



IHE Delft is the largest international graduate water education facility in the world and is based in Delft, the Netherlands. The mission of IHE Delft is to work in partnership to strengthen capacity in the water sector, to achieve global sustainable development. IHE Delft has a permanent staff of 230 of which more than 140 are academics from all over the world, while about 250 guest lecturers from academia and industry contribute to our educational programmes. Each year 750 professionals (including about 200 new MSc students per year) from all over the world attend various water-

related courses at IHE Delft. The Institute has an international staff & student community with English as the working language.

Land and Water Management Department

The Land and Water Management Department aims to add value to (human) managed land-water systems through monitoring, assessing, understanding and anticipating the impact of intervention and change. The Department cover a broad range of disciplinary knowledge, across the physical domains of water-land-environment, the policy and management domains of linking information to action and decision-making, and the technology and society domains, looking at technological innovations in land and water that can support societal development.

The Land and Water Management Department is looking for a:

Postdoc Researcher remote sensing and crop water productivity

1.00 FTE / 38 hours per week

Job description

The candidate is responsible for the implementation of concepts related to Crop Water Productivity in Africa, and the Middle East. While the concept has been promoted by many international agencies, the implementation of crop water productivity is hindered by a lack of tools to measure it at different scales and to set targets for the near future. A large part of the work will be related to the second phase of the FAO's portal to monitor Water Productivity through Open-access of Remotely sensed derived data (WaPOR) project, funded by the Government of The Netherlands. The focus of this second phase will be on country level, demand-driven, applications of the database that will be co-identified and co-developed with national stakeholders. Ten countries will participate in this process, starting with Egypt, Ethiopia, Jordan, Mali and Sudan.

The candidate will apply analytical tools and validate the predictions on crop yield and soil moisture where feasible with local field measurements. A second task is to build capacity within the irrigation community (Farmers, Departments of Agriculture, but also for Irrigation and for Environmental Protection Agencies) on water productivity and related concepts such as irrigation efficiency.

The successful candidate should contribute to the embedding of the concept of crop water productivity in irrigation system management, applied to case studies. The successful candidate will develop and deliver tailor-made courses on energy balance and biomass production modelling (to develop ET and biomass/yield maps) and the application of the analyses for improving crop water productivity at field and scheme level. The candidate is expected to prepare a set of manuals on image processing and water productivity ranking. IHE Delft is encouraging its staff members to develop scientific publications, preferably together with partner organizations. It is expected that the candidate supervises MSc students.

The successful candidate will:

1. Implement project activities (including capacity building), timely and adequately reporting of project outputs;
2. Support project leader in timely and adequately reporting to donor;
3. Be able to work and collaborate with project partners and stakeholders in the global South
4. Conduct research and implement projects on digital innovations in agriculture such as:
 - a. Application of high-resolution satellite data (Sentinels, Landsats etc.) in monitoring crop water productivity at different scales using remote sensing techniques;
 - b. Applying Machine learning and AI techniques for dynamic crop type mapping, extracting phenology and monitoring agricultural droughts;
 - c. In-depth analysis of agricultural systems on land and water productivity using existing RS products like FAO WaPOR and its validation;
 - d. Integrated spatially enabled crop yield modelling by integrating RS based products;
 - e. Design and implement field work towards calibrating and validating RS based products;
 - f. Application of drones for monitoring crop bio-physical characteristics;
 - g. Data assimilation and fusion approaches to integrate new datasets like Ecostress and Sentinel 3 in high resolution ET mapping;
 - h. Design/develop end-user applications related to water and agriculture using spatial and temporal data products.
5. Develop training materials based on these activities for capacity development trainings in partner countries;
6. Prepare and contribute to scientific publications for peer reviewed journals;
7. Supervise MSc (and PhD) students on topics related to crop water productivity and agricultural water management.

Requirements

IHE Delft is searching for an academic with a doctoral degree relevant for remote sensing and crop water productivity assessments. The applicant should have proven field experience in agricultural water management. The candidate should also have demonstrable experience with remote sensing and programming skills in Python and QGIS. The candidate should have excellent analytical and communication skills. Overseas working or training experience is preferred, particularly in the Global South.

Terms of employment

This is a position for 2 years. There is a possibility for a 2-year extension subject to performance and the availability of project funding. The position is based in Delft, The Netherlands. A competitive salary (scale 10) is offered depending on qualifications and experience in accordance with the conditions of employment for Dutch Universities. The appointment implies entry into the Netherlands' Civil Service Pension Fund (ABP).

Information and application

Additional information can be obtained from Dr. Leon Hermans, Head of the Land and Water Management Department (l.hermans@un-ihe.org) or Dr. Marloes Mul (m.mul@un-ihe.org).

Applications (in English) should respond specifically to the requirements and should be sent before **10 October 2021 (closing date)** including curriculum vitae, statement of research interests, motivation letter and the names and contact details of two contactable referees (*as one PDF file with your family name as the filename*), to IHE Delft, attn. Human Resource Management (recruitment@un-ihe.org), PO Box 3015, 2601 DA Delft, The Netherlands, stating vacancy-number **21-LWM-03**.

Reactions from staffing agencies and other 3rd parties are not appreciated.