POSTDOCTORAL POSITION IN WATER-FOOD-ENERGY-ENVIRONMENT AND CLIMATE CHANGE SCIENCES

The University of Alberta invites applications for one or more postdoctoral research positions. Innovative and highly motivated candidates are sought to conduct research project funded by Alberta Biodiversity Monitoring Institute (ABMI) and Alberta Innovates-Energy and Environment Solutions (AI-EES): A multi-disciplinary and multi component project that aims to study "Impacts of changing water supply on wetlands in southern Alberta" through building an integrated Groundwater-surface water model of SSRB in Alberta. This research project aims to specifically study the dynamic interaction of ground water and surface water supply under changing climate; and represent the impacts on wetland viability and restoration success in the SSRB of Alberta.

Qualifications and Specific Duties
This project seeks for one PDF researcher, and the candidate is generally responsible for:

1. Develop an integrated ground water-surface water model (preferably with SWAT-MODFLOW) that allows modeling surface and ground water as linked resources in relation to changing climate, landuse, landform, geology, and management. Over exploitation of either surface or groundwater as linked resources will cause ground water/baseflow drawdown. Underestimation of the related processes in surface hydrologic models, can have severe consequences and significantly affects assessment of water supply-demand relationships in the future. To properly implement adaptation strategies, an improved surface water groundwater modelling structure must be developed and integrated into the surface water model.
2. Leverage data and maps that have been collected and qualified for inclusion/exclusion in the surface hydrologic model of Alberta (i.e., SWAT model) to best represent the surface hydrological processes in the province. Collection of other required data will be facilitated. A case study region will be selected in Alberta to run the linked SWAT-MODFLOW program in the region.
3. Apply the simulated water supply data (ground water-surface water) to assess viability of wetlands in Alberta under changing water and climate. Alberta's wetlands have been disappearing since late 1800s, and are sensitive to both water and land management practices. The project aims to assess water related risks and opportunities associated with management actions and adaptation measures that affect supply of water required for ecosystem services, with a specific focus on wetland preservation and restoration. To accomplish this, the researcher must consider the cumulative effects of natural processes (e.g., impacts of climate change and climate variability on surface water including blue-green water components and ground water) and anthropogenic factors (e.g., landuse change, regulation through dams, irrigation, and industrial development).

The successful candidates for this position will have to meet the following criteria:

- Candidate must have a doctoral degree in hydrology, water resources management, biogeochemistry, environmental engineering, environmental sciences, or a closely related field.

- Candidates should have a thorough understanding of watershed agro-hydrology, and integrated water system with a specific background on simulation of hydrological water balance, soil-plant-water processes in both surface and subsurface systems, climate change, climate variability, land management practices, and wetland restoration and policy in Alberta.
- Experience with development (coding) of process-based hydrologic modeling preferably with the SWAT-MODFLOW, large dataset compilation and processing, or alternatively with development of subroutines to complement process-based watershed models. Skills in GIS and statistical analysis are desirable.
- Applicants must have track record of success in publishing peer reviewed papers.

Applicants must have strong written and oral communication skills and be able to work both independently and collaboratively.

It is important to mention that all of the following projects (project 1-3; advertised separately) are inter-related, and collaborative outputs as well as project specific outputs are strongly expected:

- Water Related Risks and Opportunities to the Beef Industry in Alberta (Research Project 1)
- Adaptation to Changing Water in Alberta (ACWA) (Research Project 2)
- Impacts of changing water supply on wetlands in southern Alberta (Research Project 3)

Work Location and Conditions
- The jobs are full time, located at the University of Alberta, Edmonton, Canada, available for two years, with a possibility of extension
- Salary: depends on the candidate's skill set and the funding source

To Apply:
- Statement of research interest: what questions in job advertisement you find interesting and important, and why,
- as well how you think progress could be made.
- Curriculum Vita
- Letters of recommendation from three references

Applications must be sent to:

Contact Name: Dr. Monireh Faramarzi
Address: Department of Biological Sciences, University of Alberta
Email address: faramarz@ualberta.ca; CC to: greg.goss@ualberta.ca

Closing date:
Position open until filled.

We thank all applicants for their interest; however, only those individuals selected for an interview will be contacted.

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.