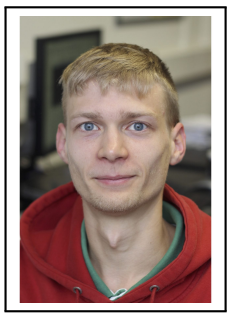

# Chaïm De Mulder

## Experience

Oct. 2015 – present **PhD Candidate**, *Ghent University, Faculty of Bioscience engineering, Department of Data Analysis and Mathematical Modeling, BIOMATH group (Model based bioprocess analysis and optimisation)*.

GHENT UNIVERSITY

Model-based decision support, knowledge build-up and advanced modeling of the Wastewater Treatment Plant of Eindhoven, The Netherlands, in close collaboration with the operators (Waterboard De Dommel).

Oct. 2014 – Oct. 2015 **Research Assistant**, *Ghent University, Faculty of Bioscience engineering, Department of Data Analysis and Mathematical Modeling, BIOMATH group (Model based bioprocess analysis and optimisation)*.

Hydrodynamic and biokinetic modeling in the context of the High Rate Activated Sludge process, in collaboration with Waterboard Brabantse Delta, The Netherlands

2015–present **IWA involvement**.

IWA the international water association

- Active YWP member in the board of directors of the Belgian branch of IWA (B-IWA)
- Organising Committee member of the IWA YWP Benelux Conference, Gent, Belgium, July 2017

Jul. – Aug. 2013 **Internship in combination with master thesis**, *DC Water, Research and Development Department*, Washington DC, USA.

Jul. – Aug. 2012 **IAESTE Internship**, *Aalto University, Department of Biotechnnology and Chemical Technology*, Espoo, Finland.

## Education

2012–2014 **Master in Bio-Science Engineering: Environmental Technology**, *Ghent University*.

2009–2012 **Bachelor in Bio-Science Engineering: Environmental Technology**, *Ghent University*.

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## Extra-curricular

2018–present **Climate Express**.

Voluteers for a socially just transition to a carbon-neutral society.

2018–present **Climate Response**.

Spreading facts on Climate Change.

2013–2018 **IAESTE**.

International Association for the Exchange of Students for Technical Experience.

**Sports and general interests**

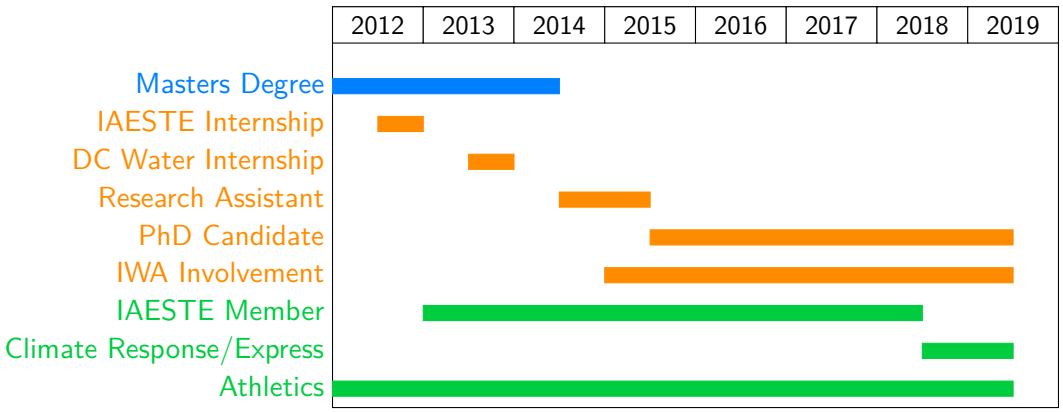
Athletics (recreational and competition), music, board games, climate related, environmental and social issues, Nordic culture.

## Skills

Software
- Advanced: WEST (Mike by DHI), Python (pandas, Jupyter), GitHub, LaTeX
- Basic: MS Office, OpenFOAM, Matlab - Simulink, Inkscape, Drupal, command line tools

Soft skills
- Social and open-minded
- Enthusiastic, engaged, motivated

Languages
- Native: Dutch
- Fluent: English
- Basic: French, Swedish

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# Scientific publications

## Journal papers


Bellandi, G., **De Mulder, C.**, and Nopens, I. (2019). "Tanks in series versus compartmental model configuration: Considering hydrodynamics helps in parameter estimation for an N2O model". In: *Water Science and Technology* 79.1, pp. 73–83.

Vandekerckhove, Tom G.L., Bodé, S., **De Mulder, C.**, Vlaeminck, S. E., and Boon, N. (2019). "13C Incorporation as a Tool to Estimate Biomass Yields in Thermophilic and Mesophilic Nitrifying Communities". In: *Frontiers in Microbiology* 10, p. 192. DOI: 10.3389/fmicb.2019.00192.

Vandekerckhove, Tom G.L., Kerckhof, Frederiek-Maarten, **De Mulder, C.**, Vlaeminck, Siegfried E., and Boon, Nico (2019). "Determining stoichiometry and kinetics of two thermophilic nitrifying communities as a crucial step in the development of thermophilic nitrogen removal". In: *Water Research* 156, pp. 34–45. ISSN: 0043-1354. DOI: https://doi.org/10.1016/j.watres.2019.03.008. URL: http://www.sciencedirect.com/science/article/pii/S0043135419302192.

**De Mulder, C.**, Flameling, T., Weijers, S., Amerlinck, Y., and Nopens, I. (2018). "An open software package for data reconciliation and gap filling in preparation of Water and Resource Recovery Facility Modeling". In: *Environmental Modelling & Software* 107, pp. 186–198. DOI: 10.1016/j.envsoft.2018.05.015.

Porro, J., **De Mulder, C.**, Amerlinck, Y., Torfs, E., Balemans, S., Weijers, S., Nopens, I., Rodriguez-Roda, I., and Comas, J. (2018). "Building an integrated AI and mathmatical modeling framework for online supervision and control of water resource recovery facilities". In: *Proceedings of the Water Environment Federation* 2018.10, pp. 4025–4028.

Seuntjens, D., Han, M., Kerckhof, F-M., Boon, Al-Omari, A., Takacs, I., Meerburg, F., **De Mulder, C.**, Wett, B., Bott, C., Murthy, S., Carvajal Arroyo, J.M., De Clippeleir, H., and Vlaeminck, S.E. (2018). "Pinpointing wastewater and process parameters controlling the AOB to NOB activity ratio in sewage treatment plants". In: *Water Research* 138, pp. 37–46.

Vandekerckhove, Tom G.L., **De Mulder, C.**, Boon, N., and Vlaeminck, S.E. (2018). "Temperature impact on sludge yield, settleability and kinetics of three heterotrophic conversions corroborates the prospect of thermophilic biological nitrogen removal". In: *Bioresource Technology* 269, pp. 104–112.

**De Mulder, C.**, Van Hoey, S., Van Hulle, S., Agathos, S.N., Cauwenberg, P., Mergen, P., Seuntjens, P., Smets, I., De Gueldre, G., Mouton, A., Schowanek, D., Meesschaert, B., Verstraete, W., and Nopens, I. (2016). "Pressing topics in the Belgian water sector anno 2015". In: *Sustainability of Water Quality and Ecology* 7, pp. 32–36.

Seuntjens, D., Bundervoet, B.L.M., Mollen, H., **De Mulder, C.**, Wypkema, E., Verliefde, A., Nopens, I., Colsen, J.G.M., and Vlaeminck, S.E. (2016). "Energy efficient treatment of A-stage effluent: pilot-scale experiences with shortcut nitrogen removal". In: *Water Science and Technology* 73.9, pp. 2150–2158.


## Conference papers (presentations and posters)


**De Mulder, C.**, Flameling, T., Langeveld, J., Amerlinck, Y., Weijers, S., and Nopens, I. (2017a). "Automating the raw data to model input process: an open Python™ package". In: *5th IWA BeNeLux Young Water Professionals Conference*. Ghent, Belgium.

**De Mulder, C.**, Flameling, T., Langeveld, J., Amerlinck, Y., Weijers, S., and Nopens, I. (2017b). "Automating the raw data to model input process using flexible open source tools". In: *Lecture notes in civil engineering*. Ed. by Giorgio Mannina. Vol. 4. Palermo, Italy, pp. 92–97.

**De Mulder, C.**, Flameling, T., Langeveld, J., Weijers, S., Nopens, I., and Amerlinck, Y. (2017). "From online data to model input: a flexible open source data analysis tool". In: *Proceedings of the IWA 2017 Conference on Sustainable Wastewater Treatment and Resource Recovery: Research, Planning, Design and Operation*. Chongqing, China.



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**De Mulder, C.**, Rehman, U., Audenaert, W., Amerlinck, Y., Flameling, T., Weijers, S., and Nopens, I. (2017). "Sensor location in WRRFs: easy change, big win". In: *Proceedings of the 12$^{th}$ IWA Specialized Conference on Instrumentation, Control and Automation*. Québec, Canada.

Seuntjens, D., Carvajal Arroyo, J.M. Maria, Bunse, P., **De Mulder, C.**, Agrawal, S., Boon, N., Lackner, S., and Vlaeminck, S.E. (2017). "High-resolution kinetics of anammox inhibition and recovery from oxygen exposure". In: *Proceedings of the 5$^{th}$ International conference on Nitrification and Related Processes*. Vienna, Austria.

Vandekerckhove, Tom G.L., Bodé, S., **De Mulder, C.**, Boon, N., and Vlaeminck, S.E. (2017). "Characterizing stoichiometry and kinetics of two thermophilic nitrification communities: a crucial step in the development of thermophilic biotechnology for nitrogen removal". In: *Proceedings of the 5$^{th}$ International conference on Nitrification and Related Processes*. Vienna, Austria.

**De Mulder, C.**, Balemans, S., Jimenez, J., Regmi, P., De Clippeleir, H., Valverde-Perez, B., Bott, C., Miller, M., Klaus, S., and Nopens, I. (2016). "Workshop on modelling of two-stage WWT systems: a faster road towards resource recovery". In: *Proceedings of the 5$^{th}$ IWA/WEF Wastewater Treatement Modelling Seminar*. Annecy, France: Water Environment Federation (WEF); International Water Association (IWA).

Rehman, U., Amerlinck, Y., Arnaldos, M., Porro, J., **De Mulder, C.**, and Nopens, I. (2015). "Computational fluid dynamic modeling of nitrous oxide in a full scale WWTP". In: *Watermatex, 9$^{th}$ IWA Symposium on system analysis and integrated water management*. IWA. Gold Coast, Queensland, Australia.

Seuntjens, D., **De Mulder, C.**, De Clippeleir, H., Murthy, S., Li, Z., Chandran, K., Nopens, I., and Vlaeminck, S.E. (2014). "Investigating AOB and NOB kinetic parameters for oxygen under moderate climate wastewater conditions". In: *ENC, 19$^{th}$ European Nitrogen Cycle Conference, Abstracts*. Ghent, Belgium.

## Software

**De Mulder, C.** (2018). *wwdata v0.2.0: Data analysis package aimed at data obtained in the context of (waste)water*. DOI: 10.5281/zenodo.1288581. URL: https://github.com/UGentBiomath/wwdata.

**De Mulder, C.** (2017). *wwdata v0.1.0: Data analysis package aimed at data obtained in the context of (waste)water*. DOI: 10.5281/zenodo.1035738. URL: https://github.com/UGentBiomath/wwdata.

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## Scientific conferences

| | |
|---|---|
| Apr. 2–6, 2016 | IWA/WEF Wastewater Treatment Plant Modeling seminar (WWTMod)<br>Annecy, France, Workshop co-organizer |
| May 21–24, 2017 | Frontiers International Conference on Wastewater Treatment (FICWTM)<br>Palermo, Italy, Oral presentation |
| June 11–14, 2017 | IWA Specialized Conference on Instrumentation, Control and Automation (ICA)<br>Québec City, Canada, Oral presentation (not present at the conference) |
| July 5–7, 2017 | Young Water Professionals BeNeLux conference<br>Ghent, Belgium, Oral presentation |
| Nov. 7–9, 2017 | IWA Conference on sustainable Wastewater Treatment and Resource Recovery: Research, Planning, Design and Operation (NRR-LWWTP)<br>Chongqing, China, Oral presentation |
| Mar. 10–14, 2018 | IWA/WEF Water Resource Recovery Modelling Seminar (WRRMod)<br>Québec City, Canada, Poster presentation |
| Sept. 16–21, 2018 | IWA World Water Congress and Exhibition<br>Tokyo, Japan, Poster presentation (not present at the conference) |

## Educational activities

| | |
|---|---|
| Teaching | • Assisting with the Master course Modeling and Control of Wastewater Treatment Plants |
| MSc student guidance | • Katrien Couchez: Modeling the effect of urine separation on full-scale Waste Water Treatment Plant operation.<br>• Vincent Van De Maele: The impact of fluctuating energy prices on WWTP cost optimisation<br>• Tom Lauriks: Opportunities and limitations of connecting Life Cycle Assessment to a dynamic wastewater treatment plant model |

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