We currently have an opening for a

Postdoc
(TVL 13, full time, 2 years)

A DATA-INTEGRATED SIMULATION APPROACH FOR THE COOLING EFFECT OF LEAVES DURING URBAN HEAT WAVES

The Cluster of Excellence "Data-Integrated Simulation Science" (EXC 2075) is an interdisciplinary research center with more than 200 scientists performing research towards a common goal: We target a new class of modeling and computational methods based on available data from various sources, in order to take the usability, precision and reliability of simulations to a new level.

THE PROJECT

The project focuses on the modelling of evapotranspiration processes, i. e. the transport of water, gas and energy in the direct environment of a plant leaf. In a first step, the leaf is described in a static manner. In the second step, leaf motion in the wind field as well as the influence of radiation are taken into account. The highly-resolved simulation results together with measured data from partners (Ulm, Zuerich) yield a data-rich system. This system can then be used as a learning basis to improve the parameterization of an REV-scale model with the help of machine learning. This methodological concept could later be extended to the cooling effect of human skin during heat waves.

YOUR TASKS

Further development of a pore network model that captures the structure of a leaf on the one hand and the hydrophobic behavior during droplet formation on the other. The newly developed algorithms are to be implemented in the open-source program system DuMux. To this end, it is crucial to first identify and understand the system-governing phenomena and processes observable from detailed simulations and experimental data. With the help of machine learning algorithms, these findings shall then be incorporated into advanced parametrisations or used in order to extend existing balance equations.

WE ARE LOOKING FOR

We seek applicants with a Doctorate in simulation science, civil or mechanical engineering with an excellent background in fluid mechanics and C++, excellent writing skills, fluency in English is required, command of German would be appreciated. Successful candidates should be curiosity-driven, ambitious, creative, and passionate about interdisciplinary research in the area of simulation and data sciences.

WE OFFER

If you work with us,

- you will enter into a team of motivated and supportive colleagues
- you will work in the dynamic environment of the Cluster of Excellence SimTech and be part of the largest research alliance at the university
- An inspirational and supportive research environment at the Cluster of Excellence SimTech
- Diverse and responsible tasks in a dynamic and friendly team
The position is fully funded (100%) and is available to applicants of any nationality. You will contribute to the leadership of ongoing projects, will have the opportunity to advise undergraduate and graduate students, and contribute to the teaching activities of the group.

Please submit your complete application, including one-page motivation letter, academic CV, one letter of reference, as well as academic certificates and transcript of records, via jobs@simtech.uni-stuttgart.de.

If you have any questions regarding this application, please contact us via the above email-address.

We cannot reimburse any costs arising from the performance of job interviews.

The University of Stuttgart has been awarded “family-friendly employer”. Flexible working hours, regular child care services, and family-networks allow for a better combination of professional and family life. The University of Stuttgart also offers a range of services to enhance social equity (https://www.uni-stuttgart.de/en/university/profile/equality-diversity/). Additionally, a dual career program is in place to offer assistance to partners of those moving to Stuttgart. For more information, please visit https://www.uni-stuttgart.de/universitaet/arbitgeber/dualcareer/

The University of Stuttgart is an equal opportunity employer. Applications from women are strongly encouraged. Severely challenged persons will be given preference in case of equal qualifications.

Information on the collection of personal data in accordance with Article 13 of the GDPR can be found via the following link: https://www.uni-stuttgart.de/en/privacy-notice/job-application/