IMCG Bulletin: April 2014

INTERNATIONAL MIRE CONSERVATION GROUP

www.imcg.net

Word from the Chair

Dear mire friends

Our Bi-annual General Assembly is fast approaching in July 2014. This year registrations (for the 1st time) were online only. We experienced some problems with the system and had an unexpectedly slow registration rate. We have therefore extended the registration deadline (see announcement below). Another factor is that various members have asked about the situation in Belarus in the light of what is happening in Ukraine. I have discussed this matter at length with Hans Joosten, as a person with much experience and activities in Belarus. His interpretation is as follows:

"The current conflict in Ukraine that has long been smouldering is a geopolitical conflict between "west" and "east" in a country with many political and cultural contrasts. This situation does not apply to Belarus. Belarus clearly belongs to the "east". The country has very good connections to Russia, which is shown by the fact that people with Belarussian nationality have – as the only nationality in the world - a visa-free and unlimited right of entry to the Russian Federation.

Belarus is no democracy, indeed, but living, working and travelling conditions are very safe. We from Greifswald have many projects and contacts in the country and I organize every year a student excursion to Belarus – also this year in June. If people are in doubt about the situation in Belarus, let them consult the travel advices on the websites of their Foreign Offices."

As IMCG we cannot restrict our activities to completely safe and "right" countries as our sphere of influence would indeed end up very small. People out there (especially our members) need our support to conserve mires everywhere. However, safety is important to all of us and our colleagues in Belarus are also instructed to make sure we travel and visit safe places. Following this principle, recent IMCG field symposia in Georgia and Armenia (2009), as well as Ecuador and Columbia (2012) had no unfortunate incidents.

We therefore encourage members to, **as soon as possible**, make use of the functional web based online registration at http://www.imcg.net/pages/events/belarus-2014.php. Please remember to also fill out the verification code at the end of the page.

On a personal note: This April was the 20th year of democracy in my own country, South Africa. Many IMCG members both in and outside South Africa have contributed to this positive change in various ways. The 2004 IMCG Field Symposium (10 years ago) in South Africa and Lesotho (still a Kingdom) meant a lot to mire conservation in southern Africa. I trust IMCG members will continue with this noble tradition to support fellow colleagues wherever they might be: See you in a mire in Belarus!!

Contributions for the IMCG Bulletin can be sent to Piet-Louis Grundling - peatland@mweb.co.za

REGISTRATION DEADLINE EXTENDED: 23 May 2014 - IMCG 2014 Field Symposium, Congress and General Assembly, Belarus, July 13-27, 2014.

The deadline for the IMCG 2014 Field Symposium, Congress and General Assembly to be held in Belarus from 13 to 27 July 2014 has been extended to 23 May 2014.

The Field Symposium will make a round-tour through the entire country and visit the most important mires and peatlands, with many new developments and interesting discussions.
Theme: New concepts of peatland management, restoration and financing
Registration: The ***Field Symposium*** will for logistical reasons be limited to 50 persons, so register (with the on line registration form) as soon as possible.

The costs for the total trip will be ***€ 850 for IMCG members***. Urgent registration is necessary to secure decent and reasonably priced accommodation. To limit costs, participants will be lodged in 2-3 bed guestrooms. To register online go to http://www.imcg.net/pages/events/belarus-2014.php. **Please remember to also fill out the verification code at the end of the page.**

Mires and Peat

New article in *Mires and Peat* (April) - Volume 15 Special Volume: Mountain Peatlands (2014/15):

This special volume is a collection of current research on mires and other peatlands in mountains around the world, inspired by the 2012 IMCG Field Symposium in the Andes, South America. Herewith the titles of the first contributions:

- The effect of drainage on organic matter accumulation and plant communities of high-altitude peatlands in the Colombian tropical Andes - J.C. Benavides
- A geographical model for the altitudinal zonation of mire types in the uplands of western Europe: the example of Les Monts du Forez in eastern France - H. Cubizolle and G. Thebaud

Find this and more at http://www.mires-and-peat.net/

If you work in mountains please do consider whether you could offer a manuscript. The current target date for new submissions is 31 May 2014, but later submissions can be accommodated. To add your planned article to the list, email your provisional title and projected submission date to Olivia Bragg (o.m.bragg@dundee.ac.uk) or Piet-Louis Grundling (peatland@mweb.co.za).

Mires and Peat published 7 articles in the first 4 months of 2014, which is the rate required to qualify for IF evaluation. We encourage our members to support Mires and Peat with your contributions. Contact Olivia Bragg, our editor, if you have enquiries (o.m.bragg@dundee.ac.uk).

News received from IMCG Regions

Argentina

Mires Conservation in the Iberá Wetlands, North Argentina by Carolina Rodriguez Martinez carolina.rodriguez@agrar.hu-berlin.de (shortened – ed)

The "Esteros del Ibera", in the Province Corrientes, Northeast Argentina, is part of a huge macrosystem extending from the River de la Plata in the south to the Caribbean Sea in the north, therefor one of the largest subtropical wetlands of South America. Located in a paleo-terrace of the Paraná River (27°40'S to 29°20'S and 56°38'E to 59°25'E). the Iberá Wetlands presents complexes of hydrogenetic habitats dominated by lakes, rainwater-fed bogs, damp meadows, grasslands and gallery forests, spread over 45 000 km^2.

Land Trust Conservation, an Argentinean Foundation, has for the past ten years promoted the protection and restoration of habitats and original fauna in the Iberá Wetlands. The Michael Succow Foundation and the

Manfred Hermsen Foundation, both from Germany, have partnered with LCT in this initiative, specifically through the production of information, methods and strategies to assess and protect the landscape ecology of the Iberá Wetlands, with an emphasis on mire ecosystems.

During March 2014, Michael Succow, Carolina Rodriguez Martínez and an expert in Argentinean soils, Cecilia Accattoli, explored and documented peat soils forming "*Embalsados":* a type of floating islands of organic matter covering and a distinct feature of the Iberá macrosystem. The main hydrogenetic mire types found in the region were amongst other floodwater mires and terrestrialization mires. The examined sites presented an average peat depth of 3.5 m, always underlain by a mud horizon or water cushions, above a sandy ground. Depending if meso- or eutrophic conditions dominated, six botanical peat types were identified in peat horizons: *Sphagnum* peat*, fine radicel* peat*, coarse radicel* peat*, Thalia* peat*, Hymenachne* peat and *Cladium* peat.

Mires of the Iberá Wetlands play a crucial role to the water retention and thus the habitat conservation of this still pristine area. Nevertheless, although it is a designated Natural Reserve, the Iberá macrosystem is still threatened by exotic livestock species (cattle, pigs), rice plantations and industrialized forestry taking place on its periphery. Tourism (specially the experience of Colonia Carlos Pellegrini) has been confirmed as an alternative coherence with the objectives of conservation, protection and sustainable use of the area. The development of concepts and tools to assess environmental functions and services of the Iberá Wetlands are expected from future investigations.

New Zealand

by Bev Clarkson (Clarksonb@landcareresearch.co.nz

Digging up mires for ancient kauri logs

Several significant mires in the Northland region of New Zealand are under threat from a 'black gold rush' – they are being dug up for valuable kauri (*Agathis australis*) logs that have been preserved for centuries within the waterlogged peats and are being sold off shore by the shipload. A swamp kauri of the size of the largest living kauri ('Tane Mahuta'; 244 m^3) has been estimated to fetch as much as NZ$6 million. Although some logs lie under pasture on private land and can be legally mined, most lie under protected wetlands. There are concerns about loss of biodiversity values in the mires, and loss of the logs, invaluable for paleo- and past climate change research. One swamp kauri exporter was prosecuted and fined NZ $50,000 for damaging a protected wetland and illegally extracting kauri logs. However, given he is currently exporting kauri logs worth close to NZ$2 million per year, this fine did not deter him. There have been calls for an immediate halt to all kauri extraction and export to protect both the finite log resource and the multiple values of wetlands.
http://www.nzherald.co.nz/northern-advocate/news/article.cfm?c_id=1503450&objectid=11052197
http://www.3news.co.nz/NZ-kauri-sent-to-China-in-black-gold-rush/tabid/1771/articleID/342199/Default.aspx

South Africa

by Althea Grundling (althea@arc.agric.za)

A new national peatland eco-region database

The Water Research Commission of South Africa approved a national project in April entitled "Investigation of peatland characteristics and processes as well as understanding of their contribution to the South African wetland ecological infrastructure". The Institute for Soil Climate and Water (Agricultural Research Council) will be responsible for improving the existing peatland eco-region model in order to identify potential peatland areas based on new imagery, modelling techniques and distribution data. Another objective of the project,

running for the next 3 years, will be to demonstrate the socio-economic value of peatlands in South Africa, based on the concepts of ecological infrastructure and ecosystem services delivered.

Georgia

By Izolda Matchutadze (izo.muho@gmx.net)

The conservation, restoration and development of eco-tourism infrastructures within the IspaniII Ramsar Site (shortened from a report by Laura Máiz-Tomé, Assistant Advisor for Europe, Ramsar)

"Tchaobi" the Society for Conservation of Wild Nature has successfully completed a Small Grants Fund project aimed at the conservation, restoration and development of eco-tourism infrastructures within the Ramsar Site "Ispani II marshes" located in in the Autonomous Republic of Ajara, West Georgia. Staff from the protected area as well as officials from the Department of Tourism of Ajara received training as nature tour guides.

The purpose was also to raise awareness among the local community and to promote the conservation of Ispani wetlands and their sustainable use through ecotourism.

© Izolda Matchutadze

Photo: Students of the Faculty of Tourism of Rustaveli University attended workshops, seminars and field trips focusing on environmental education

Photo: tourism infrastructures - wooden footpaths and bridges were constructed.

Completed project deliverables included tourism infrastructures; information booklets and flyers; and boxes with recorded bird sounds and information boards. The Ramsar Convention recognizes the continuous expansion of environmental tourism and its positive and potentially negative impact on wetlands.

The Ramsar Secretariat congratulated The Society for Conservation of Wild Nature "Tchaobi" for developing and running such an inspiring project. Read more about the project at: http://www.ramsar.org/cda/en/ramsar-news-georgiasgf/main/ramsar/1-26%5E26442_4000_0__

News from all over

Global Peatland Restoration Demonstrating Success Launch

The latest IUCN UK Peatland Programme and CEM Thematic Group in Peatlands publication, Global Peatland Restoration Demonstrating Success (following on from the success of the UK Peatland Restoration Demonstrating Success) was celebrated at a workshop (at the Welsh Government EU Offices) and an evening reception (at the IUCN EU Representative Office) in Brussels on Tuesday April

29th 2014. The launch brought together NGOs working in Europe and the EU Commission to highlight peatlands as a concrete example of a nature based solution to climate change and water problems.

More information: http://www.iucn-uk-peatlandprogramme.org/

B&Q go peat-free

The UK's largest garden retailer has switched its bedding plant production away from peat. From April 2014, B&Q will incorporate new packaging for twenty varieties of bedding plant, which will be recyclable and between 95-99% peat-free, removing peat from commercial plant production. As the largest garden retailer in the UK, over 80 million bedding plants will be sold at B&Q stores across the UK between March and June this year.

Historically these plants would be packaged in non-recyclable polystyrene trays ending up as non-degradable waste in UK landfills. The new technology called Teabag Technology, easyGrow is 100% recyclable and consists of self-contained biodegradable 'teabags' made from corn starch, a renewable resource that is fully compostable. Each bag is filled with coir, a natural fibre extracted from coconut husks.

Peat-free gardening takes the pressure away from exploiting peat bogs. Peat has been a big part of gardening and horticulture since the 1960s, when mechanised extraction of peat began in earnest. B&Q's new bedding plant production shows that peat can be replaced at the commercial scale.

RSPB accused of hypocrisy over peatland bogs plan

The Royal Society for the Protection of Birds (RSPB) has been accused of double standards by pushing ahead with plans for a £9.6 million development on the largest expanse of blanket peatland bogs in the world.

Objectors claim the project at the internationally famous 1,500-square mile Forsinard Flows nature reserve in Caithness and Sutherland – said to play an important role in the battle against climate change – flies in the face of the “conservation values” promoted by the charity. Protesters are now lobbying the Heritage Lottery Fund in a bid to block an application for cash for a proposed field centre and viewing observatory. Protesters hope the Lottery Fund will reject the funding application and effectively halt the controversial project. A decision on the application is expected next month.

Osbert Doehl, who lives in the hamlet of Forsinard and is leading the campaign against the development, said: “The funny aspect to this is that we are objecting on environmental grounds against the UK’s largest conservation charity. We are not against a field centre or research laboratory, but this is the wrong proposal. This will shatter our peace and quiet, affect our water supply and the environment. It will attract more people to the area, which will have an effect on the wildlife. The RSPB is seeking a centre with a woodchip heating plant, which is not environmentally friendly.”

The centre would house an education room, lab space, offices and accommodation for volunteers, students and researchers. The proposal also involves the construction of new trails, viewpoints and information points, as well as the restoration of seven square miles of peatlands.

Called the “Flow to the Future” project, it is being co- ordinated by the RSPB on behalf of the Peatlands Partnership. This comprises Highland Council, Forestry Commission Scotland, Scottish Natural Heritage, RSPB Scotland, Plantlife International and the Environmental Research Institute, Thurso. Partnership chairman John Henderson said the project would generate significant benefits for local communities and businesses, as well as help to restore some areas of peatland.

http://www.scotsman.com/news/environment/rspb-accused-of-hypocrisy-over-peatland-bogs-plan-1-3376351

Cutting rights bought to protect Fenn's Mosses bog near Wrexham (UK)

Cutting rights on a protected peat bog running between north Wales and England have been bought by Natural Resources Wales (NRW) in a bid to protect the area. Fenn's Mosses, between Wrexham and Whitchurch, Shropshire, is a Site of Special Scientific Interest (SSSI) and a special area of conservation. It means peat extraction and moss gathering will stop and water levels in the bog will be allowed to rise. NRW said: "The Fenn's Whixall system is one of the biggest and best raised bogs in Britain, whose astonishingly varied wildlife and mosses make it internationally important. If the peat licence had not been acquired ditches would have been cut in other areas of the bog to dry these areas out before extracting peat and this would have undone conservation work on the site. This demonstrates the importance of acquiring the peat cutting and moss gathering licence rights. Doing this will help enable the recovery of Fenn's Mosses, raising water levels, and protecting and enhancing its wonderful wildlife for future generations to enjoy and benefit from."

http://www.bbc.com/news/uk-wales-north-east-wales-26714298

IPCC report - Climate Change 2014: Impacts, Adaptation, and Vulnerability online

According to the latest report of the Intergovernmental Panel on Climate Change (IPCC), the world's greenhouse-gas emissions have risen to unprecedented levels despite an increasing number of policies to reduce climate change. Emissions grew more quickly between 2000 and 2010 than in each of the three previous decades, says the IPCC, with an average growth rate of 2.2% per year – or roughly 1 Gigatonne of carbon dioxide equivalent – compared with 1.3% per year from 1970 to 2000. The global economic crisis of 2007/08 reduced emissions only temporarily.

The report, Climate Change 2014: Mitigation of Climate Change, finds that for it to be likely that we can limit global mean temperature rise to 2 °C, global greenhouse-gas emissions must be cut by 40 to 70% compared with 2010 levels by mid-century and to near zero by 2100. Even less ambitious temperature goals would require similar emissions reductions and ambitious mitigation may even require removing carbon dioxide from the atmosphere.

Only major institutional and technological change will give a better than even chance of keeping beneath this 2° threshold, the report concludes, although it's possible to achieve the goal using a wide array of technological measures and changes in behaviour. "Many different pathways lead to a future within the boundaries set by the two degrees Celsius goal," said report co-chair Ottmar Edenhofer. "All of these require substantial investments. Avoiding further delays in mitigation and making use of a broad variety of technologies can limit the associated costs. To avoid dangerous interference with the climate system, we need to move away from business as usual."

Scenarios more likely to keep to the 2° target are characterized by rapid improvements in energy efficiency and a tripling to nearly a quadrupling by 2050 of the share of zero- and low-carbon energy supply from renewables, nuclear energy and fossil energy with carbon dioxide capture and storage (CCS), or bioenergy with CCS (BECCS). Regarding BECCS, however, the IPCC press release states, "as of today this combination is not available at scale, permanent underground carbon dioxide storage faces challenges and the risks of increased competition for land need to be managed". Indeed, of carbon dioxide removal measures in general, including BECCS and large-scale afforestation, the summary for policymakers says "the availability and scale of these...are uncertain and...are, to varying degrees, associated with challenges and risks".

Emissions in 2010 were roughly 49 Gigatonnes of carbon dioxide equivalent, with just over three-quarters (76%) from carbon dioxide, 16% from methane, 6% from nitrous oxide and 2% from fluorinated gases.

Since 2000, greenhouse-gas emissions have grown in all sectors except agriculture, forestry and other land use (AFOLU). In 2010 this sector was responsible for 24% of anthropogenic emissions.

Energy supply was the cause of 47% of the 10 Gigatonnes of carbon dioxide equivalent increase in man-made greenhouse emissions each year between 2000 and 2010, with industry resulting in 30%, transport in 11% and the buildings sector responsible for 3%. That said, accounting for indirect emissions – electricity and heat use – boosts the contributions of the industry and buildings sectors.

The key drivers behind the growing carbon-dioxide emissions from fossil fuel use are population and economic growth, the IPCC concluded. While the contribution of population growth has been roughly stable for the last four decades, that of economic growth rose sharply from 2000 to 2010. Together, population and economic growth outpaced emissions reductions from better energy intensity, and increased coal use has "reversed the long-standing trend of gradual decarbonisation of the world's energy supply".

The report highlights that conserving peatlands, or re-wetting and restoring degraded peatlands to preserve their carbon store are potential mitigation strategies (p45).

http://environmentalresearchweb.org/cws/article/news/56907

For the full report: https://www.ipcc.ch/report/ar5/wg2/

Haze crisis on Forest Summit Indonesia

The haze crisis will be a key theme of discussion at the upcoming Forests Asia Summit, 5-6 May in Jakarta, Indonesia. At the Summit, a workshop will examine the underlying causes and impacts of peat land fires, focusing on the role of conflicts over land ownership between communities and companies; impacts on human health; and the transboundary bill recently proposed by the Singaporean government. Read more here.

New peatland brew from Yorkshire

A North Yorkshire micro-brewery is using a shrub taken from the county's own peatbog reserves to create a new batch of specialist beer. Trebroom Brewery in Shipton-by-Beningbrough near York, has brewed 'Myricale' using bog myrtle (*Myrica gale*), a shrub which thrives on Yorkshire's peatlands. The plant has been supplied by Yorkshire Wildlife Trust from the North York Moors to flavour a beer and five pence from every pint and bottle sold goes to the trust.

Bog myrtle was once a common component in brewing, used to flavour beer in the Middle Ages right up until the 16th century, when hops fell into fashion. Now it is better known for its natural insect repellent properties. Myricale was created last year as a one-off specialist beer, but the brewery has now created another batch.

http://www.yorkshirepost.co.uk/news/main-topics/local-stories/region-s-new-peatland-brew-is-far-from-bog-standard-1-6572186

Big challenges for reclamation on ravaged tar sands in Alberta, Canada

The mining of tar sands has destroyed large areas of peatland in Alberta. Oil sands companies have vowed to reclaim this land, but little restoration has occurred so far and many scientists say it is virtually impossible to rebuild these complex ecosystems.

Alberta's oil sands industry is almost 50 years old, but today less than 0.3 % of the land that has been disturbed by tar sands development has been certified as being reclaimed. The challenges of restoring a landscape uprooted by oil sands mining — which involves strip mining the earth to depths of up to 75 m — are enormous. Mining occurs primarily in complex ecosystems of boreal swamps, bogs and fens that were formed over thousands of years. Many experts doubt whether it's technically or even economically possible to recreate on a large scale anything resembling the sensitive environments that existed there in the past. Even if it were possible, others wonder whether climate change and rapidly expanding tar sands development in Canada — the volume of tar sands mining is expected to nearly double by 2021 — will sabotage efforts to accomplish this on a broad scale in the future. Read more:

http://e360.yale.edu/feature/on_ravaged_tar_sands_lands_big_challenges_for_reclamation/2751/

Upcoming Events

Please visit the IMCG website (www.imcg.net) for announcements on a range of upcoming events http://www.imcg.net/pages/events.php)

Recent scientific publications: peatland conservation

Every month a wealth of scientific papers are published, many of which have relevance for peatland management and mire conservation. In this column we present the title and the URL of a selection of these papers. The selection does not aim at completeness and will inevitably be biased by the (wide…) interest of the compiler (Hans Joosten). If you want to share papers that you fear otherwise would be missed, please send title and URL to joosten@uni-greifswald.de

1. Distribution and abundance of tree species in swamp forests of Amazonian Ecuador: http://onlinelibrary.wiley.com/doi/10.1111/ecog.00774/abstract
2. Interactive biotic and abiotic regulators of soil carbon cycling: evidence from controlled climate experiments on peatland and boreal soils: http://onlinelibrary.wiley.com/doi/10.1111/gcb.12585/abstract
3. Does plant performance under stress explain divergent life history strategies? The effects of flooding and nutrient stress on two wetland sedges: http://www.sciencedirect.com/science/article/pii/S0304377014000515
4. Réhabilitation de tourbières industrielles contaminées par l'eau salée : végétation de marais salés et amendements: http://www.gret-perg.ulaval.ca/uploads/tx_centrerecherche/Emond_C_MSc_2013_minimum_01.pdf
5. Trajectories of plant recovery in block-cut peatlands 35 years after peat extraction: http://www.ecology.kee.hu/indvol11_3.htm
6. Fen restoration on a bog harvested down to sedge peat: A hydrological assessment: http://www.sciencedirect.com/science/article/pii/S0925857413005156
7. Late Holocene vegetation, climate, and land-use impacts on carbon dynamics in the Florida Everglades: http://www.sciencedirect.com/science/article/pii/S0277379114000535
8. UK peatland restoration: Some economic arithmetic: http://www.sciencedirect.com/science/article/pii/S0048969714003635#
9. Effect of cattle urine addition on the surface emissions and subsurface concentrations of greenhouse gases in a UK peat grassland: http://www.sciencedirect.com/science/article/pii/S0167880914000309
10. Comparative modeling of annual CO_2flux of temperate peat soils under permanent grassland management: http://www.sciencedirect.com/science/article/pii/S016788091400036X
11. The spatial and temporal relationships between CO_2 and CH_4 exchange in a temperate ombrotrophic bog: http://www.sciencedirect.com/science/article/pii/S1352231014001307
12. The record of hydroclimatic changes in the sediments of a kettle-hole in a young glacial landscape (north-central Poland): http://www.sciencedirect.com/science/article/pii/S1040618213007696
13. Large-scale regionalization of water table depth in peatlands optimized for greenhouse gas emission upscaling: http://www.hydrol-earth-syst-sci-discuss.net/11/3857/2014/hessd-11-3857-2014.html
14. First records and potential palaeoecological significance of *Dianella* (Xanthorrhoeaceae), an extinct representative of the native flora of Rapa Nui (Easter Island): http://link.springer.com/article/10.1007%2Fs00334-014-0432-8
15. Structure and abundance of “interrhizon” invertebrates in an oxbow lake in the peat swamp area of Central Kalimantan, Indonesia: http://link.springer.com/article/10.1007/s10201-013-0423-y?wt_mc=alerts.TOCjournals
16. UNFCCC Report on the workshop on technical and scientific aspects of ecosystems with high-carbon reservoirs not covered by other agenda items under the Convention: http://unfccc.int/resource/docs/2014/sbsta/eng/inf01.pdf
17. Relative contributions of the logging, fiber, oil palm and mining industries to forest loss in Indonesia: http://onlinelibrary.wiley.com/doi/10.1111/conl.12103/abstract
18. Response of surface air temperature to small-scale land clearing across latitudes: http://iopscience.iop.org/1748-9326/9/3/034002/article

19. The impacts of recent permafrost thaw on land–atmosphere greenhouse gas exchange: http://iopscience.iop.org/1748-9326/9/4/045005/pdf/1748-9326_9_4_045005.pdf
20. Research agendas for the sustainable management of tropical peatland in Malaysia: http://journals.cambridge.org/action/displayAbstract?fromPage=online&aid=9187574&fulltextType=RA&fileId=S0376892914000034
21. Evaluating effects of land management on greenhouse gas fluxes and carbon balances in boreo-temperate lowland peatland systems: http://www.environmentalevidencejournal.org/content/3/1/5
22. Carbon release from boreal peatland open water pools: Implication for the contemporary C exchange: http://onlinelibrary.wiley.com/doi/10.1002/2013JG002423/abstract
23. The effects of temperature and nitrogen and sulfur additions on carbon accumulation in a nutrient-poor boreal mire: Decadal effects assessed using ^{210}Pb peat chronologies: http://onlinelibrary.wiley.com/doi/10.1002/2013JG002365/abstract
24. Controls on methane released through ebullition in peatlands affected by permafrost degradation: http://onlinelibrary.wiley.com/doi/10.1002/2013JG002441/abstract
25. Large-scale estimation and uncertainty analysis of gross primary production in Tibetan alpine grasslands: http://onlinelibrary.wiley.com/doi/10.1002/2013JG002449/abstract
26. Emissions of greenhouse gases from Lake Neusiedl, a shallow steppe lake in Eastern Austria: http://link.springer.com/article/10.1007/s10750-013-1681-8?wt_mc=alerts.TOCjournals
27. Integrated conceptual ecological model and habitat indices for the southwest Florida coastal wetlands: http://www.sciencedirect.com/science/article/pii/S1470160X14000090
28. Permafrost conditions in peatlands regulate magnitude, timing and chemical composition of catchment dissolved organic carbon export: http://onlinelibrary.wiley.com/doi/10.1111/gcb.12607/abstract
29. A revised evolutionary history of Poales: origins and diversification: http://onlinelibrary.wiley.com/doi/10.1111/boj.12160/abstract
30. Seasonal variability as a source of uncertainty in the West Siberian regional CH_4 flux upscaling: http://iopscience.iop.org/1748-9326/9/4/045008
31. A synthesis of methane emissions from 71 northern, temperate, and subtropical wetlands: http://onlinelibrary.wiley.com/doi/10.1111/gcb.12580/abstract
32. High soil solution carbon and nitrogen concentrations in a drained Atlantic bog are reduced to natural levels by 10 years of rewetting: http://www.biogeosciences-discuss.net/10/15809/2013/bgd-10-15809-2013.html
33. Evidence for a non-monotonic relationship between ecosystem-scale peatland methane emissions and water table depth: http://onlinelibrary.wiley.com/doi/10.1002/2013JG002576/abstract
34. Biochemical evidence for minimal vegetation change in peatlands of the West Siberian Lowland during the Medieval Climate Anomaly and Little Ice Age: http://onlinelibrary.wiley.com/doi/10.1002/2013JG002396/abstract
35. Effects of peat and water quality parameters on groundwater arsenic contamination in Bangladesh: http://onlinelibrary.wiley.com/doi/10.1111/wej.12017/abstract
36. Changes in peat chemistry associated with permafrost thaw increase greenhouse gas production: http://www.pnas.org/cgi/doi/10.1073/pnas.1314641111
37. Mapping shallow lakes in a large South American floodplain: A frequency approach on multitemporal Landsat TM/ETM data: http://www.sciencedirect.com/science/article/pii/S0022169414001656
38. Seasonal variability of the Western Siberia wetlands from satellite radar altimetry: http://www.sciencedirect.com/science/article/pii/S0022169414001747
39. Hydro-ecology of groundwater-dependent ecosystems: applying basic science to groundwater management: http://www.tandfonline.com/doi/abs/10.1080/02626667.2014.889296#.U2MUoVfJ2P0
40. Pro-active management: the role of environmental flows in transboundary cooperative planning for the Okavango River system: http://www.tandfonline.com/doi/abs/10.1080/02626667.2014.888069#.U2MU3VfJ2P0
41. A novel framework for quantifying past methane recycling by Sphagnum-methanotroph symbiosis using carbon and hydrogen isotope ratios of leaf wax biomarkers: http://onlinelibrary.wiley.com/doi/10.1002/2014GC005242/abstract
42. Comparing litter dynamics of *Phragmites australis* and *Spartina alterniflora* in a sub-tropical Chinese estuary: Contrasts in early and late decomposition: http://www.sciencedirect.com/science/article/pii/S0304377014000539

43. A Negotiation Support System for disputes between Iraq and Turkey over the Tigris-Euphrates basin: http://www.sciencedirect.com/science/article/pii/S0022169414002613
44. Separate effects of flooding and anaerobiosis on soil greenhouse gas emissions and redox sensitive biogeochemistry: http://onlinelibrary.wiley.com/doi/10.1002/2013JG002433/abstract
45. Organic matter transformation in the peat column at Marcell Experimental Forest: Humification and vertical stratification: http://onlinelibrary.wiley.com/doi/10.1002/2013JG002492/abstract
46. The effect of long-term water table manipulations on dissolved organic carbon dynamics in a poor fen peatland: http://onlinelibrary.wiley.com/doi/10.1002/2013JG002527/abstract

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