POST-DOC POSITION: HYDRAULIC DISCONNECTION APPROACH IN URBAN AREA

Project context

The overall goal of MULTISOURCE (https://multisource.eu/) is to investigate the performance of Enhanced Natural Treatment Solutions (ENTS) to treat a wide range of urban waters. Innovative tools, methods, and business models will be developed together with local, national, and international stakeholders, in order to support citywide planning, as well as long-term operations and maintenance, of nature-based solutions for water treatment, storage, and reuse in urban areas worldwide. MULTISOURCE will enable users to identify multiple sources for local water reuse, foster the dissemination of nature-based solutions, and better control contaminants transfer through urban water fluxes. MULTISOURCE will deliver new knowledge about ENTS and their ability to remove waterborne contaminants and provide effective risk reduction for chemical and biological hazards, as well as their capacity to be integrated into urban environments and contribute to additional co-benefits. The project includes seven pilots which encompass a wide range of contexts (small and large areas with different degrees of urbanization), treating a wide range of urban waters. Two individual municipalities (Girona, Spain; Oslo, Norway), two metropolitan municipalities (Lyon, France; Milan, Italy), and international partners in Brazil, Vietnam, and the USA, will contribute to each of the main above-mentioned project activities and to the MULTISOURCE Planning Platform. The use of urban archetypes in this Planning Platform will enable users to quickly identify the most suitable areas for the application of nature-based solutions for water treatment, and compare scenarios with and without such facilities. This unique approach is expected to provide the knowledge, business models, and modular tools that will enable stakeholders to conduct fit-to-purpose, large-scale planning in their local region: in doing so, the objective is to promote circularity and sustainable development in the urban water sector and overcome barriers to widespread uptake of nature-based solutions for water management and treatment.

Job description	**Interested in contributing to Multisource, developing your skills and extending your collaborative network across Europe with leading organisations?** A post-doc position is opened at INSA Lyon (DEEP laboratory). The recruited person will contribute to the development of a decision support tool on hydraulic disconnection, in close collaboration with UFZ and INRAE. The description of the task is as follows: The disconnection module, developed by the hired post-doc at INSA, is based on spatial analysis, hydrologic modelling of runoff and transfer of urban waters in sewer networks including separate and combined systems. This tool will enable city planners to identify areas where Nature-based solutions for urban water treatment (NBSWT) could be implemented to alleviate pressure on the existing water infrastructure network. The MULTISOURCE Selection Tool will specify which NBSWT technologies are expected to provide the most value in terms of increased treatment, storage, and opportunities for safe reuse of polluted water, among other co-benefits. This disconnection module will be integrated into the final MULTISOURCE sustainable tool. In collaboration with UFZ and INRAE, the recruited person will be in charge of defining detailed objectives and workplan, elaborate and develop methods and tools for: - catchment delineation and space discretization around the problematical combined sewer overflow structures - improving modelling of rainfall-runoff and transfer in the discretized areas (a python-based preliminary model is available) - developing specific algorithms to prioritize urban sub-catchment to be disconnected - elaborating an integrated modelling approach – combining combined sewer system and NBSWT – to evaluate the hydrologic response of an urban catchment drained by hybrid infrastructures (NBSWT and combined sewer network) - assess the performances of such hybrid system in terms of overflow volumes reduction and spilled events frequencies.
Required diploma	PhD degree, or Master of Science / Engineer diploma with experience.
Expected experience and skills	- Experience in urban drainage modelling (hydrology and hydraulic modelling). - Experience in data handling and processing as well as GIS - Ability to develop methods associating measurement data and modelling for stormwater management. - Programming skills - Ability to work in collaboration and in a team.
Duration	20 to 22 months (starting in September 2022) / Full-time
Location	The position will be based at INSA, Lyon, France with visits to other partners, particularly UFZ and INRAE Lyon, for meetings and collaborative work.
Salary	Minimum net salary 2000 € per month, possible adjustment depending on experience and competences
Additional information	Staff restaurant 50% reimbursement of public transport costs Paid leave: 42 days per year Possibility of teleworking 1 day per week Professional equipment available Social, cultural and sporting events Access to professional training Social security coverage

Language	Project working language will be English. Skills in French are appreciated as local language at INSA Lyon.
Contact	Prof. Gislain Lipeme Kouyi - gislain.lipeme-kouyi@insa-lyon.fr
Recruitment process	Candidates must send a CV and a motivation letter to the above contact. After pre-selection based on received documents, interviews will be organised with the remaining candidates. **Deadline for applications: 15 June 2022**.