

Details of Position

Topic: The resilience of the Alsatian aquifer to climate and anthropogenic change

Summary:

- Analysis of the resilience of the Alsatian aquifer to climate and anthropogenic change. This will include the development of correlations between river discharge (of the Rhine and its principal confluences), the state of water bodies, wetlands and groundwater levels. The correlations will be based on transboundary data from Alsace, Baden-Württemberg and the Canton of Basel, an approach complimentary to EUCOR (European Campus).

Disciplines: Hydrology, Hydrogeology, Geography, Climatology, Ecology (Sociology, Law, History)

Keywords: groundwater, river discharge, water bodies, wetlands, ecology, precipitation, snow, droughts, floods, pollution, drinking water, agriculture, industry, transboundary water management, Early Warning System against Water Scarcity, reserved flow

Description of position:

Methodology:

- developing correlations between the timing and location of drinking water problems, groundwater levels, river discharge and rates of reservoir filling and emptying
- developing spatial and temporal correlations between floods and groundwater levels
- analysing droughts based on meteorological and hydrological parameters using the Palmer Drought Severity Index (PDSI), the Standardized Precipitation Index (SPI) and the periodicity and amplitude of low flows for different water bodies
- reconstructing long-term groundwater variations from historical sources. Emil Dister (Karlsruhe Institute of Technology) estimated groundwater levels on the German side of the Rhine dating back to the 19th century. These should be expanded and prolonged. Historic data dating back to 1940 from the APRONA (Observatoire de la Nappe d'Alsace) can be used for this purpose.
- Gathering of soft information from local stakeholders on low flows (frequency and duration of periods during which wells have run dry, frequency and length of dry river reaches etc.)
- Mapping of critical areas or communes whose drinking water supply is under stress and their evolution over at least the last 100 years, based on research in archives, newspapers and other media.

Required Profile:

- Master Degree in Hydrology, Hydrogeology, Geography, Environmental Sciences or Ecology
- Advanced skills in hydrological and hydrogeological analysis, statistics and modelling
- Experience in transboundary research projects (desirable)
- 1 or 2 scientific publications (desirable)
- Very motivated, capable of working autonomously as well as within a team
- Fluent in English, French and knowledge of German
- Driving license

Supervisor: Carmen de Jong
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Main research areas:

Geography / Hydrology / Hydrogeology / Environmental sciences / Information Technology / Sociology

JOB DETAILS

Type of contract: Temporary (3 years)
Status: full time
Organisation: University of Strasbourg
City: Strasbourg
Postal Code: 67000
Road: 4 rue Blaise Pascal

DEADLINES

Starting Date: 15th December 2018
Application Deadline: 15 November 2018
Contact: carmen.dejong@live-cnrs.unistra.fr