



Modelling N_2O dynamics in the engineered N cycle: Observations, assumptions, knowns, and unknowns

Smets, Barth F.; Pellicer i Nàcher, Carles; Jensen, Marlene Mark; Ramin, Elham; Plósz, Benedek; Domingo Felez, Carlos; Mutlu, Ayten Gizem; Scheutz, Charlotte; Thamdrup, Bo; Chandran, Kartik

Total number of authors:

13

Publication date:

2013

Document Version

Publisher's PDF, also known as Version of record

[Link back to DTU Orbit](#)

Citation (APA):

Smets, B. F., Pellicer i Nàcher, C., Jensen, M. M., Ramin, E., Plósz, B., Domingo Felez, C., Mutlu, A. G., Scheutz, C., Thamdrup, B., Chandran, K., Sin, G., Lemaire, R., & Kuypers, M. (2013). *Modelling N_2O dynamics in the engineered N cycle: Observations, assumptions, knowns, and unknowns*. Abstract from ICON3: 3rd international conference on Nitrification, Tokoy, Japan.

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

ICON 3 – 3rd International conference on nitrification, 2nd-5th September 2013,
Tokyo (Japan)

Modelling N₂O dynamics in the engineered N cycle: Observations, assumptions, knowns, and unknowns

Barth F. Smets, Carles Pellicer-Nàcher, Marlene Mark Jensen, Elham Ramin, Benedek Gy.

Plósz, Carlos Domingo-Félez, Gizem Multu, Charlotte Scheutz, Bo Thamdrup, Kartik

Chandran, Gürkan Sin, Romain Lemaire, and Marcel Kuypers

Research on nitrous oxide formation in engineered wastewater systems has experienced an exponential development in the recent years due to the important environmental impact of this greenhouse gas. These efforts have crystalized in a large number of publications that aim to identify the importance of the main microbial processes responsible for its production and consumption. The conceptualization of these pathways in mathematical models has the potential to become a key tool to increase our understanding on the complex interrelationships within these ecosystems and develop strategies to minimize the carbon footprint of wastewater treatment plants. Unfortunately, existing model structures are limited to describe the emissions of individual microbial pathways in an attempt to decrease their complexity and facilitate their calibration. The present contribution summarizes the recent developments in this field and makes use of sensitivity analyses, and an in-depth study of model uncertainties to establish experimental protocols that facilitate the calibration and predictive ability of a new generation of more realistic models describing N₂O production during wastewater treatment.