

SMaReF

瑞中汞研究框架计划

newsletter: November-December 2014. Third issue

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More information about SMaReF:

<http://www.slu.se/en/collaborative-centres-and-projects/smaref/>

Words from the leadership

In Sweden the first snows have come, and with it the end of the field season for many of us. But I realize I don't have a good sense of how the field season works for our colleagues working with the rice harvest. This is just one of many things to be learned about each other's environments. Fortunately SMaReF will offer more opportunities for learning in the coming year.

Last year's Swedish excursion was just the beginning! Not only is there the visit to Guiyang in June, but also a special session at ICMGP 2015 on "Using contrasts to improve the understanding of mercury biogeochemistry". This will be a great opportunity to present the comparative work between Chinese and Swedish Hg environments that SMaReF is encouraging. Please think of submitting an abstract to that session! And enjoy this newsletter that gives a taste of what has already started, with much more to come in the years ahead.

Kevin Bishop

Special session at ICMGP 2015.

During the 12th International Conference on Mercury as a Global Pollutant (ICMGP 2015) to be held in Jeju, Korea from 14 to 19 June 2015 SMaReF have been approved a special session named: *Using contrasts to improve the understanding of mercury biogeochemistry.*

Abstract submission open on November 1 and will close January 10. Please submit your abstracts and chose the SMaReF special session.

Research grant to Ulf Skyllberg

On November 3 the Swedish research council made their decision for grants of the natural and engineering sciences. Ulf Skyllberg was awarded one of the grants for the project

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Kinetics of mercury complexation with natural organic matter O/N and S functional groups - a new paradigm to advance mercury biogeochemistry research. The grant is 3 000 kkr over 4 years.

What is going on in Swedish Beaver ponds?

Starting from late September a research project carried out in Swedish beaver ponds focusing on Hg cycling in beaver pond. This project was initiated by Oded Levanoni (PhD student, SLU) in cooperation with Frauke Ecke some years ago. Footprints of the field working crew extended from far north in Sweden, Luleå, to south Sweden, Örebro. This study will enable our knowledge in natural sites like newly built beaver ponds on the existence of specific microbial communities and their roles in enhanced water and biota MeHg. Furthermore, it provides a chance to look up several questions: Firstly, what happened to differentiated bacteria Hg methylation efficiencies across new and old erected beaver ponds. Secondly, how aquatic MeHg will impact biota from the base of the food chain (macroinvertebrates) to aquatic mammals. Finally, understand the role of macrophytes in reallocating aquatic MeHg to terrestrial environments.

Contact: Pianpian Wu
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Pianpian Wu standing below one of the Beaver dams included in the project.

Experiments to study interactions between sulfur and mercury in rice paddies

In August 2014, the first sampling campaign of surface water, pore water and soil profiles samples have been done from five rice paddies, in Aozhi Catchment, contaminated mining area, Wanshan, Guizhou. In August the rice paddies were totally flooded (wet season) and 20 water samples have also been collected along the Aozhi river. Xiaohang also collected soil samples for microbial analysis. Xiaohang is working in collaboration with Jinying at Uppsala university. In September, during the harvest season, Professor Qiu Guangle collected rice samples that will be analyzed for Hg. Water sampled have been analyzed for THg as well as major, minor and trace elements, DOC, UV absorption) and the group at the Guiyang Institute of Geochemistry are waiting to do MeHg analysis. This work is considered as a pre-study of mercury methylation in rice paddy

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before any application of sulfurs, that could help us to earn more information that we need for the future work on sulfurs-mercury bio-geochemistry.

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Soil sampling in rice paddies in Aozhi Catchment.

Visit to Canada

During one week in the end of October Pianpian Wu (PhD student, SLU) and Kevin Bishop (Professor, UU, SLU) met Brian Branfireun (Associate Professor, Western Ontario University) and his research group at the beautiful campus of Western Ontario University in London, Ontario, Canada. Brian is a renowned researcher for his interdisciplinary work on hydrological-ecological interactions in North America, especially the work on biogeochemical cycling of Hg in wetland-dominated environments. He is also the director of the university's leading lab facility, The Biotron

Contact: Staffan Åkerblom (staffan.akerblom@slu.se)

Swedish University of Agricultural Sciences, Department of Aquatic Sciences and Assessment

Experimental Climate Change Research Centre (Biotron). Starting from this Oct, Brian is listed as new PhD supervisor to Pianpian's study on MeHg bioavailability in aquatic environment. His research group's expertise in identifying total Hg and methyl Hg in Biotron, as well as experimental works will strongly support the student's related study projects in the future.



Pianpian Wu with Hg research group from Western Ontario University at Niagara Falls.

Visit to Ethiopia

There have been a lot of things going on this October. Staffan Åkerblom and Brian Huser (Department of Aquatic Sciences and Assessment, SLU) visited Lake Tana in Ethiopia to assist PhD-student Habiba Gashaw and master-student Margareta Sjöholm. Ms. Gashaw conducts a PhD-project with the aim to estimate the accumulation in freshwater fish and exposure to humans from Hg and other pollutants. Lake Tana is

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the largest lake in Ethiopia and is the main supply of water for the Nile river. Water quality in Lake Tana is therefore of an important issue for all regions and countries around Lake Tana and along the course of the Nile river. Sampling of fish and sediment has been done in Lake Tana and sampling of hair from people living in fishing villages have also been done.



Staffan waiting in papyrus boat in Lake Tana



Sediment sampling with Brian Huser, Margareta Sjöholm and Benyam at the Ethiopian International Water Research Institute.

New publications

(not a complete list of publications from partners in SMaReF)

Fritsche, J., S. Osterwalder, M.B. Nilsson, J. Sagerfors, S. Åkerblom, S. K. Bishop, and C. Alewell. 2014. Evasion of Elemental Mercury from a Boreal Peatland Suppressed by Long Term Sulfate Addition. *Environmental Science & Technology Letters* 1(10): 421-425.

Meng, B., X. Feng, G. Qiu, C.W.N. Anderson, J. Wang, and L. Zhao. 2014. Localization and Speciation of Mercury in Brown Rice with Implications for Pan-Asian Public Health. *Environmental Science & Technology* 48: 7974-7981. doi:10.1021/es502000d.

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Wang, J., X. Feng, C. W. N. Anderson, G. Qiu, Z. Bao, and L. Shang. 2014. Effect of cropping systems on heavy metal distribution and mercury fractionation in the wanshan mining district, china: Implications for environmental management. *Environmental Toxicology and Chemistry*. 33:2147-2155. doi:10.1002/etc.2664.

Xu, J., Bravo, A. G., Lagerkvist, A., Bertilsson, S., Sjöblom, R., & Kumpiene, J. 2015. Sources and remediation techniques for mercury contaminated soil. *Environment International* 74:42-53.

Postdoc positions in Umeå

The first postdoc position within SMaReF have now been announced. A second position is also announced that will deal with Hg biogeochemistry in the Baltic sea.

2 postdoc positions are announced at the Swedish Agricultural University and Umeå University. Both positions related to mercury, one of which is directly financed by SMaReF. The positions:

Mercury biogeochemistry within the Sino-Swedish Mercury Research Network.
(Contact: Erik Björn and Ulf Skyllberg)

Understanding the possible re-activation of high priority contaminants from pulp fibre sediments in the northern Baltic Sea (REACT)
(Contact: Erik Björn)

In case you are interested in these positions your application should be sent on December 1, 2014 at the latest.

Schedule of things to come in SMaReF

2014

9-16 December: Kevin Bishop and Pianpian Wu will visit the SMaReF group in Guiyang.

2015

7-14 June: SMaReF All-Project meeting at CAS-SKLEG in Guiyang.

14-19 June: ICMGP, Jeju, Korea. A whole week entirely dedicated to mercury including a SMaReF special session.

25 August-1 September: SMaReF PhD Course on Mercury Biogeochemistry. The course will be held in Umeå and is organised by Ulf Skyllberg and Andrea Garcia Bravo.

Next newsletter

Planned to be released early January. We encourage you to send newly published Hg-related papers that also can be added to this newsletter.

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