IIASA

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Early Stage Researcher/Predoctoral Researcher

BACKGROUND:

Under the supervision of Prof. Dr. Yoshihide Wada, Program Director of the IIASA Biodiversity and Natural Resourced (BNR) program, and co-supervision by associates at Utrecht and Wageningen University & Research universities, the Water Security (WAT) research group at IIASA will be hosting one Early Stage Researcher (ESR) who will be enrolled in the four-year PhD program at the Utrecht University. This project is part of the InventWater project for which 15 ESR PhD students will be hired. A centrally coordinated common call for applications can be found here.

SECONDMENTS:

This project will be carried out in close collaboration with our international partners. A willingness to travel and spend time abroad is therefore essential. Visits to the following universities are expected during the project:

Wageningen University & Research, Wageningen, Netherlands, five months (Dr. Maryna Strokal).

Utrecht University, Utrecht, Netherlands, four months (Dr. Michelle van Vliet).

HOST ORGANIZATION:

IIASA is an independent, international research institute with national member organizations in Africa, the Americas, Asia, and Europe. Through its research programs and initiatives, the institute conducts policy-oriented research into issues that are too large or complex to be solved by a single country or academic discipline. The Water Security (BNR-WAT) research group is one of four groups within the IIASA Biodiversity and Natural Resources (BNR) Program. The water security group works across various water-related sectors and management scales by incorporating water science into integrated assessment and planning studies. The group has about 30 scientific staff and (co-)hosts 5-10 visiting PhD students each year through the IIASA Young Scientists Summer Program (YSSP). The successful candidate will benefit from the multidisciplinary and multicultural environment working on all aspects of water sciences. IIASA is located in the Schloss Laxenburg, which dates back to the 18th century. Laxenburg is about 15 km south of Vienna and easily accessible by public transport.

PROJECT DESCRIPTION:

This project aims to develop innovative global indicators for water quality status and changes (especially eutrophication) in selected lakes worldwide, accounting for climate change and socio-economic development and land- use change.

The proposed project includes mainly three parts:

1   Long-term trend (e.g, 1980-present) assessment of water quality for selected lakes worldwide. This will be done by integrating PCLake+ (lake water quality and ecological modeling) with nutrient load modeling (based on the GLOBIOM-CWatM-MARINA modeling framework developed as part of the ISWEL project) and global water quality dataset from Remote Sensing products for lakes and reservoirs (e.g., from World Bank and Copernicus)

2.   Development of critical indicators by linking the long-term trend (e.g., trophic level change) back to the driving forces (e.g., climate change and socio-economic development, land-use change, river connectivity), and

3.   Mid- and long-term projection and scenario analysis to provide policy and management recommendations with case studies (e.g., Lake Victoria, Lake Taihu).

The project will benefit from on-going research and existing tools of the project members on hydrological modelling, pollutant load modelling, lake modelling at the global, regional and basin scale and for the case studies.

Expected Results:

1.   Innovative integrated framework of water quality information from remote sensing with multiple modelling tools, leading to long-term trend assessment of water quality

2.   Global indicators (e.g., climate change and socio-economic development, land-use change,) for water quality status

3.   Policy and management recommendations for case studies, where regional policies and management options will be considered in a detailed assessment.

MAIN DUTIES:

- Extend and refine the nutrient load modelling framework and integrate it with lake nutrient model

- Assess the integrated modelling system using available in-situ and remote sensing data for selected lake basins worldwide

- Conduct trend assessment of water quality status for the selected lake basins

- Identify critical indicators (e.g., driving factors) for water quality status and changes through statistical analysis or machine learning techniques

- Carry out mid- and long-term future projection (e.g., till 2050) based on global and regional scenarios for selected case studies.

SKILLS AND SPECIFIC REQUIREMENTS:

- The candidate must hold a master's degree from or equivalent to a master's degree awarded in the European Higher Education Area

- Master's degree must be in Hydrology, Environmental Engineering, Environmental Sciences, Environmental Chemistry, or similar

- Willingness and ability to travel and collaborate in teams

- Good programming skills in typical scientific programming languages (e.g., Python, R, etc.)

APPOINTMENT TERMS:

Other than the secondments, duties will be mainly carried out at the IIASA premises in Laxenburg, Austria. The successful candidate should be available to take up the position by September 2021, and will be enrolled at the Utrecht University as a PhD student, and comply with relevant PhD regulations at the Utrecht University. We will offer an initial one-year employment contract at IIASA. Following a satisfactory evaluation of the first year's work by both IIASA and Utrecht University, the appointment period can be extended further.

This position is classified as "Scientific".

- Experience with geographic information systems (ArcGIS, or QGIS)

- Good knowledge of data analysis and statistics

- Good knowledge of hydrological and water quality modeling

- Eagerness to deal with complex modelling problems and develop tools to support policy development

- Proficiency in the English language is required, as well as good communication skills, both oral and written.

WE OFFER:

A competitive salary which is exempt from taxation in the host country of Austria (subject to the principle of income aggregation - "Progressionsvorbehalt"). Subject to deductions for health insurance and/or social security.

Details about further attractive benefits here.

About IIASA

IIASA is committed to a working environment that promotes equality, diversity, tolerance and inclusion within its workforce. This is reflected in our Core Values. We encourage qualified candidates, irrespective of gender, from all religious, ethnic, and social backgrounds to apply. In the case that candidates are equally qualified, preference will be given to applicants from countries where IIASA has a National Member Organization (NMO).

Further Information

For further information about this opportunity please contact:

Prof. Dr. Yoshihide Wada program director, Biodiversity and Natural Resources (BNR)

Dr. Ting Tang, research scholar, Water Security (WAT) research group

Applications

To be considered for this opportunity, you must first download and complete the official inventWater application form available here. You will be asked to upload this in the process of submitting your application.

Deadline for receipt of applications: 22 April 2021 (17:00 CEST)

APPLY