



Norwegian University
of Life Sciences

NORA Newsletter no. 4

June 2015

The NORA project is in an active period these days. There is a lot of good science and exiting secondments going on.

Secondments

An important part of a Marie Skłodowska Curie ITN project is the secondments of fellows. In the NORA project, most fellows are on one of their scientific visits in the spring 2015. Here is a “travelogue” from Monica Conthe and Aline Ramos da Silva visiting the Norwegian University of Life Sciences:



Monica: *"It was a great experience to work in a different lab, with different tools and different perspectives. A typical work day would consist of an early morning sampling 'expedition' to a nearby wastewater treatment plant (see picture) - and running back to the lab to do experiments with the freshly-fished activated sludge in "the robot" (i.e. the fantastic robotized incubation system developed at NMBU to carefully monitor the gaseous intermediates of denitrification in many parallel batch experiments). With such experiments, we discovered that the activated sludge studied has a great N₂O reducing capacity, which appears to be even greater than the nitrate reducing capacity. This suggests that there may be a niche for specialized N₂O reducers in wastewater treatment systems, an exciting result! Even though we worked a lot, there was still time to enjoy life: with visits to Oslo, camping in the woods, and other authentic Norwegian experiences - like seeing mooses just some meters from home".*



Dr. Aline Ramos da Silva (Bioclear) and PhD student Monica Conthe (TUD) visiting NMBU in April and May 2015.



Aline: “As part of my NORA project, I came for a secondment at the Nitrogen Group in the Norwegian University of Life Sciences (NMBU) under the supervision of Prof. Åsa Frostegård and Prof. Lars Bakken. In this collaboration, Monica (ESR4), Pawel (ESR1) and I worked with wastewater samples from two municipal treatment plants: Bekkelaget and VEAS. Monica and Pawel carried out batch experiments with activated sludge, where they induced disturbances and analysed the gas production using the robot connected to a gas chromatograph (GC). To follow possible changes in microbial community, check the genetic potential of the activated sludge and the transcriptional profile after disturbances, I collected samples from the experiments and performed DNA and RNA extractions. Then, I followed with PCR and gel electrophoresis to screen the in-house N-cycle primers. My next step is to quantify gene abundances and ratios using qPCR.

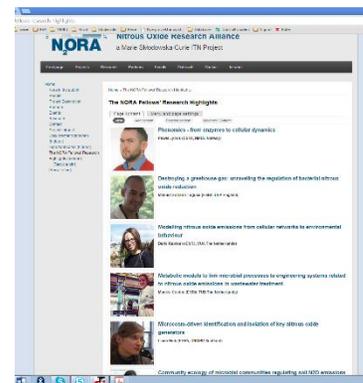
Apart from work, NMBU is located in Ås, a small city surrounded by nature nearby Drøbak and Oslo. Ås is the perfect city to work during the week and enjoy around on weekends.

Finally, I would like to thank Prof. Åsa, Prof. Lars and all the Nitrogen Group for the great work environment and for this fruitful joint collaboration”.

Research highlights on the NORA website

All NORA fellows have written a short, popular scientific report on their research highlights, now uploaded to the [NORA website](#). The reports are important for several reasons

- the NORA website finally shows real scientific activity
- writing this type of reports gives important outreach practice
- obviously, the NORA research is hence more available for the non-scientific audience



Internal Progress Reports - updates

In accordance with the NORA Consortium Agreement, fellows regularly write internal progress reports. The Technical Committee (TC) members evaluate these reports; by now the TC has approved two internal progress reports (June and October 2014). The third internal reports are currently under preparation (deadline June 8, 2015). The Technical Committee has scheduled an evaluation meeting to June 12, 2015 (Skype).

The NORA project’s Internal Progress Reports are available in the [NORA intranet](#) for all NORA supervisors and fellows to keep updated on the latest scientific progress.



The Workshop in Göteborg, May 2015



Written by Jan Reent Köster (ER1):

On May 10 – 13, 2015 a workshop on N₂O and trace gas emissions (a NORA outreach) was held at the University of Gothenburg (UGOT). The workshop was hosted by Leif Klemedtsson and jointly organized by UGOT (Leif Klemedtsson), Yara (Carlo Lammirato, ER2), and NMBU (Lars Bakken and Jan Reent Köster, ER1). The networks of ICOS Sweden and the Swedish Infrastructure for Ecosystem Research (SITES) supported the workshop.

There were sessions on N₂O relevant biological processes, modelling of N₂O fluxes, micrometeorological flux measuring techniques, stable isotope techniques, laser and fast box approaches, as well as automated and robotic field platforms for measuring trace gas fluxes. There was a poster session on the first day.

The conference included a field trip to three different field sites: a willow plantation, an agricultural experimental farm site, and a forest site enclosing a swamp. Here, several Eddy Covariance systems for measuring N₂O, CO₂, and CH₄ fluxes were presented, but also a gradient tower, VOC measurements, and the NMBU field robot in operation measuring N₂O emissions in a wheat field.



The feedback we received from workshop participants so far is without exception very positive, which confirms our impression of a very interesting and successful event. [Read more here.](#)

Work Package 4 (WP4) – Management

Leader Åsa Frostegård

New password – NORA Intranet

As a precaution the password to the NORA Intranet is now changed. The new password was sent out via email to all NORA scientists on May 18, 2015. Please contact the [NORA secretary](#) if you need access.

Project Reporting

The NORA project handed in the [first *Periodic report*](#) on March 1, 2015. This was a comprehensive report including financial statements, to which all partners contributed. REA's Financial Assistant had approved all the Form C's by the end of April. However, the EU continues asking the Coordinator about various project-administrative issues, and withholds the next payment until satisfactory answers are given. Surprisingly, there is so far no feedback from the EU on the NORA research; neither on our latest report, nor on our mid-term review meeting in November last year. We do hope to receive a detailed feedback soon.

The NORA Discussion Forum

[The discussion forum](#) is now running (intranet, logon required). We encourage everyone please to try it out. There is some technical issues concerning the email-notice generated after each comment, but this is currently being improved.

Work Package 5 (WP5) – Teaching Leader Mark van Loosdrecht



Summer Schools 2 and 3 were successfully arranged by TUD in Delft, 15-20 November 2014. All NORA fellows participated, as well as three external PhD students. The schools have been described in the NORA web site:

- [Program for School 2](#) *Systems biology and biochemistry of N₂O producing bacteria; Waste water treatment technologies*
- [Program for School 3](#) *Entrepreneurial skills and IPR*

A QuestBack survey was sent to all school participants for course evaluation. The overall feedback was positive. Clearly, the NORA fellows have different backgrounds and therefore dissimilar needs - some felt that School 3 was more useful than School 2 and *vice versa*. Here are some of the comments from the school participants:

School 2: *"...the level was very well chosen, very interesting lectures."
 "Very nice lectures from brilliant scientists, very well done."
Score: 4.18 out of 5.*

School 3: *"Excellent idea to include general working skills apart from academia
 within a NORA course! Very engaging and talented lecturers."
Score: 3.36 out of 5.*

Work Package 6 (WP6) - Dissemination / Outreach

Leader David Richardson / Andrew Gates

The partners are continuously registering all dissemination activities related to NORA in the [NORA website](#). The dissemination activities are listed in the following, searchable categories:

- scientific publications
- popular scientific publications
- oral presentations
- popular oral presentations
- poster
- media activity

The NORA people also report their dissemination activities directly to the WP6 leader ([Andy Gates](#)).

The next NORA meeting

The next meeting will be in Aberdeen, in October 2015. This meeting will be coordinated with the N-cycle meeting and the “TechFest” arrangement (both in Aberdeen).

- [N-cycle meeting](#): Mon 28. – Wed 30. September, 2015
- [TechFest Aberdeen](#): a two months’ science arrangement open to all in September 2015
- NORA project meeting, Thursday October 1, 2015.
- [NORA Summer School 4](#) “*Transferable skills including: personal effectiveness, communication, team-working and career management*”: Fri Oct 2 - Fri Oct 9, 2015



University of Aberdeen