Geophysical Research Abstracts
Vol. 17, EGU2015-3222, 2015
EGU General Assembly 2015

Towards a Global High Resolution Peatland Map in 2020

Alexandra Barthelmes, Karen-Doreen Barthelmes, Hans Joosten, Rene Dommain, and Olga Margalef
Greifswald, Institute for Botany and Landscape Ecology, Department of Peatland Studies and Palaeoecology, Greifswald, Germany (abarthelmes@gmx.de)

Some 3% of land area on planet Earth (approx. 4 million km2) is covered by peatlands. About 10% (∼ 0.3 % of the land area) are drained and responsible for a disproportional 5 % of the global anthropogenic CO_2 emissions (Victoria et al., 2012). Additionally, peatland drainage and degradation lead to land subsidence, soil degradation, water pollution, and enhanced susceptibility to fire (Holden et al., 2004; Joosten et al., 2012).

The global importance of peatlands for carbon storage and climate change mitigation has currently been recognized in international policy - since 2008 organic soils are subject of discussion in the UN Framework Convention on Climate Change (UNFCCC) (Joosten, 2011). In May 2013 the European Parliament decided that the global post 2020 climate agreement should include the obligation to report emissions and removals from peatland drainage and rewetting. Implementation of such program, however, necessitates the rapid availability of reliable, comprehensive, high resolution, spatially explicit data on the extent and status of peatlands. For many reporting countries this requires an innovation in peatland mapping, i.e. the better and integrative use of novel, but already available methods and technologies.

We developed an approach that links various science networks, methodologies and data bases, including those of peatland/landscape ecology for understanding where and how peatlands may occur, those of remote sensing for identifying possible locations, and those of pedology (legacy soil maps) and (palaeo-)ecology for ground truthing. Such integration of old field data, specialized knowledge, and modern RS and GIS technologies enables acquiring a rapid, comprehensive, detailed and rather reliable overview, even on a continental scale.

We illustrate this approach with a high resolution overview of peatland distribution, area, status and greenhouse gas fluxes e.g. for the East African countries Rwanda, Burundi, Uganda and Zambia. Furthermore, we discuss the perspectives and opportunities to complete a global map by collaborative action by 2020.

References:
Holden J., Chapman P.J., Labadz J.C. 2004 Artificial drainage of peatlands: hydrological and hydrochemical process and wetland restoration. Prog. Phys. Geogr, 28, 95-123.

Joosten H. 2011. Sensitising global conventions for climate change mitigation by peatlands. In: Tanneberger F., Wichtmann W. (eds.) 2011. Carbon credits from peatland rewetting. Climate - biodiversity - land use. Science, policy, implementation and recommendations of a pilot project in Belarus. Schweizerbart, Stuttgart, p. 90-94.

Joosten H., Tapio-Biström M.-L., Tol S. (eds.) 2012. Peatlands – guidance for climate change mitigation by conservation, rehabilitation and sustainable use. Mitigation of Climate Change in Agriculture Series 5. FAO, Rome, L + 96 p. http://www.fao.org/docrep/015/an762e/an762e.pdf.

Victoria R., Banwart S., Black H., Ingram J., Joosten H., Milne E., Noellemeyer E. 2012. The benefits of soil carbon. Managing soils for multiple economic, societal, and environmental benefits. UNEP Yearbook 2012, UNEP, Nairobi, pp. 18-33.