Internship Terms of Reference

<table>
<thead>
<tr>
<th>Internship Title:</th>
<th>INTERN (Hydro-informatics): Historical Flood Mapping Tool-HFMT</th>
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<tbody>
<tr>
<td>Reference Number:</td>
<td>2021/UNU/INWEH/INTERN/HFMT/23</td>
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<tr>
<td>Institute/Office:</td>
<td>United Nations University Institute for Water, Environment and Health (UNU-INWEH)</td>
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<td>Duty Station:</td>
<td>Hamilton, Canada – INTERNATIONAL RECRUITMENT</td>
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<tr>
<td>Supervisor Name:</td>
<td>Hamid Mehmood</td>
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<td>Duration:</td>
<td>15/MAY/2021 to 15/AUG/2021</td>
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Background
For the past four decades, UNU has been a go-to think tank for impartial research on the pressing global problems of human survival, conflict prevention, development, and welfare. With more than 400 researchers in 13 countries, UNU’s work spans the full breadth of the 17 Sustainable Development Goals, generating policy-relevant knowledge to effect positive global change. UNU maintains more than 200 collaborations with UN agencies and leading universities and research institutions across the globe.

United Nations University Institute for Water, Environment and Health (UNU-INWEH)

The UNU Institute for Water, Environment and Health (http://inweh.unu.edu/) is a member of the UNU family of organizations. Its vision is a world free of water problems where sustainable human development and environmental health and security are assured for all. Its mission is to help resolve pressing water challenges that are of concern to the United Nations, its Member States, and their people. UNU-INWEH pursues its mission through critical analysis and synthesis of existing bodies of scientific discovery; targeted research that identifies emerging policy issues; application of on-the-ground scalable science-based solutions to water issues; and global outreach. UNU-INWEH is the only entirely-water focused Institute within the UNU System, and the only entirely water-related UN entity in Canada. UNU-INWEH is supported by the Government of Canada and hosted by McMaster University.

UNU-INWEH works on four broadly defined, interconnected thematic areas: i) accelerating the implementation of water-related SDGs ii) activating a technology revolution for water security in the Global South; iii) advancing gender equality for effective water management and iv) managing water- and climate-related risks for improved water security [UNU-INWEH-Strategic-Plan]. The institute focuses primarily on global water issues and their implications for developing countries.

Project description
UNU-INWEH is developing a flood mapping and future flood risk prediction tool. This tool consists of two modules; a flood mapping module that addresses the data gap of historical flood maps and a flood risk predicting module, which addresses the issue of possible risk in the future.

The historical flood mapping module uses a water classification algorithm (Modified Normalized Difference Water Index) applied to ‘stacks’ of historical Landsat and Sentinel 2 satellite imagery to
reveal patterns of inundation over space and time across the landscapes. The prototype of the tool is ready, which uses Landsat data to identify water patterns.

The second module will use AI models to predict the future flood risk for a given area. The AI models will be trained using the historical flood maps from the first module, and open temporal datasets including land use land cover, population, infrastructure, precipitation, temperature, and sex and age disaggregated socio-economic data. This module will help identify the most flood-risk areas for the future.

We are looking for an intern who can work remotely to assist in the development of the first module of the tool by integrating the Harmonized Landsat Sentinel-2 data.

**Description of Responsibilities**

- Integrate the Harmonized Landsat Sentinel-2 data.
- Test the integration against recent flood events (validation data is available).
- Optimize the HFMT system flow where possible.
- Undertake additional tasks as assigned by the supervisor.

**Learning objective**

Develop interns’ research knowledge and capabilities, including the ability to use Harmonized Landsat Sentinel-2 data in Google Earth Engine and implement surface water mapping algorithms.

**Competencies**

**Core Values:**
- Respect for Diversity
- Integrity
- Professionalism

**Core Competencies:**
- Awareness and Sensitivity Regarding Gender Issues
- Accountability
- Creative Problem Solving
- Effective Communication
- Inclusive Collaboration

**Qualifications**

**Education:**
- University studies in one of the following disciplines: Remote Sensing, GIS, Hydroinformatics Computer Science Environmental Science or other relevant subjects is required.
- Be in their final year of undergraduate study or enrolled in a graduate degree programme or is within the two-year post-graduation (maximum) from either a bachelors’, masters’ or PhD degree programme.
- Eligibility requirements as available at: internship-programme
- Excellent writing and research skills, including ability to conduct searches in academic databases
- Ability to conduct geospatial analysis.
- Working knowledge of Google Earth Engine and ArcGIS.
- Ability to prioritize work and multi-task; focus on delivery; self-motivation.
• Ability to work in a multi-cultural environment with sensitivity and respect for diversity.

Language:
• Excellent communication skills (written and oral) in English are required;
• Working knowledge of another UN language is an advantage.

Application Procedure
Interested and eligible (must satisfy Eligibility Criteria) applicants should submit their application online through Impactpool and must upload all required documents listed below:

• A completed and signed Internship Application Form downloadable from the UNU-INWEH website.
• A separate cover letter with a) a brief statement of purpose and b) why you think an internship would be a valuable opportunity and c) setting out how your qualifications and description of previous relevant experience match the requirements of the position.
• A Copy of Your University Transcript: Undergraduate or Graduate transcript. Unofficial is acceptable.
• For Non-Native English Speakers, a Copy of Your English Language Certification (E.g., TOEFL, IELTS, TOEIC); not required if the applicant has completed undergraduate and/or graduate studies with English as the medium of instruction. See FAQ Section 2 for further information on language certification.
• Confirmation of Family Relationship downloadable from the UNU-INWEH website.
• Only upload documents as requested. Applications submitted with additional documents e.g. reference letters can be disqualified.
• An indication of the reference number of the vacancy announcement (2021/UNU/INWEH/INTERN/HFMT/23)
• Please include your surname in the file names of any attachments.

Candidates invited for interview must submit prior to the interview the following documents:
• Document(s) for Proof of enrollment or graduation; downloadable from the UNU-INWEH website.
• Two Letters of Recommendation from your references as specified in application form (#17).
• Proof of health and life/accident insurance valid for the location in which the internship will be carried out. Selected intern must have health and life insurance. NOTE: ONLY applicable for on-site internships.

Only short-listed candidates will be notified and applications that do not include all the requested information will not be considered.

UNU accepts no responsibility for costs arising from accidents and/or illness or death incurred during the internship.

Duration and Start Date:
The duration of this internship is 3 months on a full-time basis with an expected start date of 15 May or as soon as possible thereafter. Part-time applications will be considered under exceptional conditions.
**Duty Station:**
The successful candidate shall undertake the internship remotely due to the ongoing pandemic associated with travel restrictions, uncertainties and delays in many aspects. This arrangement should also limit possible exposure to COVID-19. Interns working remotely must have access to a personal laptop or desktop with basic functionalities and internet for the duration of their in-/externship.

**Stipend**
Interns who are not in receipt of financial support (*please indicate on application form; 15 c & d*) for the purpose of this internship from other sources such as universities or other institutions will receive a stipend from UNU to partially subsidize basic daily expenses such as meals, transportation, and internet costs for the duration of the internship.

The monthly amount of the stipend will be determined according to the location of the in-/extern based on the stipend rates in effect. The stipend will be paid on a monthly basis and part-time internship arrangements are prorated accordingly.

**Additional Information**
Interns are not staff members and may not represent UNU in any official capacity.

The purpose of the Internship Programme is not to lead to further employment with UNU but to complement an intern’s studies. Therefore, there should be no expectation of employment at the end of an internship.

UNU is committed to diversity and inclusion within its workforce, and encourages all candidates, irrespective of gender, nationality, religious and ethnic backgrounds, including persons living with disabilities to apply and become part of the organisation.

UNU has a zero-tolerance policy on conduct that is incompatible with the aims and objectives of the United Nations and UNU, including sexual exploitation and abuse, sexual harassment, abuse of authority and discrimination.