



SCAR Visiting Professor Scheme Report



Name of Visiting Professor: Catherine GOYET

Position: Professor

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Host Institution

Host Contact: Prof. Dr. Rodrigo KERR, Universidade Federal do Rio Grande – FURG, Institute of Oceanography.

Host Contact Email: rodrigokerr@furg.br

Host Country: Brazil

Dates of Visit

June 3, 2019 to June 10, 2019

Summary of Visit

On the first day of my visit with Pr. Dr. Rodrigo Kerr, he showed me the nice FURG campus with all the various building, before showing me in details the LEOC laboratory where he is working. There he introduced me to the staff as well as the students. We started to have some scientific discussions.

On the following days, my host introduced me to other marine scientists from buildings, so we could interact and get an excellent overview of the current scientific challenges in Antarctic sciences. Later on we took some time to work together specifically with our common Ph.D student. One of her first author paper was accepted this week. She is progressing nicely and we foresee her Ph.D defense as earlier planned in February 2020.

One afternoon we had discussion with the laboratory students. One of them presented her work and we gave her advices to improve it and go further.

I also gave a lecture attended by approximately 120 persons (scientists, professors and graduate and post-graduate students), where I presented our work and gave ideas to discuss for future work in Antarctica. Thus, we talked about developing new instrumentation for high frequency measurements of the four properties (pH, C_T , A_T , pCO_2) of the carbonate system in seawater, as well as using models and satellite data to quantify ocean acidification over the whole Antarctic Ocean.

We also had a specific meeting to plan for our future work together to continue our collaboration over the next few years, mainly in the context of the new Brazilian Antarctic project PROVOCAR approved by PROANTAR to occur between 2020-2023. Thus, we plan to go to sea, share data, and write common scientific articles.

In summary, the visit went very smoothly and efficiently. We did everything we had hoped for.

Capacity Building, Education and Outreach Activities

Before my visit, I guided the research of two Brazilian Ph.D students from FURG. One of them finished her Ph.D last year.

During my visit at FURG, with my host, we gave some guidance to the other Ph.D student, who will defend her thesis next February.

During my stay at FURG, I had several good opportunities to meet with various students, to give them advices on their research on the Antarctic Ocean. These meetings occurred around tables in meeting rooms as well as in a large amphitheater after I gave a public lecture. These discussions raised the curiosity of several students, who I hope will soon become new researchers into Antarctic Science.

My impact on the host's Antarctic activities include: 1) a widening of the local research to a global view of the whole Antarctic Ocean, 2) a novel technical approach of the measurements of the four properties of the carbonate system in seawater, and 3) students opportunity to work a few months in France, mainly in context of the new FURG internationalization CAPES-PrInt project (<https://print.furg.br/en/>).

Future Plans

One of the objectives of the visit was to reinforce our collaboration and to plan for further work together. We therefore took time, one afternoon, to discuss this issue. It was very well planned, with a skype conference to have Dr. Letícia Da Cunha, from the State University of Rio de Janeiro (UERJ), to join our discussion regarding the marine biogeochemical issues on Antarctic research.

Thus, together, we first identified the main scientific questions that we will address for the next three years. Then we determined how they can be best answered with our various technical and human means. Consequently, we wrote a relatively detailed plan for the measurements that will be performed during the next 2020-2022 PROVOCCAR (approved and funded) cruises. We will share the data and write joint scientific papers.

On a shorter time-scale, over the next six months, we plan to finalize two scientific papers (on our previous collaboration) that will be submitted for publication. I will be also collaborating with one manuscript that is being writing by one of Dr. Rodrigo students, as part of our previous collaboration during the GOAL NAUTILUS project.

We also planned to have student exchanges and thus, we will ask volunteer Brazilian students to apply for CAPES-Print fellowships allowing them to work at least 6 months in my laboratory at the UPVD in France.