

## POSTDOCTORAL POSITION IN SPATIAL HETEROGENEITY, GEOSPATIAL & GEOMATICS APPROACHES, AND SOILS.

### Position Description

To characterize and understand patterns of spatial heterogeneity across terrestrial ecosystems is challenging, yet this is essential to inform and optimize landscape management choices leading to enhanced outcomes of ecosystem goods and services based upon sustaining and improving land productivity and environmental performance, and approaching ecological conservation goals. We seek a motivated post-doctoral fellow to join and expand our research program. For example, the work includes mapping spatial heterogeneity in selected croplands under precision agriculture management and grassland sites under contrasting land-use intensity. The assessments will include field measurements and sampling, laboratory analyses, and data analyses including digital spectral data and ground truth measurements of soil properties (e.g., organic carbon, texture) and plant attributes (grain/biomass performance and community composition). Quantification and prediction of properties will underpin soil quality assessment and mapping. The work includes the use and development of geospatial and geomatics approaches (remote sensing, GIS, GPS) to sample, measure, model and explicitly map soil properties and plant responses across Alberta landscapes including croplands, grasslands and forest ecosystems. Field plot variability assessment and mapping at selected irrigated grasslands, drained croplands and fragmented boreal forest sites will also be subjects of study. The work involves activities with graduate and undergraduate students, technical assistants and other researchers. Our research group counts with experience and tools to conduct sophisticated procedures for determination of soil and plant data. Collaborative work will be also conducted with personnel from provincial and federal research agencies.

This post-doctoral appointment will be for at least one year, and potentially renewable for additional terms based on performance and funding.

We are seeking for candidates interested in this work.

### Key Qualifications

- PhD with solid knowledge of soils, plants, and spatial heterogeneity.
  - Proactive, flexible, dedicated, well-centered, responsible,
  - Strong numerical, statistical and computer skills,
  - Open to undertake novel scientific approaches (measurements and modeling),
  - Willingness to engage in complex data analyses and synthesis, and interpretation of findings,
  - Demonstrated skills and eager to complete literature reviews, original manuscript writing and publication process in peer-reviewed journals in English,
  - An intense desire to deliver/present/share results in public,
- A teamwork aptitude – ability to work independently and to organize activities with others.

### Sought-After Assets and Abilities

- Ability to propose and undertake innovative spatial heterogeneity approaches.
- Knowledge influxes from other related disciplines such as geography, topography, rangeland management, agronomy, biology and hydrology.
- Proximal and distal remote sensing data acquisition and analyses. Unsupervised and supervised classification techniques, spectral indexes, panchromatic sharpening.
- Software for mapping of soil properties and plant attributes at field and landscape levels. Geostatistics (Variogram and Kriging). Implementation of management zones delineation.
- Use of DGPS, DEM, and LiDAR data.
- A valid driver license and clean driving record/abstract (+2 years).
- Experience writing research proposals and technical reports for projects.

**Additional Information**

University of Alberta is consistently rated as one of the top 5 universities in Canada, and one of the top 100 universities worldwide. Located in Alberta's capital city, Edmonton (population of one million people), University of Alberta provides a dynamic mixture of a large research intensive university, urban culture and recreation. More than 39,000 students from across Canada and 144 other countries participate in nearly 400 programs and 18 faculties. Within the University, the Department of Renewable Resources consists of 30 faculty members, over 200 graduate students, numerous postdoctoral fellows and support staff, and offers significant research support through sophisticated laboratories and multiple field facilities.

**Website Links**

<http://www.rr.ualberta.ca>

[https://sites.google.com/a/ualberta.ca/agroecosystems\\_group/home](https://sites.google.com/a/ualberta.ca/agroecosystems_group/home)

**Keywords**

Soil, Plant, Vegetation, Mapping, Remote sensing, GIS, GPS, Geomatics, Modelling, Croplands, Grasslands, Forest, Linear disturbance.

**Timeline for beginning the position:** as early as January 2016, on or before April 2016, or until filled.

PhD Thesis must have been all done and deposited prior initiation of this job position.

**To Apply:**

Please e-mail CV, transcripts (scanned unofficial copy), a letter describing research experience and interests (one or two pages), a writing sample of scientific publication (preferably written by the candidate as a first author and published in peer-reviewed journal), contact information for three references to: Dr. Guillermo, Hernandez Ramirez (assistant professor and research group head), University of Alberta, Dept. of Renewable Resources, 751 General Services Building, Edmonton, Alberta, Canada T6G 2H1.  
email: [ghernand@ualberta.ca](mailto:ghernand@ualberta.ca)

**Closing date:**

20 November. The position will remain open until filled.

**We thank all applicants for their interest; however, only those individuals selected for an interview will be contacted.** I will available for interviews at ASA Minneapolis or via sky.

*The University of Alberta offers appointments on the basis of merit. We are committed to the principle of equity in employment. We welcome diversity and encourage applications from all qualified women and men, including persons with disabilities, members of visible minorities and Aboriginal persons.*