**UCL**

**Université catholique de Louvain**

3 open PhD positions:

**Soil organic matter dynamics and GHG fluxes in relation to landscape scale processes:**

**linking process understanding to regional scale carbon mass-balances**

3 PhD positions are available within the project « Soil organic matter dynamics and GHG fluxes in relation to landscape scale processes: linking process understanding to regional scale carbon mass-balances ». This is a collaborative project (2009-2014) between the Department of Geography (B. van Wesemael and K. Van Oost) and the Department of environmental sciences and land use planning (S. Lambot, M. Vanclooster and P. Bogaert) at the Université catholique de Louvain, Belgium. The positions involve a 4 year PhD program and are available from September 2009. They will remain open until suitable candidates are found. Applications should include the names and addresses of three referees. For further information on the research groups go to our websites (www.uclouvain.be/geo and http://www.uclouvain.be/mila.html.

**PhD1: Characterization and modeling of emergent spatial variability in soil organic matter storage and key soil properties at the regional scale.** We are seeking to appoint an enthusiastic PhD-researcher to develop and integrate remote sensing, geomorphological and soil analysis techniques to monitor and model the spatial and temporal variability of soil carbon pools at large spatial scales. A key area of interest will be the linkages between lateral fluxes of C in relation with sediment transport and the spatial variation in carbon storage at multiple spatial scales. The measurements include radioisotopes for erosion rates and airborne imaging spectroscopy for high resolution/full coverage sampling at larger spatial scales. The Phd will be responsible for helping to coordinate the field campaign in Belgium and will lead the data analysis, modelling and preparation of publications. The successful candidate will be an enthusiastic physical geographer, earth scientist or engineer. A commitment to field-based research is essential. For information and application contact Kristof Van Oost (kristof.vanoost@uclouvain.be) or Bas van Wesemael (Bas.vanwesemael@uclouvain.be) or go to our website

PhD2: Characterizing and modeling soil carbon dynamics from the laboratory to the hillslope scale using advanced hydrogeophysical methods.

We are seeking to appoint an enthusiastic PhD-researcher to characterize and model soil carbon response at the local and hillslope scales in terms of soil physical attributes (soil moisture, temperature). The characterization at the local scale will be based on detailed and controlled column experiments in the laboratory, which will be subject to different hydro-thermal regimes. Laboratory and hillslope scale characterization will be based on advanced hydrogeophysical techniques such as GPR (Ground Penetrating Radar), EMI (Electromagnetic induction), ERT (Electrical Resistivity Tomography), FDR (Frequency Domain Reflectometry)and near surface thermometry. Collected data will be processed with advanced geophysical inversion and data mining tools. Data will allow to calibrate/validate a hillslope scale physically based model of C pool response. The Phd will be

responsible for the execution of the experimental and modeling program and publish the obtained results jointly with members of the project team. The successful candidate will be an enthusiastic earth scientist or engineer (geophysisist, agricultural and environmental engineer, civil engineer, etc.). A commitment to experimental and modeling work is essential. For information and application contact Marnik Vanclooster (marnik.vanclooster@uclouvain.be) or Sebastien Lambot (sebastien.lambot@uclouvain.be)

**Ph.D. 3 : Coupling the lateral fluxes of sediments, carbon and water along the hillslope : towards a characterization of the spatial pattern of CO2**

We are seeking to appoint an enthusiastic Ph.D. researcher to model the distribution of sediment, water, carbon and energy fluxes along the hillslope since the hillslope is often an elementary unit in large scale terrestrial ecosystem models. As these masses and energy fluxes are closely coupled, they induce structured spatial and temporal patterns with non negligible attached uncertainties. A key area of interest will be the characterization of these linkages and uncertainties in order to obtain a reliable model at the hillslope level, with possible extensions at the regional level. The Ph.D. will lead the statistical/physical data analysis and modeling ; he/she will also be responsible for the preparation of publications. The successful candidate will be an enthusiastic physicist, civil/environmental engineer, bioengineer or equivalent diploma. Sound knowledge in physical and statistical modeling for environmental sciences is a clear benefit. For information and application contact Patrick Bogaert (patrick.bogaert@uclouvain.be).