

Summer Research Project

Job Information

Title of Research Project: **Satellite observations of ephemeral wetlands**

Proposed Start Date: **May 2 2023**

Name and Title of Supervisor: **Aaron Berg/Ben DeVries**

Department: **Geography, Environment and Geomatics**

Type of position: URA ISURA USRA USRA+ (Indigenous and Black students)

Brief Outline of Research Project:

Over the Canadian prairies the soil moisture status is an important factor for crop yields, weather prediction and streamflow estimation. Satellites such as NASA's Soil Moisture Active Passive routinely monitor soil moisture, resulting in an estimate every 2 days. Passive microwave satellites such as SMAP have very coarse resolutions and derive these estimates considering the emitted radiation over a broad area. Given the large area and spatial variability within this area, the emitted radiation will contain contributions from water bodies within the satellite pixel. Particularly within the Canadian prairies these water bodies are ephemeral. The proposed study will use moderate resolution optical satellite data to characterize the ephemeral nature of these waterbodies to understand impacts on soil moisture estimates from NASA's SMAP satellite.

Job description (task/responsibilities, relevant scheduling details, and required and/or preferred qualifications):

Working with satellite data and the Google Earth Engine the student will derive estimates of saturated surfaces over prairie region during the spring/summer/fall from 2015-2021. The ideal candidate will have taken remote sensing courses and have some familiarity with programming (e.g., Python).

What are 2-5 specific things you feel a student will learn during this position?

The student will gain skills in remote sensing, programming, application development on the Google Earth Engine, improved knowledge of geographical information systems, collaboration with a science team.

Which 2-5 knowledge, skills, or attitudes are most relevant to this position? [View definitions of common knowledge, skills, and attitudes.](#)

1. **Knowledge: Mathematical**
2. **Knowledge: Digital and Technical**
3. **Skill: Problem-Solving**
4. **Knowledge: Scientific**
5. **Skill: Information Management**