

Postdoctoral research fellow position

Ecole nationale des ponts et chaussées – Leesu (France)

Building development scenarios of nature based urban stormwater management solutions to climate extremes in the City of Paris

Host laboratory : École nationale des ponts et chaussées, Institut polytechnique de Paris
(<https://ecoledesponts.fr/>)
Leesu (<https://www.leesu.fr/>)

Location : Marne la Vallée, France (Paris conurbation)

Duration : 12 months (start date: as soon as possible, possible extension on other research projects in urban hydrology)

Type of contract : fixed term (CDD)

Contact : Marie-Christine Gromaire marie-christine.gromaire@enpc.fr and Yangzi Qiu yangzi.qiu@enpc.fr

Background

Leesu (<https://www.leesu.fr/>) develops interdisciplinary research on water in the city. Its objective, in line with the challenge of making cities sustainable and resilient to global changes, is to gain a better understanding of water and contaminants flows and fate in urban environments, and to develop innovative concepts for water and soil management. The research is based on in situ and/or controlled laboratory observations, and their interpretation in order to produce quantitative and predictive models. Leesu coordinates since 1994 the OPUR observatory of urban hydrology, a long-term research project and a means for structuring scientific expertise in the Paris metropolitan area.

LEE (<https://ee.univ-gustave-eiffel.fr/>) In a context of global change, sustainable urban development must both controls its impact and limits its vulnerability to various anthropogenic risks. The laboratory water and Environment conducts research on this major issue through various themes: flood risks, water resources and ecosystem quality (soil, groundwater and urban waterways), thermal comfort, and the spread of micropollutants in the environment.

The postdoctoral position is part of the European project GreenStorm (<https://arceau-idf.fr/projets/greenstorm>). GreenStorm focuses on nature-based solutions for urban stormwater management (NBSsw) and addresses the question of their implementation, performance and resilience for current and future climate extremes. It emphasizes the hydrological and thermal benefits of these devices as well as the stress suffered by vegetation during extreme events in 5 European cities. The project aims also to assess the acceptability of these solutions and the conditions for their diffusion. The project proposes to identify effective, resilient designs accepted by all, but also the levers to promote their implementation on a city scale and maximize the associated benefits.

Research activities

The applicant will contribute to the workpackage 5 of the GreenStorm project, which targets upscaling deployment and evaluation of a range of NBSsw solutions. He/she will be in charge of the project tasks WP5b that aims at developing the NBSsw scenarios, in close collaboration with local government

departments and other stakeholders (developers, associations, etc.) in the framework of co-construction workshops. Workshops will be based on identified issues from another GreenStorm project task and the expertise of the project researchers and participants. The concerned NBSsw are those studied in two other tasks of the GreenStorm project at smaller scales, as well as any suitable NBSsw depending on the local context (full disconnection from drainage network, availability of open-space and vegetated areas).

Two different scenarios, one very ambitious and one more linked to reality should be developed. The realistic one should be ambitious but taking into account many brakes as financial and regulatory constraints and the slow urban regeneration, while the ambitious one should not take these brakes into account and use a maximum number of NBSsw. Nevertheless, both scenarios will be developed based on technical, biophysical and local constraints.

Expected profile

PhD degree

Double background in urban hydrology and social geography.

Proficient in geographic information systems (GIS) and spatial data analysis.

Experience in workshops organisation

Good French speaking and reading capacities and good English writing capacities

Abilities to work in a team

Application procedure

Send CV + application letter by email to marie-christine.gromaire@enpc.fr, ghassan.chebbo@enpc.fr, yangzi.qiu@enpc.fr and katia.chancibault@univ-eiffel.fr