Two Ph.D. studentships in peatland carbon cycling and GHG emissions

Two Ph.D. studentships in Peatland carbon cycling and greenhouse gas (GHG) emissions are available at Memorial University of Newfoundland (Canada). The studentships are available fully funded for four years, starting immediately or as early as possible.

Your research topics will be defined under the following research programs: (1) studying the impacts of agricultural drainage on carbon cycling and GHG emissions in a boreal bog peatland, using both eddy covariance technique and static chambers; (2) examining the impacts of warming, and Nitrogen and Phosphorus fertilization on carbon cycling, GHG emissions, vegetation composition changes and microbial dynamics in a boreal bog peatland. Please email jwu@grenfell.mun.ca if you want to know more about these field experiments.

You should have excellent oral and written communication skills in English, and the appropriate academic background, for example, in soil science, ecology, earth system science, physical geography, hydrology, biogeochemistry, forestry ecology, and micrometerology, and other suitable subjects. You are required to regularly visit the sites year-round to collect gas samples from static chambers, or maintain the proper function of EC tower, analyze the sample in the lab, write high-quality manuscripts for peer-reviewed publication in the high impact journals, presentation in international/national conferences, and other requirement for a Ph.D. degree.

If you are interested in these positions, please send a letter of motivation/research statement, evidence of English Proficiency (if required for international students), up-to-date curriculum vitae, unofficial transcripts, and a copy of any publication (if available) to Dr. Jianghua Wu at jwu@grenfell.mun.ca with subject "PhD-Field experiment". Reviewing is started immediately after your files are received. Only the potentially selected candidates will be contacted for further discussions. Please see more details about Dr. Wu's group at https://fac.grenfell.mun.ca/jwu/SitePages/Home.aspx

Two Ph.D. studentships in modeling peatland carbon cycling and GHG emissions

Two Ph.D. students are available to further develop and apply the McGill Wetland Model (MWM), which has coupled with Holocene Peatland Model (HPM), a cohort peatland model that can dynamically model the peat properties of each peat cohort, and incorporated the microbial dynamics and N, P cycling in peatlands, to fully assess the potential and responses of peatlands to climate change, human disturbances and restoration.

The following aspects are the potential candidates to be incorporated: (1) a new soil hydrology module in MWM that is fully coupled with the C dynamics of peatlands to simulate soil temperature and moisture, and water table depth, which will be the key hydrological variables in peatlands to regulate the C and GHG dynamics and are likely to change with disturbance; (2) a new module of CH_4 and N_2O cycling and DOC in MWM for peatlands that will function with natural as well as disturbed and restored peatlands; (3) a vegetation dynamics module in MWM to simulate the changes/shifts of vegetation composition in peatlands under climate change, human disturbance and restoration; (4) evaluating the newly further developed and adapted MWM at a suite of natural peatland sites and disturbed peatland sites and restored peatland sites; and (5) the newly developed and adapted MWM will be used to simulate how natural peatlands, disturbed peatlands, and restored/reclaimed respond to climate change using difference scenarios of climate changes in the next 100 years.

You are required to have: excellent oral and written communication skills in English; appropriate academic background, for example, in soil science, ecology, earth system science, physical geography, hydrology, biogeochemistry, forestry ecology, and micrometerology, and other suitable subjects; strong numerical analytical skills; experience with process-based ecosystem modeling; A good understanding of peatland/wetland biogeochemistry, wetland/peatland hydrology and biophysical drivers of peatland/wetland processes; experience in computer programming (for example, Fortran, or C, C++) preferred. You are also required to write high-quality manuscript for peer-reviewed publication in the high impact journals, presentation in international/national conferences, and other requirement for a Ph.D. degree.

The starting date for these positions are Sept. 2023, but earlier starting date is also possible, upon discussion.

If you are interested, please send a letter of motivation/research statement, evidence of English Proficiency (if required for international students), up-to-date curriculum vitae, unofficial transcripts, and a copy of any publication (if available) to Dr. Jianghua Wu at jwu@grenfell.mun.ca with subject "Ph.D. studentship". Reviewing is started immediately after your files are received. Only the potentially selected candidates will be contacted for further discussions. Please see more details about Dr. Wu's group at https://fac.grenfell.mun.ca/jwu/SitePages/Home.aspx