

Graduate Research Assistant or Postdoctoral Opportunity

Remote Sensing of the Arctic

University of Minnesota – Saint Anthony Falls Laboratory

Department of Civil, Environmental, and Geo-Engineering

As the Arctic and Boreal Zone (ABZ) transforms, it presents both opportunities, such as expanded food production, and risks, including snowpack loss, eutrophication, and mobility challenges. These changes carry profound implications for North American ecosystems and socioeconomic development. Accurate, high-resolution modeling and satellite-based monitoring of ABZ land surface dynamics are critical to understanding these shifts, guiding informed policymaking, and strengthening the United States' leadership in managing and exploring the region's emerging natural resources and habitats.

The **Hydrologic Sciences and Remote Sensing Lab** at the University of Minnesota is seeking a highly motivated Ph.D. student or Postdoctoral Scholar to join our research team beginning in **Fall 2025**. This position aims to advance the understanding and sub-seasonal prediction of freeze–thaw dynamics within the soil–snow–vegetation continuum across the Arctic and Boreal Zones.

The successful candidate will work at the intersection of satellite remote sensing, land surface modeling, and data assimilation in collaborations with research scientists at the NASA Goddard Space Flight Center. The research will involve:

- Analyzing optical and microwave satellite observations
- Applying radiative transfer models
- Leveraging machine learning and deep learning techniques
- Integrating land surface models with data assimilation frameworks

Applicants should have a strong background or enthusiasm in hydrology, remote sensing, Earth system and computer sciences, or related fields, along with experience in programming (e.g., Python, MATLAB, or R).

Minimum Qualifications

- B.S. or M.S. (for Ph.D. applicants), or Ph.D. (for postdoc applicants) in Civil/Environmental Engineering, Earth & Atmospheric Sciences, Remote Sensing, or related fields
- Proficiency in **Python or MATLAB**.
- Strong background in **data analysis** and/or **hydrologic modeling**.
- Demonstrated **analytical thinking** and **problem-solving skills**.
- Excellent written and verbal communication skills.
- Prior research experience is strongly preferred.

What We Offer

- **Competitive stipend, full tuition waiver, and health insurance** (for Ph.D. students)
- Access to **state-of-the-art facilities** at the Saint Anthony Falls Laboratory
- Opportunities to **present at national/international conferences**
- Collaboration with experts in hydrology and remote sensing
- A dynamic, interdisciplinary environment in a top-ranked engineering department

Application Instructions

To apply, email **Dr. Ardeshir Ebtehaj** (ebtehaj@umn.edu) with the **subject line**:
“Research position for remote sensing of the Arctic landscape”

The email body should only include:

- Full name
- Academic degrees, institutions, years of acquired degrees, and corresponding GPAs
- TOEFL and GRE scores (only for PhD candidates)
- *Attach only your CV*

Deadline

Applications are reviewed **on a rolling basis**. Early applications are encouraged, with **priority given to candidates available to start in Fall 2025**.

Contact

Hydrologic Sciences & Remote Sensing Lab

Saint Anthony Falls Laboratory

Department of Civil, Environmental, and Geo-Engineering

University of Minnesota

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