

Meet the partners

Dr Jyrki Jauhianen, University of Helsinki

My Biology and Chemistry studies started in the University of Joensuu (Finland) in 1985. In the late 1980's I started my work on peatlands as a research assistant - summer jobs in North Carelia near Mekrijärvi research station. Peatland related issues became my major research interest and my exercise involved carrying (hardly) portable gas flux devices. An MSc followed with a thesis on Sphagnum fuscum on various water table depths and CO₂ concentrations. A project funded by the Academy of Finland between 1990-95 gave me the opportunity to continue researching peatlands and work on a PhD. My PhD thesis title was Response of Sphagnum mosses to increased CO₂ concentration and nitrogen deposition and I defended it 1998.



Jyrki in tropical mode

After obtaining my PhD, the whole world was open for other activities outside peatlands (I thought). However, one day my former supervisor, Dr Harri Vasander, asked, "How about working at the equator - palm trees, beaches, friendly people just waiting in tropical peatlands and there is a few month's salary available too?" I knew Dr Jack Rieley was running a recently established project and was behind this opportunity. I knew him from past workshops and long walks in Britain's Southern Pennines, where he told me about his first studies on tropical peat. (As an aside, I can tell you that I had actually started writing a letter to Jack about my interest in volunteering as a peat corer in Kalimantan in his first tropical peat project, but I got seduced to Lund University (Sweden) as there was funding available for studying temperate peat carbon.) Anyway, after about 1-minute pondering the available work options for a fresh PhD (such as a part-time job cleaning Helsinki's public parks), I was ready for the challenge. The first project (EUTROP) was a seed to another project and my appetite for tropical peat studies grew with the continuous challenges in getting funding. Now a decade in and the tropical peat is almost gone.

In the tropics I specialized in carbon cycle studies. At first, the studies included greenhouse gas emission measurements in undrained tropical peat swamp forest in Sebangau catchment (now the Natural Laboratory area) and continued on drainage affected sites (agricultural and degraded peatlands) in the STRAPEAT project. After some early ordeals, the Academy of Finland became convinced of the global importance of tropical peat and the severe impacts of drainage threatening the tropical peat carbon store and finally we got funding for the first Finnish scientific program on tropical peat. KEYTROP program started studies on experimental tropical peat restoration in the Ex-Mega Rice Project area and later joined forces with the EU-funded RESTORPEAT program. At the end of KEYTROP, the Academy of Finland continued financing work through TROPEASS. Large areas of tropical peatlands in SE Asia are formed over dangerous pyrite soils and these mineral soils will be largely activated, as the peat water table reaches mineral soil due to peat oxidation and due to fires in drained areas. These exposed 'acid sulphate soils' react with oxygen and form sulphuric acid, which causes extremely low pH in water and dilutes toxic heavy metals to the environment. TROPEASS studies interaction between tropical peat and acid sulphate soils. At present my work includes duties as research coordinator in the TROPEASS project, research scientist in the APRIL-company funded SBMSP and EU-funded RESTORPEAT and CARBOPEAT projects.

A large body of data has been collected over the past decade in various projects and CARBOPEAT is an important international collaboration that disseminates this information for decision takers, industry and others interested in tropical peat. My primary work activities in Indonesia and Vietnam are connected to C-fluxes in natural forests as well as reclaimed and degraded peatlands in addition to studies on ecosystem C-dynamics prior to and after hydrological restoration of overdrained peat areas.

Further information on University of Helsinki activities in tropical peat can be found in addition to CARBOPEAT web pages from <http://blogs.helsinki.fi/jyjauhia/>.

Suo on muutakin kuin turvetta! (Peatland is more than just peat!)

www.carbopeat.org

Carbon–Climate–Human Interactions in Tropical Peatlands:
Vulnerabilities, Risks & Mitigation Measures

CARBOPEAT News

Issue 4 June 2008 IPC Special Edition



A European Union (EU) funded project involving partners from both the EU and Southeast Asia. The aim is to promote better understanding and awareness of the issues surrounding carbon-climate-human interactions in tropical peatlands.



Welcome to this special edition of the CARBOPEAT newsletter published to coincide with the International Peat Society's 13th International Peat Congress in Tullamore, Ireland. As part of the Congress there will be a number of CARBOPEAT related activities including a special session on tropical peatland on Tuesday 10th June focussing on carbon-climate-human interactions. On Thursday 12th June there will be a general session on tropical peatland in which the most recent research information will be presented. If you cannot make it to the Tullamore session then see the website (www.carbopeat.org) for details of the next CARBOPEAT event in the beautiful city of Kuching.

In this issue of the *News*, Dr Sarah Jewitt from the University of Nottingham introduces some practical suggestions for producing income for local communities in tropical peatlands areas. Dr Henk Wösten, from Alterra, outlines a new report on the sustainability of palm oil production in Kalimantan. Prof Jack Rieley, also from University of Nottingham, reports on a number of meetings he has recently attended on tropical peatland issues. The back page is given over to Dr Jyrki Jauhianen, from the University of Helsinki, to introduce himself, his background and his current work in the tropical peatlands of Southeast Asia.

As always I welcome suggestions and contributions for future editions.

Dr Chris Banks, Leicester, June 2008

Wise use of tropical peat in local communities

In order to promote the 'wise use' of tropical peatlands and mitigate past and future damage to peat swamp forests and their associated carbon and hydrological systems, rehabilitation projects must be conducted in collaboration with and with support from local communities. This is because communities who currently depend upon on degraded peat swamp forests for meeting their livelihood needs may destroy restoration efforts that that they perceive not to be in their interests.



Cooking with biogas

Examples of how they may do this include illegal forest felling, the use of fire to

promote agriculture in degraded forests, or the destruction of dams designed to slow peatland drainage. Significant and appropriate incentives are therefore needed to persuade local communities to substitute forest degradation-based income earning opportunities with alternative livelihood opportunities that have limited impacts on peat swamp forest ecology (and long term sustainable livelihoods).

Unfortunately arable agriculture on clear-felled peat areas is one of the least sustainable land uses due to the nutrient deficient and frequently toxic nature of the soils, the impacts that cultivation has on peat subsidence/shrinkage and the increased risk of erosion and fire that it causes (Rieley and Page, 2005; Jauhiainen and Vasander, 2007). But as many people already live (or have been settled) on peatlands, it makes sense to use 'wise use' principles to minimize the impacts of peatland agriculture and guide local people in how to generate more sustainable livelihoods from it. This is particularly so for areas like the ex-Mega Rice Project area that have already been deforested and drained, because if the economic value of such peatlands can be raised for local people, 'the misuse of these areas by burning caused by careless use of fire could be prevented' (Silpola: 2007:4).

Vermiculture

Vermicomposting could offer opportunities for increased homestead garden production as well as providing a source of income for local people. Using simple terra-cotta vessels, certain species of worm (*Eisenia foetida*, *Eudrillus uginiae* or *Perionics excavatus*) reproduce rapidly and can be reared for profit, whilst the compost that they produce is excellent for growing vegetables in. In addition, the 'vermi water' that drains out of the terra cotta vessels can be collected for use as a fertiliser and as a natural insecticide. Over a period of 35 days, the number of worms can increase from 100 to 2500 which in India gives an income of around €20 and the compost in which the worms are reared can be sold for around €1 for 8 kg: a significant income for resource-poor communities with few alternative livelihood opportunities.



Vermicompost containers

Nutrient value of vermi-compost

N	-	0.4-1.79
P	-	1.8-2.1
K	-	0.32-1.96
pH VALUE : 6.4-7		

Biogas

For more remote peatland communities with a high level of dependence on fuel wood for cooking, community-based forest rehabilitation schemes could investigate opportunities for providing alternative energy household energy sources such as small biogas plants fed by kitchen waste and/or animal manure. A 1 cubic meter plant can treat 4-5 kg of kitchen waste daily and provide around one and a half hours of cooking gas per day and a liquid slurry that makes an excellent plant fertiliser. In addition to providing a smoke-free and convenient fuel as well as a household waste disposal system, such units also significantly reduce dependence on peat swamp forests as a fuel source.



Small biogas units process 0.5-2 kg of kitchen waste daily and cost under €45

Additional health benefits include reduced respiratory problems (caused by indoor air pollution associated with the burning of biomass fuels) and reduced gut-related infections (as a result of better waste management), especially where biogas units are directly linked to household latrines.

At a larger scale, such units can be used for municipal sewage treatment and electricity generation whilst providing good quality slurry for agricultural purposes. In Cochin, India, a small NGO (Welfare Services Ernakulam) has built a latrine-linked biogas plant comprising of two 35 cubic meter tanks that treats the waste of 2000 people and provides power for the incineration of hospital waste. Such systems are worth investigating as alternative sources of energy generation, waste management and fertiliser production for more remote peatland communities.

Dr Sarah Jewitt, University of Nottingham, UK

Potential for further oil palm cultivation in Kalimantan

There is burgeoning global demand for palm oil and its production provokes debate on environmental and social impacts. This is especially true for Southeast Asia including the Indonesian areas of Borneo. Indonesia is an important producer of palm oil with an increasing share of the market and the associated increasing production is achieved mainly through clearing new areas.

BUT are the new areas to be developed suitable for sustainable plantations?

At the request of the Dutch Ministry of Agriculture, Nature and Food Quality (LNV), ISRIC–World Soil Information, Alterra and Plant Research International, have assessed the biophysical land suitability for production of oil palm in Kalimantan. In their report, the scientists concluded that about half of Kalimantan may be biophysically suitable for oil palm cultivation. The soils are acidic and infertile, hence, they are unsuitable for most food crops but are suitable for oil palm.



Transporting of harvested oil palm fruits

The report suggests from the viewpoint of physical suitability and ecological sustainability, an increase in oil palm production should be based on intensification of the present oil palm estates and expansion on already degraded areas, rather than clearing natural forest. This is especially relevant for (virgin) peat areas where development is unsustainable because of disturbance of the peat ecosystem, increased fire risk and associated fluxes of greenhouse gases.

The complete report can be downloaded from www.isric.org/isric/webdocs/docs/ISRIC_Report_2007_01_web.pdf

Dr Henk Wösten, ALTErrA, The Netherlands

Recent meetings

Prof Jack Rieley (University of Nottingham) has attended several meetings over the last few months at which he spoke about restoration, wise use and carbon fluxes on tropical peatland under different land uses.

1. In October/November he attended the 'Technical Workshop on Minimizing Impacts of Palm Oil and Biofuel Production in SE Asia on Peatlands, Biodiversity and Climate Change' in Kuala Lumpur, Malaysia that was organised by the Global Carbon Project and Global Environment Centre. 15 technical presentations were made and three working group sessions were held on: the nature and options for reducing Greenhouse Gas Emissions from drained peat; best management practices for palm oil/biofuel production on peatland; and options for restoration and utilisation of degraded peatlands and associated biodiversity.
2. Following this he joined a workshop held in the CIMTROP offices at the University of Palangka Raya, Central Kalimantan on "priorities for restoration of peatland in the former mega rice project area in Central Kalimantan, Indonesia: Biodiversity, carbon, fire, poverty and water management".
3. 9-11 April 2008 – meetings in New York at the invitation of the Environmental Paper Network of leading experts on the Indonesian pulp and paper sector with corporate consumers, financial institutions and others to provide a forum for information exchange and discussion on emerging issues associated with the Indonesian pulp and paper sector. Jack presented a paper entitled "High Value, High Cost – Climate Impacts of Deforestation associated with Pulp & Paper Sector in Indonesia" at a Round Table meeting attended by 30-40 pulp and paper sector investors and buyers informed and interested in engaging on issues related to plans for Pulp and Paper expansion in Indonesia. The official proceedings are available at www.environmentalpaper.org/indonesiaroundtablesummary.htm.

In addition, Jack addressed a meeting on 10th April in the offices of the investment bank JP Morgan Chase, a major financier of pulp and paper projects globally. On 12th April he went to Washington DC to address a meeting organised by WWF on similar topics. This was attended by staff of WWF, US State Department and USAID. Further details of the first 2 meetings can be found at www.geog.le.ac.uk/carbopeat/unottmeetings.html.