.uclouvain.be/endoctorat.html>
<http://sitesfinal.uclouvain.be/immc/institut/people/persos/miltos.php>

Interested applicants are encouraged to send a detailed CV, a statement of research interests, and names of two references to Professor M. Papalexandris (miltos@uclouvain.be).

2. PhD Position at the University of Louvain, Belgium

The research project focuses on the work package devoted to "unsteady flows and sediment transport in river flows". The candidate will have to carry out experimental tests of flows over granular bed, both made of idealised sediment and real sediment. Accurate measurements will be obtained using non-intrusive devices such as digital imagery (PTV and PIV) and UVP for the velocity field. In parallel to this experimental work, the candidate will also be involved in the development and application of numerical simulation tools. The new models developed within the project will be applied to the new experimental cases. The results will be compared to experimental data and to results obtained by using existing models developed in the research team, with the aim of validating the new approaches and assessing the performances of each type of model, based on different assumptions.

The ideal candidate should have an interest in experimental and numerical modelling, together with significant scientific curiosity and rigour to be able to design adequate experimental campaigns and to extract from these the appropriate information for the validation of the numerical models. The work will take place in the Hydraulics Laboratory of the Civil and Environmental Engineering Research Unit (Institute of Mechanics, Materials and Civil Engineering) of the Université Catholique de Louvain, Belgium. International exchanges are foreseen, mainly with IST (Instituto Superior Tecnico, Portugal) about experimental modelling. Training periods are also planned, with one of the industrial partners of the consortium, to be defined according to the progress of the project.

Interested applicants are encouraged to send a detailed CV, a statement of research interests, and names of two references to Professor S. Soares-Frazaio (sandra.soares-frazaio@uclouvain.be).

3. PhD Position at the University of Cyprus, Cyprus

Project title: "Numerical simulations of turbulent particle laden flows"

Location: Dept. of Mechanical & Manufacturing Engineering, Univ. of Cyprus, Nicosia, Cyprus

Requirements / eligibility:

- English or Greek Language
- Honours/master degree of 1st class or 2.1 (or equivalent) in engineering, physics or related disciplines
- Candidates should preferably have skills in programming using Fortran or C++ language and be able to work in Linux/Unix environment

Objectives:

- Numerical simulations of particle laden turbulent flows over a fixed bed
- Development of numerical algorithms and codes to extend the immersed boundary (IB) method to simulate sediment transport over arbitrary bed morphology

Job description:

- Code development for Large Eddy Simulations of particle-laden flows using the immersed boundary (IB) method
- Development of numerical algorithms and codes to extend the immersed boundary (IB) method to simulate sediment transport over arbitrary bed morphology
- Implementation of a physical model to model bed sediment transport due to grain motion
- Validation of numerical code against the experimental measurements for coastal sediment transport from
- Documentation of computational test cases
- Preparation and submission of articles in international peer-reviewed journals and/or conferences

Interested applicants are encouraged to send a detailed CV, a statement of research interests, and names of two references to Lecturer D. Grigoriadis (dimokratisg@gmail.com).

4. PhD Position at IST, Portugal

A position for one Early Stage Researcher, expected to enroll as PhD student, is open at CEHDRO, IST-ULisbon, within the Marie Curie Initial Training Network “SEDTRANS”.

The work-programme addresses the reciprocal influences of bedload transport, bed morphology and flow turbulence in complex three dimensional flows such as those in bends, confluences or in the vicinity of obstacles. The ultimate objective is to derive conceptual models susceptible to be included in numerical models for the simulation of these flows. The methodology is essentially experimental: flow and morphology will be characterized by directly observing particle and flow motion at several scales, from grain to flow depth. The specific objectives are: i) to characterize entrainment, disentrainment and transport process under size-selective sediment transport, ii) to characterize self-formed bed morphology and its feedback relation with flow patterns and turbulence. Available instrumentation includes time-resolved stereo PIV, 2D PIV and high-speed video. The experimental work will be conducted at IST and LNEC.

Confidential and informal enquiries (including a detailed CV, a statement of research interests, and names of two references) regarding the nature of this post may be made to Professor R. Ferreira (ruif@civil.ist.utl.pt, +351 21 841 81 43).

5. PhD Position at the University of Trieste, Italy

The research project is aimed at development of erosion models to be used in high-Reynolds number large eddy simulation models of river and estuarine flows. We look for a highly motivated student with, at least 4-year, Master degree in Engineering, Physics or Applied Mathematics. The candidate must have proficiency in programming in fortran or C++ and knowledge of Matlab. Competences in river hydraulics, fluid mechanics and turbulence are well considered. The position is for 3 years, at the University of Trieste, Dept. of Eng. and Math. (Laboratory of Environmental and Industrial Fluid Mechanics chaired by Prof. V. Armenio), and interaction with research groups of the network will be encouraged.

Interested applicants are encouraged to send a detailed CV, a statement of research interests, and names of two references to Professor V. Armenio (armenio@dica.units.it).

6. PhD Position at EPFL, Switzerland

Sediment deposition upstream of impounding structures (e.g., dams) results in loss of storage in reservoirs with important economic costs and eventual accumulation of polluting materials. Besides delta propagation, the transfer of fine sediments by turbidity currents may cause silting of reservoirs and blocking of intakes, requiring mitigation measures such as reservoir flushing, sediments sluicing and turbidity venting. The present research project aims at improving the understanding of the dynamics, mixing processes and depositional patterns of turbidity currents and to assessing the efficacy of mitigation measures. Flushing, sluicing and venting processes will be studied experimentally with adequate measuring instrumentation at Laboratory of Hydraulic Constructions from the École Polytechnique Fédérale de Lausanne (LCH-EPFL).

We look for a highly motivated student with a Master degree in Engineering (Civil, Environmental, Mechanics or related fields). Competences in river hydraulics, fluid mechanics and turbulence, as well as in programming are welcome. The position is for 3 years, at the LCH-EPFL, (Prof. Anton Schleiss and Dr. Mário Franca), and interaction with research groups of the network and stakeholders will be encouraged. The candidate should be accepted as a student from the Doctoral Program in Civil and Environmental Engineer offered at EPFL.

Interested applicants are encouraged to send a detailed CV, a statement of research interests, and names of two references to Professor A. Schleiss (anton.schleiss@epfl.ch) or Dr. M.J. Franca (mario.franca@epfl.ch).

7. PhD Position at LNEC, Portugal

LNEC is seeking an outstanding candidate for a position for one Early Stage Researcher, expected to enrol as PhD student, within the Marie Curie Initial Training Network “SEDIRANS”. Candidates should hold a Master degree in Hydraulics or Environmental Engineering or similar educational level; a strong mathematical background and good skills in scientific computing and visualization of data; and excellent English language skills.

In natural rivers the secondary flow in curved regions play an important role in sediment transport and river morphology evolution. The PhD research project aims the characterization of the sediment transport and associated bed topography, mean flow field and turbulence in strongly curved river bends. The work involves experimental tests in a curved laboratory flume at LNEC. Measurements of bed bathymetry and detailed flow velocity under equilibrium flow and sediment transport conditions will be performed considering different sediment mixtures.

Confidential and informal enquiries (including a detailed CV, a statement of research interests, and names of two references) regarding the nature of this post may be made to Dr. Elsa Alves (ealves@lnec.pt, +351 21 8443636).

8. PhD Position at Fugro GeoConsulting, Belgium

Project title: Solid-fluid transitions at inception and runout of slide-induced sediment density flows: experimental characterization and innovative modelling approaches for runout models.

Objectives:

- Theoretical and experimental investigation of the solid-fluid transition from an incipient slope failure to a developed sediment density flow, and reversed fluid-solid transition from a flowing sediment mass to a frozen sediment deposit.
- Development of innovative conceptual models to be incorporated in numerical models of flow runout used for risk analysis of impact against infrastructure

Interested applicants are encouraged to send a detailed CV, a statement of research interests, and names of two references to Dr. B. Spinewine (BSpinewine@fugro.be).