



Good Coding Practice In WRRF Modelling: Hands-On Session



5/02/24
4pm CET

Speakers



E. Torfs
(Ulaval)



M. Schneider
(UGent)



S. Daneshgar
(UGent)



C. Gomez
(UGent)



F. Wenk
(Eawag)



X. Zou
(UST)



S. Borzooei
(IVL)



J.-J. Zhu
(Princeton)



A. Tafti
(Poly. Montreal)



M. Serrao
(Suez)

The session will be recorded



AGENDA AND HOUSEKEEPING

Introduction to MIA

Saba Daneshgar (UGent, Belgium, co-chair modelling and integrated assessment)

Version control with Git

Cristian Gómez Cortés (UGent, Belgium)

Virtual Environments in Python

Mariane Schneider (UGent, Belgium)

Examples with a package: PeePyPoo.py

Florian Wenk (Eawag, Switzerland)

Hands on!

Xu Zou (Eawag, China)

Hands on session with breakout rooms (you can change between the rooms)

- This session is being recorded;
- Please do not use the chat function.
- Please put any questions and comments you may have in the Q&A and we will do our best to answer them during the session (in writing or orally).
- Microphones and cameras have been disabled due to the large number of attendees.



Hybrid modelling working group: a recent and quite active working group



The faces of the hybrid modelling working group



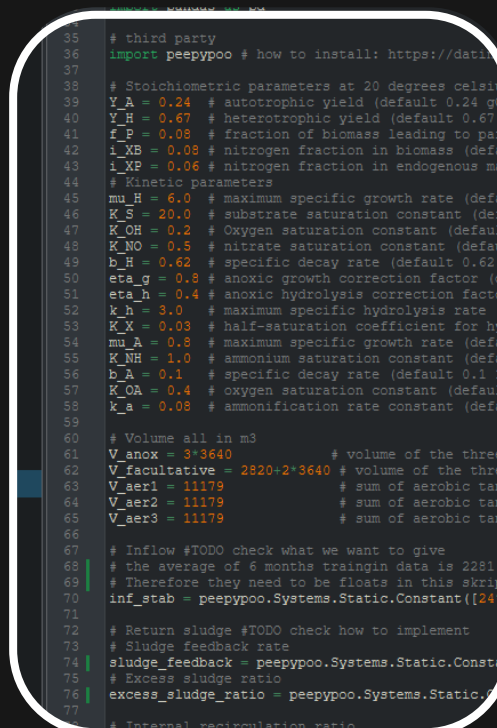
Kaggle competition on hybrid modelling

You get



Data and a mechanistic model

You develop



Data-driven, mechanistic or hybrid model

Register now



$\Sigma_{\text{Prize}} = 1000 \text{ €}$
and more

Deadline: March 1st 2024

Who wins?

- Utilize any available method to predict the effluent concentration
- Mechanistic, data-driven or hybrid: Is there a clear winner among the models or is it up to the competitors modelling skills?
- Motivate your students to compete or compete yourself
- Long term goal: establish good coding and good modelling practices in our field



Register now



**$\Sigma_{\text{Prize}}=1000 \text{ €}$
and more**

[https://www.kaggle.com/competitions/
dynamic-modeling-of-wastewater-
treatment-process/overview](https://www.kaggle.com/competitions/dynamic-modeling-of-wastewater-treatment-process/overview)



Why would you want a lightweight, yet isolated Python environment?

e.g. so that today's exercise does not mess up your normal workflow.



Virtual environments in Python

Windows:

- Go to folder where you would like to have your virtual environment in
- Open command line (cmd)
- Create the virtual environment
“python -m venv venv”



Command to create the virtual environment

Name the folder containing the virtual environment will have

- Activate the venv “venv\Scripts\activate”

```
D:\Code\PeePyPoo>python -m venv venv3
```

```
D:\Code\PeePyPoo>venv\Scripts\activate
```

```
(venv) D:\Code\PeePyPoo>
```

Linux/Mac

- Go to folder where you would like to have your virtual environment in
- Open a terminal
- Create the virtual environment
“python -m venv venv”
- Activate the venv “source <venv>/bin/activate”



Path to virtual environment



MIA Welcome Note

IWA Modelling and Integrated Assessment Specialist Group

Dr. Elena Torfs

(Chair of MIA SG)

Dr. Saba Daneshgar

(Vice-chair of MIA SG)



inspiring change





“This group targets people from research, consulting companies, institutions and operators to think along the use of models and computing tools to support the understanding, management and optimization of water systems.”

PRIORITIES

- Stimulate interaction and knowledge transfer in the domain of modelling and integrated assessment
- Interact with other IWA SGs and other academic/professional organisations

inspiring change

How to find us



Website: <http://iwa-mia.org/>



<https://iwaconnectplus.org>

MIA SG: Activities



Task Groups (TGs)

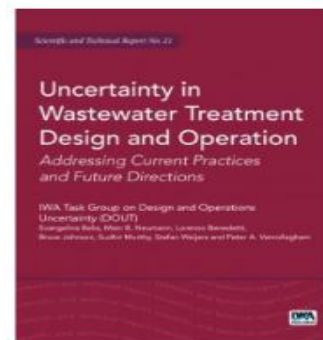
- Benchmarking of Control Strategies for WWTPs (BSM) **AND** Good Modelling Practice (GMP) **AND** Design and Operations Uncertainty (DOUT) **AND** Generalised Physicochemical Modelling (PCM) **AND** Use of Modelling for Minimizing GHG Emissions from Wastewater Systems (GHG) **(All finished)**
- Membrane Bioreactor Modelling and Control (MBR)
- Good Modelling Practice in Water Resource Recovery Systems (GMP2)

Working Groups (WGs)

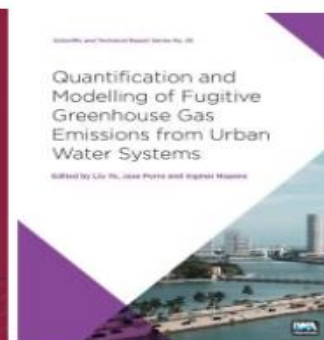
- Integrated Urban Water Systems (IUWS)
- Computational Fluid Dynamics (CFD)
- Good Modelling Practice (GMP)
- Hybrid Modelling (HM) **(New)**

Conferences / Events

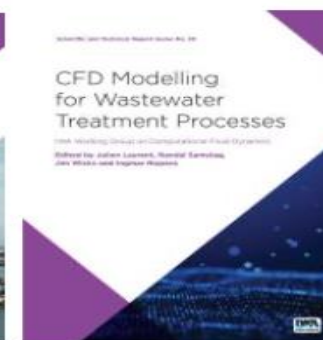
- WRRmod
- Watermatex



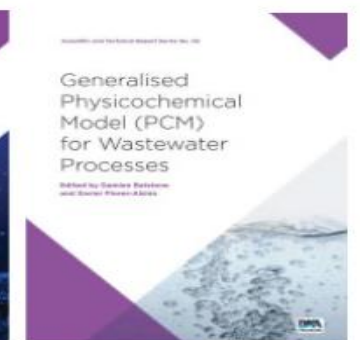
STR
(2021, OA)



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(2022, OA)



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(2022)



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(2022, OA)



MIA SG: RECENT & UPCOMING CONFERENCES

11th Symposium on Modelling and Integrated Assessment (Watermatex2023)

Location: Québec City, Canada, 23-27 Sept. 2023

Chair/vice-chair: Prof. Peter Vanrolleghem (Univ. Laval)/Dr. Elena Torfs (Univ. Ghent)



9th Water Resource Recovery Modelling seminar (WRRmod2024)

Location: Notre Dame, Indiana, USA, 6-10 April 2024

Organisers: Adrienne Menniti, Leon Downing, Tom Johnson, Rob Nerenberg



WRRmod2026 (To be announced soon)



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To get informed about our latest events, publications and news!



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IWAConnect



<https://www.linkedin.com/company/iwa-mia-specialist-group-on-modelling-and-integrated-assessment>

MIA SG open web site

<http://iwa-mia.org>



https://twitter.com/iwa_mia_sg

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