



The CCB-bulletin, no 9, 9 September 2003
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CCB Wageningen-UR



Land use, Climate, Adaptation, Mitigation



1. CCB SEMINAR: the dominant role of plant species on soil carbon and nitrogen dynamics (17 september 2003)

When? Wednesday 17 September 2003. 16.00 hrs

Where? At College room C12, The Laboratory of Soil Science and Geology of Wageningen University, Duivendaal 10, Wageningen.

More info: <http://www.cbs.umn.edu/eeb/researchassociates/researchassociates.html>

Organised by: The Laboratory of Soil Science and Geology of Wageningen University is proud to announce the following seminar:

“The dominant role of plant species on soil carbon and nitrogen dynamics affected by elevated CO₂ and nitrogen deposition”.

By: Dr.ir. Feike Dijkstra (from Department of Ecology, Evolution and Behavior, University of Minnesota, St. Paul, USA):

What are the feedbacks among litter quality, decomposition dynamics of soil organic matter, and rates of nutrient uptake, affect patterns of nutrient cycling and plant composition? These feedback mechanisms between plant and soil play an important role in how ecosystems react to global change, such as elevated atmospheric CO₂ concentration and N deposition. Dijkstra is interested in how these feedback mechanisms work in different terrestrial ecosystems both under ambient and changing environmental conditions. Currently he is involved in two studies: 1) a study looking at soil C and N dynamics affected by elevated CO₂, N fertilization, and plant diversity, and 2) a study looking at N cycling and losses affected by fire and vegetation.



Selected Publications

Dijkstra, F.A., M.M. Smits. 2002. Tree species effects on calcium cycling: the role of calcium uptake in deep soils. *Ecosystems* 5:385-398.

Dijkstra, F.A., N. van Breemen, A.G. Jongmans, G.R. Davies, G.E. Likens. 2002. Calcium weathering in forested soils and the effect of different tree species. *Biogeochemistry*, in press

Dijkstra, F.A. 2002. Calcium mineralization in the forest floor and surface soil beneath different tree species of the northeastern US. *Forest Ecology and Management*, in press.

Aber, J., E.S. Bernhardt, F.A. Dijkstra, R.H. Gardner, K.H. Macneale, W.J. Parton, S.T.A.

Pickett, D.L. Urban, K.C. Weathers. 2002. Standards of practice for review and publication of models - summary of discussion. In: C.D. Canham, J.J. Cole, W.K. Lauenroth (eds.), *The role of models in ecosystem science*. Princeton University Press.

Dijkstra, F.A., C. Geibe, S. Holmström, U.S. Lundström, N. van Breemen. 2001. The effect of organic acids on base cation leaching from the forest floor under six North American tree species. *European Journal of Soil Science* 52:205-214.

2. RMNO workshop: Hoe bevorder je de economie van ontwikkelingslanden- sociaal ethisch beleggen -

When? dinsdag 30 september 2003

Where?

Het RMNO-café

Café open vanaf 16.30 uur. Plaats: r m n o, Emmapark 6 (zijstraat Bezuidenhoutseweg t/o ministerie EZ) Den Haag.

Spreker: Bart Jan Krouwel

(raadslid RMNO en directeur Directoraat Duurzaamheid en Maatschappelijke Innovatie Rabobank Nederland)

S.v.p. vooraf aanmelden: 070 31 55 210 (ook voor informatie).

3. Vacancy: Post-doctoral Position Carbon/Nitrogen interactions in the soil

Location:

UMR ECOFOG, Campus Agronomique, BP 709 97310 KOUROU, Guyane Francaise
(French Guiana, South America)
Phone: 594 594 32 93 00
fax: 594 594 32 43 02
Website <http://kourou.cirad.fr/umr/>)

Administrative status and salary conditions:

Position is offered by the French public research institute INRA (Institut National de la Recherche Agronomique) for 2 years with the possibility of 1-time renewable, starting by the end of year 2003. Monthly net salary will follow INRA's salary grids, i.e. around 2700 euros for a young scientist, including a 40% prime to cover for the increased life costs in French Guiana, but excluding French annual income tax (about 10%). The salary will be modulated (increased) with regards to the research experience of the candidate. No age limit is considered.

Required qualification:

PhD in Plant Biology or Ecology. Background in ecophysiology and/or soil microbiology. Strong affinities to work in the tropics and in the field (tropical rainforest). Number and ranking of publications of the candidate will be a major criteria for the selection. Working language can be either English or French.

Application:

Applicants should submit a cover letter with a detailed CV before September 30th 2003 to:
Meriem Fournier (fournier@engref.fr)
UMR ECOFOG, Campus agronomique, BP 709, 97310 KOUROU, Guyane francaise
(French Guiana)

The objectives of the proposed post-doctoral position will be to evaluate the relationships between tree functional types, soil-N mineralisation, and the consequences for the different soil CO₂ respiratory components. The ultimate objective is to provide a functional basis to the spatial integration of the CO₂ respiratory fluxes (and other fluxes eventually) from the soil to the ecosystem level that is different from the purely statistical and correlating approaches commonly proposed. The hypothesis to test is whether the processes determining soil CO₂ respiratory fluxes present a spatial structure associated with the assembling of the different tree functional types with regards to N-acquisition. This approach more largely inscribes in the analysis of the relationships between biodiversity and the biogeochemical functioning of the tropical rainforest ecosystems.

The aims will be to develop a functional ecology approach to the soil compartment, being mainly related to the tree or inter-tree level, but which will be also coupled to a "bottom-up"-like approach from tree to community in collaboration with research colleagues within the Ecofog UMR, for a large set of processes and indicating variables, and especially for soil respiration processes. Methodological tools to be used will be (i) nitrogen and soil organic matter analysis, and their dynamics (namely isotope approaches ¹³C and ¹⁵N), and (ii) the analysis of the soil respiratory CO₂ fluxes, especially the determination of their different components (autotrophic and heterotrophic) using stable isotopes.

More precisely, the working program will include:

- Evaluation of the quantity and quality of tree species litter. Spatial analysis taking into account the location of the tree species
- Characterisation of the speed of litter decomposition with regards to C/N ratio.
- In situ characterisation of organic matter decomposition using isotopic tools
- Temporal and spatial variability of soil respiratory CO₂ fluxes.

- Analysis of the mixing of the different CO₂ sources (autotrophic/heterotrophic; litter/soil, Keeling plots)
 - Evaluation of the influence zone of a tree on the nitrogen mineralisation.
 - Relationship between soil CO₂ fluxes and the quantity and quality of N in the soil.
- These studies are integrated to the Guyaflux research program (CO₂ and H₂O fluxes in the tropical rainforest) and linked to the following approaches:
- Characterisation and modelling of the temporal and spatial variability of soil respiration (D EPRON, V FREYCON, D BONAL and E MARCON)
 - Characterisation of the interspecific diversity of N-acquisition traits by trees in relationship with light use and the assembling in the ecosystem of the different functional types (JC ROGGY)
 - Studies on soil mineralisation processes and associated microbial communities (AM DOMENACH)

4. Vacancy: Scientist for software framework for high-resolution terrestrial biogeochemical and biometeorological modeling

Position Available: Immediately

Applications will be reviewed at the end of September, 2003. See complete job description and apply online at:

http://www.fin.ucar.edu/hr/careers/uco_jobList_ext.cfm (job # 3257).

Basic Function of Job:

Work closely with a team of other scientists and software engineers on a newly-funded project to develop and implement a state-of-the-art model of terrestrial carbon, nitrogen, and water cycles over large regions at high resolution. The project funding this position will produce a software framework for end-to-end research-quality model applications, including the interpolation of surface weather observations, configuration of terrestrial biogeochemistry model experiments, deployment of experiments through Grid Compute architecture, post-processing and analysis of model results, integration with existing remote sensing and in situ data systems, and visualization of simulation results. This position will have primary responsibility for ensuring that the core scientific components of the simulation system are integrated effectively within the larger software framework.

Responsibilities [and % time devoted to each]:

- 1) Develop a thorough knowledge of the two core science models. These are:
 - a) a surface weather interpolation model driven by daily observations from operational networks (the Daymet model), and b) Biome-BGC, a fully prognostic model of carbon, nitrogen, and water cycles in vegetation and soil. The project PI is the principal author of the current versions of these models, and will provide extensive one-on-one training. Preference will be given to candidates with experience in the development and application of terrestrial biogeochemistry and/or biometeorology models. [50% time in year 1].
- 2) Work closely with PI to define the user interface requirements for the software framework that will integrate the end-to-end operation of the simulation, analysis, and visualization components of the modeling system [50% time in year 1].
- 3) Work with PI and others to design and implement data connections between the modeling system and existing data distribution systems, including NASA's EOS Data Gateway for access to remote sensing products from the MODIS sensors, and the FluxNet data archives at Oak Ridge National Laboratory DAAC for access to eddy covariance observations from the FluxNet tower sites. [40% time in year 2].
- 4) Work closely with a Software Engineer to implement and evaluate the user interface components of the modeling system. Primary responsibility for scientific programming will be

with this position, and will include the development of tools for analysis and visualization of simulation inputs and outputs. [40% time in year 2].

5) Design and implement modeling experiments that address current carbon cycle research issues and that exercise the end-to-end functionality of the modeling system developed under this project, in collaboration with PI. Provide training for and coordinate interactions with outside research groups who have volunteered to beta-test the modeling system. This will involve week-long travel for on-site training, around 2-3 such trips in the final year of the project, some of which may involve international travel. [80% time in year 3]

6) Assist in preparation of results for publication. [20% time in years 2 and 3].

http://www.fin.ucar.edu/hr/careers/uco.cfm?do=jobDetailExt&job_ID=141

5. Ratificatie Kyoto broodnodig

Bron: Milieudefensie via www.milieuactueel.nl

Datum: 8 september 2003

Milieudefensie heeft vanmorgen in Den Haag een petitie overhandigd aan de ambassadeur van Rusland. Milieudefensie, partnerorganisatie van Friends of the Earth, roept de Russische regering op het Verdrag van Kyoto zo snel mogelijk te ratificeren. Aangesloten Milieuorganisaties van Friends of the Earth in Duitsland, het Verenigd koninkrijk, Italië, Luxemburg, Noorwegen en Denemarken hebben op een zelfde manier aandacht gevraagd voor een spoedige bekrachtiging van het klimaatverdrag. De oproep wordt gedaan aan de vooravond van het nieuwe zittingsjaar van het Russisch parlement.

Om de eis kracht bij te zetten, heeft Milieudefensie een grote ijsberg voor de ambassade neergezet. Het ijs staat symbool voor de smeltende delen van de Siberische permafrost door de opwarming van de aarde. Als de temperatuur op aarde blijft stijgen, zal Rusland te kampen krijgen met overstromingen. "Rusland is aan zet", vertelt Luuk Heijlman van Milieudefensie. "Niet alleen om hun eigen land te beschermen tegen de gevolgen van klimaatverandering, maar de hele wereld."

Volgens Milieudefensie en Friends of the Earth is het cruciaal dat Rusland het klimaatverdrag onderschrijft. In juni dit jaar kondigden klimaatwetenschappers van de World Meteorological Organisation een recordtoename van extreme weersomstandigheden aan, zoals tornado's droogtes en overstromingen. "Sindsdien hebben we een hittegolf gezien die bijna het hele noordelijk halfrond in z'n greep hield en tot vele duizenden doden heeft geleid, om nog maar te zwijgen over de economische schade", aldus Heijlman. "Dergelijke extreme weersomstandigheden zullen toenemen naarmate het klimaat verder verandert. Het Verdrag van Kyoto is een noodzakelijke eerste stap om klimaatverandering een halt toe te roepen."

In het Verdrag van Kyoto verplichten industrielanden zich tot een beperking van de uitstoot van broeikasgassen (CO₂) met gemiddeld 5 procent ten opzichte van 1990. Tot nu toe hebben 113 landen het verdrag ondertekend. Het verdrag treedt automatisch in werking als Rusland ondertekent. "In Kyoto is afgesproken dat het verdrag in werking treedt als alle landen bij elkaar opgeteld verantwoordelijk zijn voor 55 procent van de wereldwijde CO₂ uitstoot. Met Rusland erbij wordt die norm gehaald. Het zou van wereldleiderschap getuigen, als Rusland het verdrag ratificeert", aldus Heijlman

Bron: Milieudefensie

6. Leemans new Professor Environmental Systems Analysis at Wageningen University (1 september 2003)

Prior before his new position at Wageningen University Prof. Dr. Rik Leemans was a senior scientist and leader of the multidisciplinary IMAGE-Project of the Dutch National Institute of Public Health and the Environment (RIVM) and parttime professor in integrated land-use modelling at Wageningen University. He is also member of the board of CCB Wageningen-UR. He is active in directing several core projects of International Human Dimension of Global Change Programme (IHDP) and International Geosphere Biosphere Programme (IGBP), is a lead author of the Intergovernmental Panel on Climate Change (IPCC), and is member of several (inter)national committees concerned with various aspects of global change.



His research aims to determine the vulnerability and responses of eco- and agrosystems to environmental change (including climate change), to develop appropriate models and other tools to accomplish this and to evaluate strategies to mitigate negative effects. The results of his research are often directly used to support the development and evaluation of (inter)national climate-change policies.

His early research at Uppsala University (Sweden) emphasised the successional dynamics and structure of boreal forests. He then moved to a research position at the Biosphere Project of the International Institute of Applied System Analyses (IIASA, Austria). Here he developed a simulation model for the circumpolar boreal forest biome and used it to assess the impacts of climate change on these ecosystems. Since then his research has excelled into modelling global land cover patterns and incorporating land-use aspects in changes therein. His main research interests concern biodiversity, vegetation structure and dynamics, land-use and cover change, C-cycle, bio-energy and global environmental databases. These interests have lead to the development of integrated modelling approaches of the IMAGE 2 model. This innovative model explicitly incorporates the anthropogenic influences on changing land cover patterns on greenhouse gas emission from the terrestrial biosphere.

More information on one (ATEAM project) of several on-going projects in which Leemans is involved:

Indicators for quantifying and evaluating change in ecosystems' goods and services under global change

Ecosystems provide many vital goods and services for people and society. Examples of these goods and services include food and fibre, water resources, carbon sequestration and recreation. The future capability of ecosystems to provide these goods and services is determined by changes in socio-economic characteristics, land use, biodiversity, atmospheric composition and climate. Collectively, these changes are referred to as "global change". Ecosystem's goods and services are not well defined and it is therefore not yet straightforward to quantify them.

One of the aims of the ATEAM project is to define the goods and services related to a specific region (e.g. mountain areas, a national park, a province or country) or a specific sector (e.g. agriculture, forestry, or nature conservation), and to develop indicators that can be used to improve the quantification of goods and services.

The ATEAM (Advanced Terrestrial Ecosystems Analysis and Modelling) project is an EU-funded collaborative project with 12 partners within Europe, that aims at quantifying vulnerability of ecosystems to different aspects of global environmental change (Web site address: www.pik-potsdam.de/ateam).

Colofon:

The CCB-Bulletin is a news bulletin for researchers in the field of global environmental change from Wageningen University and Research Centre, as well as for people who are interested. The bulletin is provided by the Climate Change and Biosphere Research Centre (CCB - Wageningen UR). This bulletin board is intended for information exchange, like announcements of workshops, conferences, job opportunities and education courses in relation to global change research. It will be sent to you every 3 weeks, in case of vacancies we may use it ad-hoc.

Would you like to add a news item or a change in E-MAILADRES or you want to be removed from this newsbulletin ?

Please, contact us by e-mail: Jeroen Veraart: jeroen.veraart@wur.nl

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