



ERC project in collaboration between Sweden and Brazil: Interviews of ERC grantee Sebastian Sobek and Raquel Mendonça, Brazilian ERC team member based in Brazil



[Sebastian Sobek](#) investigates the cycling of carbon in lakes and rivers. He holds a PhD from Uppsala University (Sweden), and spent three years as a post-doctoral fellow at the Swiss Federal Institute of Technology (ETH Zurich). He is now Associate Professor at Uppsala University, and visiting researcher (*pesquisador visitante especial*) at the Federal University of Juiz de Fora, Brazil.

Sebastian's university homepage can be found [here](#)

Sebastian Sobek, please briefly outline your academic career, and its developments before joining the ERC team.

I have a PhD from Uppsala University (Sweden) in Limnology, which is the science of freshwater ecosystems. My thesis was about the carbon balance of lakes, particularly their emission of carbon dioxide to the atmosphere. I went on to a three-year post-doc at ETH Zurich in Switzerland, where I studied the carbon sink in the bottom sediments of lakes and artificial reservoirs. I was then appointed Assistant Professor back at Uppsala University and started to establish my own group working on greenhouse gas emission and carbon burial in freshwaters. I was awarded an ERC Starting Grant in 2013, and promoted to Associate Professor at Uppsala University in 2014.

Could you briefly tell us about this particular research project with Brazil? How can the general public benefit from it?

In the tropics, many new large hydropower dams are being built, in order to produce renewable energy for economic growth. However, tropical reservoirs have been pointed out as strong sources of greenhouse gases, especially of methane, which is a particularly strong greenhouse gas. My project, financed through the ERC, is based on the insight that the present understanding of the magnitude of greenhouse gas emission from reservoirs is insufficient. On one hand, current estimates of methane emissions are much too low, as emission hot spots at river inflow areas have been missed completely. On the other hand, the carbon sink in reservoir sediments is generally disregarded, even though it may to some extent offset greenhouse gas emissions. Combining new field observations and lab experiments, and applying a cross-disciplinary methodological approach, the project will generate new carbon balances of tropical hydropower reservoirs. The results will be used to upgrade the Reservoir Greenhouse Gas Risk Assessment Tool, a software tool that enables the hydropower industry and stakeholders to gauge the carbon footprint of both existing and projected hydropower dams.

How does this ERC grant allow you to collaborate with Brazil?

Within the ERC grant, I have full freedom to collaborate with my Brazilian partners, and also to reimburse them for costs occurred because of the project.



Your scientific career has led you to (at least short visits) to various countries so far - What made you choose Brazil for this project?

Brazil covers >80% of its energy demand from hydropower, the country has several tropical climates, and in addition it has a strong track record on research on the ecology and biogeochemistry of tropical hydropower reservoirs. The project idea developed when I was invited to Brazil to serve as an external opponent at a PhD defense, during discussions with my Brazilian hosts.

To which extent are you including Brazilians in this project?

The team is very international. A little less than half of the team members are Brazilians, and they are based at the Brazilian partner university. The knowledge, experience and practical know-how (we do a lot of field work) of the Brazilian team members are key for the success of the project. ERC funding allows me to have research staff hired on ERC funding, based at the Brazilian partner university.

What would you say to EU and Brazilian researchers to encourage them to apply for this grant?

An ERC grant opens many doors and opportunities (and in my case resulted in a promotion to a permanent position), and gives you the muscles to address big and important questions.



Raquel Mendonça, please briefly outline your academic career and its developments before joining the ERC team.

I did my graduation and masters at the Federal University of Juiz de Fora (Brazil), working with carbon cycling in inland waters. I did my PhD in Ecology at the Federal University of Rio de Janeiro. My thesis was about carbon sequestration in the sediment of hydroelectric reservoirs.

You are part of Sebastian Sobek's ERC funded project. How did you find out about the ERC selection process and how did you end up in Sebastian's team? Which aspects of the ERC attracted you the most?

I met Sebastian Sobek (Uppsala University, Sweden) when he visited Brazil in 2012. During his stay in Brazil he developed the idea of the project which later was granted an ERC funding, developed in cooperation with the group led by Fábio Roland, my PhD supervisor. Since then, I followed the news about Sebastian's ERC project through contact directly with Sebastian and through the Uppsala University's home page, where the post doc position was announced. I had the good fortune to be selected for this position. It was very attractive to me, because I would work in one of the world's most outstanding biogeochemistry groups (Sobek's group) and, at the same time, it would allow me to continue contributing to the scientific development of my home country, Brazil.

[Raquel Mendonça](#) is interested in understanding the role of freshwater systems in the perturbed carbon cycle. She has a PhD in Ecology from the Federal University of Rio de Janeiro (Brazil) and a postdoc from Radboud University of Nijmegen (RUN, Netherlands). She is currently a postdoc at the Federal University of Juiz de Fora (Brazil) and Uppsala University (Sweden).



Could you tell us a little bit about the research you are conducting with this grant?

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Prof. Moacyr MARTUCCI Jr
Av. Prof. Luciano Gualberto,
Trav 3, 158 – sala C2-49
São Paulo, SP
+55 11 3091 5626
mmartucc@usp.br
cecilia.yamanaka@usp.br

Many new large hydropower dams are being built in the tropics, which is now known to affect the landscape's greenhouse gas emissions and carbon cycling. However, methane (an important greenhouse gas) emissions have been severely underestimated by current studies which also neglect organic carbon sequestration in reservoir sediments. With this ERC grant, we have been applying a combination of emerging and state-of-the-art methodologies from different disciplines to reach a better understanding of carbon processing in reservoirs. We have been conducting several field works in Brazilian reservoirs located at variable biomes and we have performed laboratory experiments both in Brazil and in Sweden. My post doc project is specifically linked to the measurements of sediment carbon sequestration. However, I have the chance to participate on practically all aspects of the project, from field work organisation, to writing papers.

How is the ERC grant influencing your research career, what advantages does it offer? Are you planning to go to Sweden as part of the project?

This ERC project is undoubtedly a turning point in my scientific career. It permits me to work with the most up-to-date technologies in my field and to participate on high-impact publications. More importantly than that, it significantly broadened my international collaboration network, opening doors to future projects. I also had the opportunity to work in Sweden, where I spent most part of my first postdoc year . After the field works in Brazil started, I moved back to Brazil, but I spend about two months per year in Sweden, working on experiments and on papers together with the Swedish researchers and students. This project gave me the unique opportunity to be part of an international research group based in Sweden and, at the same time, work from my home country, where I supervise students and teach in a post graduate programme (PGECOL/UFJF).

What would you say to Brazilian researchers to encourage them to apply for an ERC starting grant and/or as an ERC team member ?

The fact that there is high competition for this funding should not hold us back. I strongly recommend Brazilian researchers to apply to ERC grants or to positions within ERC-financed projects. It creates endless research opportunities.