Urban Water Interfaces (UWI)

The DFG Research Training Group on Urban Water Interfaces (UWI) invites to a guest lecture by

Dr. Sarian Kosten, Assistant Professor, Aquatic Ecology & Environmental Biology Group, Radboud University Nijmegen (The Netherlands)

Wednesday, 24th February 2016, IGB Berlin, Müggelseedamm 310, Lecture hall, 2 - 3 pm

Lecture title:
CH_4 and CO_2 emissions from inland waters: internal and external processes

Abstract
The majority of inland waters are greenhouse gas sources as they emit CO_2 and CH_4 to the atmosphere. Thereby they are important players in the global carbon cycle. Part of these greenhouse gasses are produced within the aquatic system. Sediments, for instance, are important sources of CH_4 and CO_2 and have received ample attention. More recently, the role of primary producers, being phytoplankton or macrophytes, in regulating the greenhouse gas emissions has become focus of study. Macrophytes are important habitats for methane oxidizing bacteria and may therefore strongly influence CH_4 emissions, on the other hand – when rooted - they may also channel CH_4 directly from the sediment to the atmosphere. In conditions with high primary production combined with low decomposition most CO_2 is sequestered. In literature case studies point to macrophyte-dominated as well as phytoplankton-dominated systems being the strongest CO_2 sink. These differences may be due to local circumstances, but also to the assumptions – inherent to the scale the existing field studies were conducted - that had to be made. Variation in CO_2 and organic carbon inflow may for instance blur the impact of (shifts in) primary producers. In the first part of my talk I will show some recent results of mesocosm and aquarium experiments in which we varied the primary producers and measured greenhouse gas fluxes.

A considerable share of the CH_4 and CO_2 emitted from inland waters is derived from the watershed. Many systems act as a chimney outgassing 'terrestial' CH_4 and CO_2. In the second part of my talk I will talk about a large scale study involving a high number of lakes for which we inferred internal and external CO_2 production and their relative contribution to outgassing. I will also zoom in on some systems in different climate zones that we analyzed more in detail, highlighting the importance of the terrestrial-aquatic link and pointing out differences in the relative importance of internal and external processes for CH_4 and CO_2.

About the Speaker

Sarian Kosten (1975) holds a BSc in Aquatic Ecotechnology from the Hogeschool Zeeland. In 1999 she graduated for her MSc at the Wageningen University. She specialized in Water Quality Management and Communication. After working for a Dutch Water Board, the International Potato Center and the IUCN-World Conservation Union (both in Ecuador) she started her PhD research at the Wageningen University studying shallow lakes in different climate regions in Brazil, Uruguay and Argentina. In 2010 she defended her PhD thesis 'Aquatic ecosystems in hot water: effects of climate on the functioning of shallow lakes'. She works at the Radboud University since 2013.

Further information about Dr. Sarian Kosten can be found at:
http://www.ru.nl/science/aquatic/people-research/sarian-kosten/

How to find the IGB:
http://www.igb-berlin.de/how_to_get_to_berlin.html