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# PhD student in Hydrological Modeling with the Multiple Interactive Flowpaths Model

2012-07-09

at the Department of Earth Sciences.

Application no later than 2012-09-01. UFV-PA 2012/1990

Start date: 1 October 2012 or as agreed upon.

**Duties:** Preserving or restoring water quality is one of the great environmental challenges of our time. This challenge includes work with many different water quality problems. Common to many water issues is the need to define the flow pathways and transit times of water. Hydrologists have striven to provide a sound basis for biogeochemical modeling, but face the complexity of catchment flow systems that defy complete description of catchment flow paths.

This project will develop an innovative new predictive model of soil and hillslope hydrology, transport and transit times based on the concept of multiple interacting pathways (MIPs) (Davies et al., 2011 [1]). The model will be used to test different rules for particle movements within a multiple working hypothesis framework for water and solute fluxes using carefully posed, hillslope scale tracer experiments. In this proposed project we will also evaluate MIPs models using detailed isotope data.

The PhD student will use the Multiple Interactive Flowpaths Model approach to define plausible descriptions of high resolution flow paths through soil profiles, hillslopes and small catchments. The outcome of this thesis will be an improved understanding of catchment hydrology. Connections will be explored to the biogeochemical modeling of both weathering and carbon balances.

**Qualifications required:** We are looking for persons with university degrees in engineering, natural sciences or comparable with a focus on hydrology, water- and environmental engineering, physics or similar. Experience with hydrological modeling is a merit, as is experience of field work. Strong motivation and capacity to independent work are important qualities. The applicant must be proficient in spoken and written English. Experience with numerical methods (programming, statistics, ...) are considered as an important asset.

PhD education, also called research or third-level education, normally takes 4 years full time. The position can involve up to 20% departmental work, commonly teaching at basic or advanced levels. This work is added to the 4 years of PhD studies so a PhD position is commonly 5 years. To be appointed as a PhD student it is required that the candidate has been admitted, or will be admitted, to a PhD education program, in which the ability to benefit from the PhD education is crucial.

More information on research education at UppsalaUniversity can be found at <http://www.teknat.uu.se/cms/en/>. Information about the Department of Earth Sciences can be found at <http://www.geo.uu.se/>. Information about Swedish postgraduate studies is given in the [Handbook for postgraduate students](#).

**How to apply:** We ask the applicant to attach a letter explaining why you are interested in this Ph.D.. The application must also include a CV, copies of exams and list of courses including the

grades obtained, a copy of the undergraduate thesis (or a draft thereof), as well as names of two reference persons.

**For further information** about the position, please contact Professor Jan Seibert, ([jan.seibert@hyd.uu.se](mailto:jan.seibert@hyd.uu.se)) or Kevin Bishop +46-70-638-2517 ([kevin.bishop@geo.uu.se](mailto:kevin.bishop@geo.uu.se)). Union representatives are Anders Grundström, SACO (the Swedish Confederation of Professional Associations), phone +46 18 471 5380 and Carin Söderhäll, TCO/ST (the Swedish Confederation of Professional Employees), phone +46 18 471 1996, Stefan Djurström, SEKO (the Union of Service and Communication Employees), phone +46 18 471 3315.

In case of different interpretations of the English and Swedish versions of this announcement, the English version takes precedence.

**You are welcome to submit your application no later than 1 September 2012, UFV-PA 2012/1990.** Use the link below to access the application form.

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