



MIA Specialist Group

Open Group meeting at WWC&E2024

Dr Elena Torfs

Chair of MIA SG, Université Laval, Canada

Dr Saba Daneshgar

Vice-Chair of MIA SG, Ghent University, Belgium



inspiring change



AGENDA



- Introduction
- Group organization and composition
- Activities
 - Associated YWP initiatives
 - Task Groups and Working Groups
 - Webinars
 - Conferences
 - Others
- YWP positions in MIA MC

AGENDA



- Introduction
- Group organization and composition
- Activities:
 - Associated YWP initiatives
 - Task Groups and Working Groups
 - Webinars
 - Conferences
 - Others
- YWP positions in MIA MC

MIA SPECIALIST GROUP



“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

How to find us



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



About this group

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

<https://iwaconnectplus.org>

GENERAL ACTIVITIES OF MIA MC



- Spread information of the Group's activities and developments
- Convene conferences and arrange workshops/webinars
- Initiate research and case studies, produce special papers
- Stimulate initiation and host Task Groups and Working Groups
- Interact and streamline activities with other IWA SGs, as well as with other academic and professional organisations
- Start SG-internal committees on specific emerging topics of interest
- Work for the benefit of our members, assist IWA HQ on issues

ORGANISING THE WORK WITHIN MIA

- Monthly electronic MC meetings (1 hour)
- Tri-monthly focused YWP meetings + mentoring
- Open MIA SG meeting at major conferences (1/yr)
- Short newsletter (generated from IWAconnectplus)
- Posting news on IWA Connectplus platform
- Manage open MIA website for non-IWA members
- Produce MIA part of the IWA Global Trend Report series
- Close collaboration with IWA HQ, IWA SC2SG and IWA Learn

ORGANISING THE WORK WITHIN MIA



- Strong focus on TGs and WGs
- Organise conferences and workshops (IWA/MIA events)
- Organise workshops or sessions at non-IWA/MIA conferences (SETAC, IFAC)
- Organise webinars
- Create MIA visibility on social media (LinkedIn, Twitter, YouTube)
- **Create friendships**
- **Remember face-to-face social activities**

AGENDA



- Introduction
- Group organization and composition
- Activities:
 - Associated YWP initiatives
 - Task Groups and Working Groups
 - Webinars
 - Conferences
 - Others
- YWP positions in MIA MC

MIA MANAGEMENT COMMITTEE

- “Time is the enemy” – ALL SG WORK is VOLUNTARY!
- Dedicated MC members essential
- MC: 14 senior members (+ outgoing chair) & 14 **associated YWPs** working in teams

- **MC** more **ACTIVE** and **DYNAMIC**
- Higher work **CAPACITY**
- Create **OPPORTUNITIES** for YWPs

Across
11 Countries
~20 Institutions



PHILOSOPHY ASSOCIATED YWPs

Active program to fully engage, mentor and involve YWPs

- Every “full” MC member teamed up with associated YWP
- Teams made up from different research groups
- Senior MC members take on mentoring role
 - Train YWPs in leadership
 - Actively involve them in MC activities
- Associated YWPs can grow into full members if place opens up
- This innovative approach has now been adopted by many other SGs

ASSOCIATED YWPS



- Much of MC work is handled by YWPs
- Great thanks to former chairs Ingmar Nopens & Ulf Jeppsson
- Great thanks to all MIA MC YWPs

MANAGEMENT COMMITTEE

- Lluís Corominas (Webinar Coordinator)
- Bruce Johnson (Industrial Insight Officer)
- Kimberly Solon (Administrative Coordinator)
- Giacomo Bellandi (TG and WG Coordinator)
- Lina Belia (Industrial Insight Officer)
- Lloyd Townley (Conference and Workshop Coordinator)
- Andreia Amaral (IWA Connect Officer)
- Vacant (Industrial Insight Officer)
- Marie-Noelle Pons (Webmaster)
- Peter Bach (YWP Relations Officer)
- Juan Baeza (SG Outreach Coord.)
- Sina Borzooei (Social Media Coord.)
- Ulf Jeppsson (Outgoing chair)

Associated YWPs

- Feiyi Li
- Arifur Rahman
- Fanlin Meng
- Fabio Polese
- Gamze Kirim
- Sovanna Tik
- Gabriel Capson-Tojo
- Vacant
- Mahmudul Hasan
- Christoffer Wärrff
- Borja Valverde-Perez
- Ahmed Shaqfa



Elena Torfs
(Chair)
Université Laval, Canada

Associated YWP:
Vacant



Saba Daneshgar
(Vice chair)
BIOMATH, UGent, Belgium

Associated YWP:
Tri Le

MIA GROUP MEMBERS



- 1918 members (according to IWAconnect, Sep. 2022)
- 677 members (according to IWAconnectplus, Aug, 2024)

(not all members have registered on the new IWA platform)

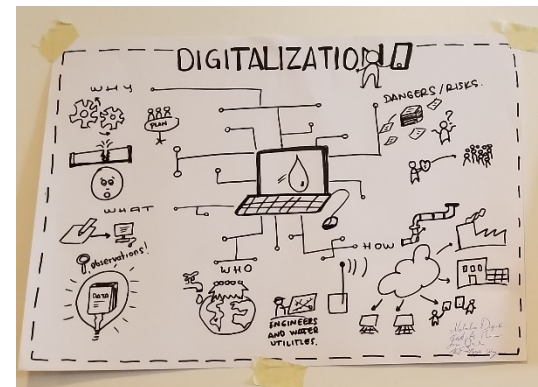
AGENDA



- Introduction
- Group organization and composition
- **Activities**
 - Associated YWP initiatives
 - Task Groups and Working Groups
 - Webinars
 - Conferences
 - Others
- YWP positions in MIA MC

INITIATIVES OF ASSOCIATED YWPs

- TG/WG liaisons: YWPs form direct link between MC and TG/WGs
- 3-monthly separate YWP meeting discussing ongoing activities and new initiatives + mentoring
- (Co-)organization of workshops
 - Integrated modelling workshop at YWP conference Toronto
 - YWP workshop at Watermatex 2023
 - YWP workshop at WRRmod2022+ and WRRmod2024



WRRmod2022+
South Africa

INITIATIVES OF ASSOCIATED YWPs

- **MIA INTERNAL YWP SEMINARS**
 - To present their background, current research and seek an opportunity for potential collaboration
- **MIA SG NEWSLETTER**
 - Newsletter for MIA members once in 3 months through IWA-connect



- **SUPPORTING LOCAL YWP CHAPTERS**



- **NETWORKING EVENTS WITH IWA SPECIALIST GROUPS YWPs**

- In planning phase



- **YWP SEMINARS OPEN TO ALL YWPs**

- Seminars are being planned in the field of MIA and networking event

TASK GROUPS AND WORKING GROUPS



- MIA has a strong focus on TGs and WGs
- YWP liaisons to all TGs and WGs
- Request on our TGs: report on progress, update website etc
- Soon dedicated IWAconnectplus subpages for each TG and WG

TASK GROUPS AND WORKING GROUPS

Task Groups (TGs)

- Benchmarking of Control Strategies for WWTPs (BSM) and Good Modelling Practice (GMP) (**Finished**)
- Design and Operations Uncertainty (DOUT), chair Lina Belia (**Finished**)
- Generalised Physico-Chemical Modelling (PCM), chair Damien Batstone (**Finishing**)
- Use of Modelling for Minimizing GHG Emissions from Wastewater Systems (GHG), chair Jose Porro (**Finished**)
- Membrane Bioreactor Modelling and Control, chair Giorgio Mannina
- Good Modelling Practice in Water Resource Recovery Systems, chair Patrick Dunlap

Working Groups (WGs)

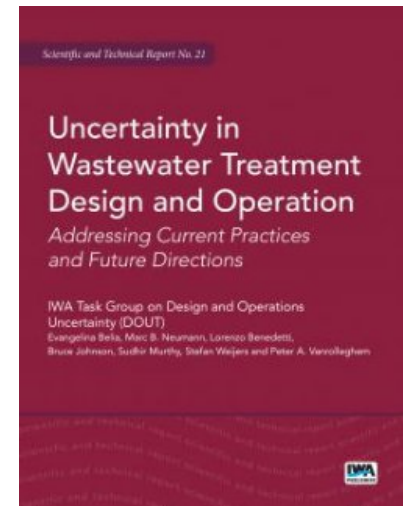
- Integrated Urban Water Systems (IUWS), chair Peter Bach
- Computational Fluid Dynamics (CFD), chair Julien Laurent (**Finished**)
- Life Cycle Analysis (LCA), chair Lluís Corominas – (**Finished**)
- Good Modelling Practice (GMP), chair Günter Langergraber (**Finished**)
- Hybrid Modelling Working Group (HMWG), chair Mariane Schneider
- Generalized Physico-Chemical Modelling, chair Damien Batstone (**soon**)
- Modelling of Phototrophic Systems (**soon**)

IDEAS for NEW TGs or WGs?

TG: Design and Operations Uncertainty

(Chair: Lina Belia – Liaison: Christoffer Wärrff)

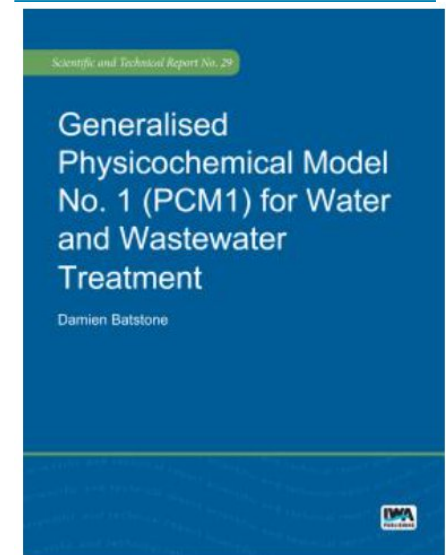
- Goals:
 - Increase efficacy and transparency of wastewater infrastructure (design/operations) via the use of numerical simulation with statistical analysis
- Activities
 - Workshop during Watermatex 2019
 - Webinar February 6, 2018
 - STR published in 2021 (open access)



TG: Generalized Physicochemical Framework

(Chair: Damien Batstone – Liaison: Kimberly Solon)

- Goals:
 - Develop a physicochemical framework with high predictive capacity that is usable across the range of unit operations by both modelers and end-users
- Activities:
 - STR published in 2022 (open access)



TG: Modelling of GHG emissions

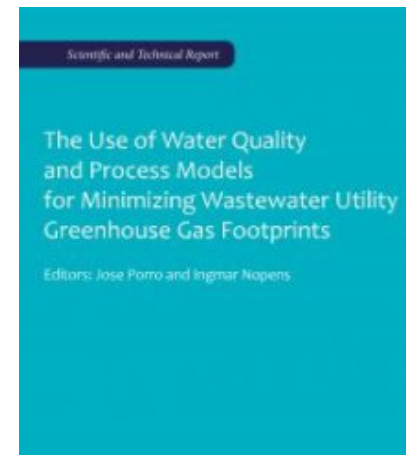
(Chair: Jose Porro)

■ Goals:

- Understand the processes that are responsible for the major contributions to GHG emissions from WWTPs and sewer systems
- Translate this knowledge into mathematical models

■ Activities:

- Development of an N₂O Field Measurements Guide
- Open webinar on Sept. 21, 2021
- STR published in 2022 (open access)



TG: MBR modelling and control

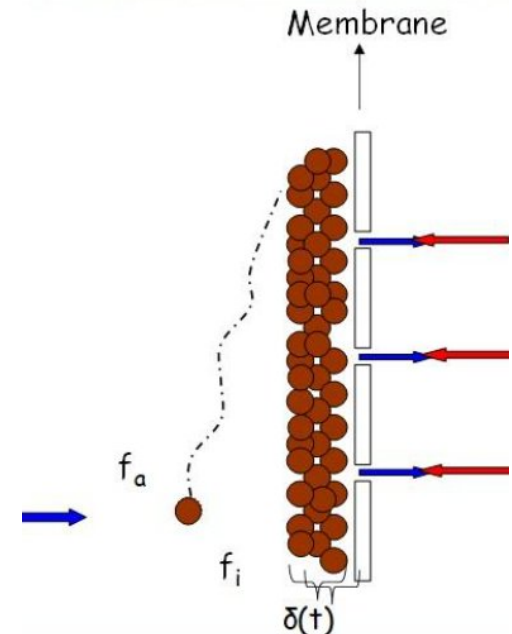
(Chair: Giorgio Mannina – Liaison: Saba Daneshgar)

■ Goals:

- Propose standardized criteria to integrate biological, filtration and energy models for modelling of MBR-based systems.
- Set-up a database that can be used for plant-wide modelling, control and optimization of MBR-based systems.

■ Activities

- Workshops during UDM 2018, Watermatex 2019 and WRRmod2021
- Special session during 9th IWA-MTC conference 2019



TG: Good Modelling Practice in Water Resource Recovery Systems

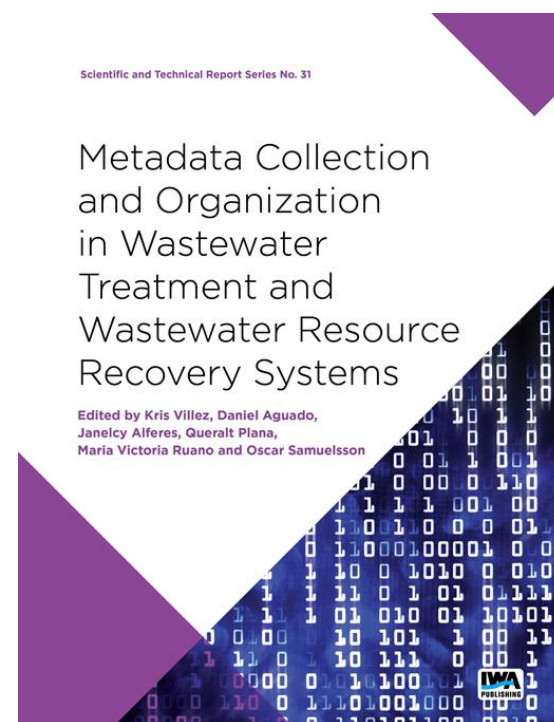
(Chair: Patrick Dunlap – Liaison: Kimberly Solon)

- Goals:
 - Evaluate the adoption of the previous STR.
 - Assess the state of WRRF modelling practice (broadening the focus of the first GMP Task Group, e.g., focus on plant-wide modelling)
 - Provide practitioners with updated and extended guidance to meet new challenges of the industry (e.g., from wastewater treatment to resource recovery systems).
- Activities
 - Start of preparation of STR (review, update, development of new chapters)

TG: Metadata Collection and Organization in Wastewater Treatment and Wastewater Resource Recovery Systems (co-sponsored by ICA)

(Chair: Kris Villez)

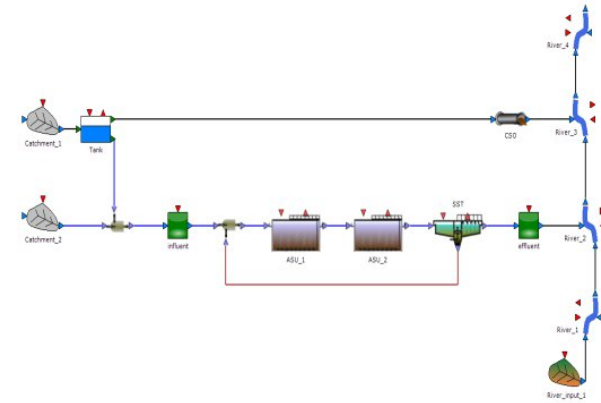
- Goals:
 - Describe structured approaches to the management and storage of meta-data
 - Provide guidelines that are specifically aimed at avoiding duplication of efforts and databases
 - Discuss the current experience with applicable standards such open architectures such as Open Geospatial Consortium WaterML.
 - Discuss the potential of recently developed technologies, including block chain and ontology-based tools.
- Activities
 - STR published in 2024 (Open access)



WG: Integrated Urban Water Systems

(Chair: Peter Bach – Liaison: Sovanna Tik)

- Goals:
 - Integration of models of all components of the water cycle in urban areas including the nutrients and energy cycles
- Activities:
 - Creation of an IWA *WaterWiki* group and a LinkedIn Group for dissemination
 - Webinar September 26, 2017
 - Organization of workshops in Watermatex2015, Urban Drainage 2015, YWP Conference 2019, WRRmod2021
 - *Upcoming*: White paper on barriers to integrated modelling



IWA MIUWS Working Group

MENU

About MIUWS

Home » About MIUWS

Both policy makers and industry are increasingly realizing the necessity to adopt an integrated approach to water management. In Europe, this is clearly stated in the Water Framework Directive, and by the recent funding of large research projects on that topic (e.g. PREPARED, SANITAS, TRUST). In North America, recent activities confirm this direction, e.g. the USEPA's Integrated Planning and Permitting Initiative and integrated planning framework, two new WERF Research Challenges: "Linking Contaminant Sources to Receiving Water Impacts" and "Sustainable Integrated Water Management". Other areas in the world are already following closely. IWA has launched the "Cities of the Future" programme, which has strong integration components.

Website:

<http://miuws.org/index.php/sample-page/>

WG: Computational Fluid Dynamics

(Chair: Julien Laurent – Liaison: Gamze Kirim)

- Goals:
 - Develop guidance documents and hands-on training for good modelling practice in CFD for wastewater treatment modelling
 - Consensus building on state-of-the-art knowledge gaps and future needs
- Activities:
 - Workshop during Watermatex2019, WRRmod2018 and WEFTEC 2017
 - Webinar February 5, 2019
 - Scientific and technical report published in 2022, (open access)
 - Finished



Scientific and Technical Report Series No. 30

CFD Modelling for Wastewater Treatment Processes

IWA Working Group on Computational Fluid Dynamics

Edited by Julien Laurent, Randal Samstag,
Jim Wicks and Ingmar Nopens

WG: Life Cycle Analysis

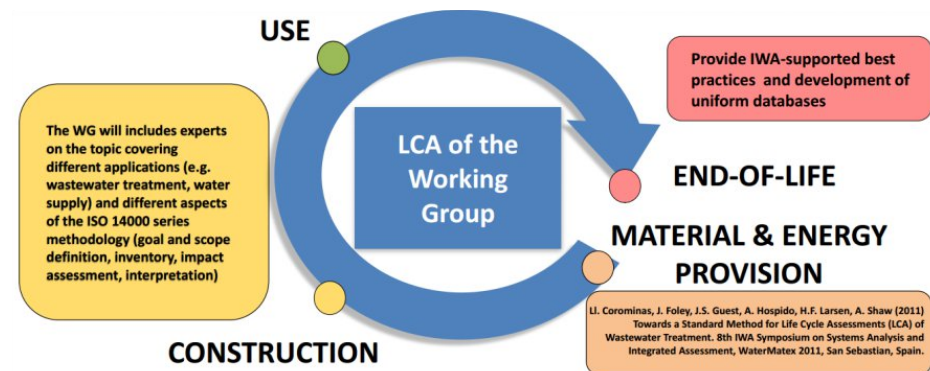
(Chair: Lluís Corominas)

- Goals:

- To facilitate the exchange of ideas and develop consensual methodologies, in order to promote better use of LCA in the urban water systems

- Activities:

- Workshop during Watermatex 2019
- Published white paper on “Life cycle assessment applied to wastewater treatment: An operational guide”
- **Finished**



WG: Good Modelling Practice

(Chair: Günter Langergraber)

- Goals:
 - Create a new Task Group on Good Modelling Practice with a wider perspective (outside AS system)
 - Recruit members for such a TG and transfer knowledge
 - Continue to provide courses etc. on Good Modelling Practice

- Activities:
 - Goals achieved
 - Finished

WG: Hybrid Modelling

(Chair: Mariane Schneider)

- Goals:
 - To disseminate the latest work on application of HM in water sector
 - Investigate and harmonise terminology
 - Facilitate exchange of early ideas and experiences
 - Identify gaps in current knowledge and practices
 - Create an open-source platform with a Git repository
 - Develop a test case study of HM and openly shared data
- Activities:
 - HM workshop at WRRmod2021, WRRmod2022+, WRRmod2024, Watermatex2023 and at WWC&E2022
 - Review article published in WST
 - Webinar November 10, 2020
 - Formally initiated in August 2022

MIA WEBINARS



1. **Overcoming data issues and barriers to integrated modelling in practice** – September 26, 2017 – 225 registered attendees
2. **Modelling resource recovery: State-of-the-art and future challenges** – February 6, 2018 – 461 registered attendees (an IWA record at the time)
3. **New advanced in advanced biological phosphorous removal** – July 9, 2018 – 250 registered attendees
4. **Computational Fluid Dynamics: Applications and good modelling practice** – February 5, 2019 – 380 registered attendees
5. ***Wastewater Disinfection Modelling*** – October 24, 2019 – (392 attendees)
6. ***Advanced Oxidation Process Modelling*** – November 14, 2019 (452 attendees)
7. ***Hybrid Models in Wastewater: Merging mechanistic with data-driven*** – November 10, 2020 (419 attendees)

MIA WEBINARS

- 8. Advancements on N₂O modelling in water resource recovery facilities – September 21, 2021 – approx. 100 attendees (also YouTube)**
- 9. Modelling wastewater treatment resilience for improved decision making and resource recovery– October 21, 2021 – approx. 100 attendees (also YouTube)**
- 10. State-of-the-art in anaerobic digestion modelling – November 22, 2021 – approx. 100 attendees (also YouTube)**
- 11. State-of-the-art modelling on anaerobic mixed-culture fermentation – March 31, 2022 – approx. 100 attendees (also YouTube)**
- 12. *The incorporation of risk and uncertainty in mathematical models to aid the design and operations of WRRFs* – June 8, 2022 – approx. 100 attendees (also YouTube)**

- 13. Modelling greenhouse gas emissions from urban wastewater systems: State-of-the-art and beyond – 21 November 2022 – approx. 100 attendees (also YouTube)**
- 14. Modelling of phototrophic systems for resource recovery – 21 December 2022 – approx. 100 attendees (also YouTube)**
- 15. Modelling tools for water sensitive urban planning – 13 April 2023 – approx. 100 attendees (also YouTube)**
- 16. Generalised Physicochemical Model (PCM) for Wastewater Processes – 19 May 2023 – approx. 100 attendees (also YouTube)**
- 17. Using CFD modeling to enhance wastewater treatment processes – 14 December 2023**

MIA WEBINARS



18. Bridging the gap between the water reuse community and water treatment model developers – 31 January 2024 – approx. 100 attendees (also YouTube)

19. Good coding practice in WRRF modelling: Hands-on session – 5 February 2024 – approx. 50 attendees (also YouTube)

MIA UPCOMING WEBINARS



20. WRRF Influent Soft Sensors – Oct/Nov 2024

21. Industrial wastewater modelling – Feb/Mar 2025

22. Digital twin applications for WRRFs – 2025

JOIN US TO CONTRIBUTE TO WEBINARS WITH YOUR IDEAS



- You are invited: workshop organizers, speakers, expertise...
- Any topics related to water modelling, simulation, optimization...
- Collaborate with us webinars@iwa-mia.org for your webinar proposal

UPCOMING CONFERENCES

10th Water Resource Recovery Modelling seminar (WRRmod2026)

- Location: Barcelona, Spain, June 2026
- Chairs: Juan Antonio Baeza & Paloma Grau (Universitat Autònoma de Barcelona & Universidad de Navarra)

12th Symposium on Modelling and Integrated Assessment (Watermatex2027)

- Location: to be selected
- Applications are open for the next host: deadline 20 September 2024. [More info!](#)



PROCEEDINGS ON IWA_CONNECT

(HOPEFULLY WILL BE MADE AVAILABLE IN THE NEW PLATFORM)

Publications

- [WRRmod2021, Virtual](#)
 - [WRRmod2018, Québec, Canada](#)
 - [WWTmod2016, Annecy, France](#)
 - [WWTmod2014, Spa, Belgium](#)
 - [WWTmod2012, Québec, Canada](#)
 - [WWTmod2010, Québec, Canada](#)
 - [WWTmod2008, Québec, Canada](#)

 - [Watermatex2019, Copenhagen, Denmark](#)
 - [Watermatex2015, Queensland, Australia](#)
 - [Watermatex2011, San Sebastian, Spain](#)
 - [Watermatex2007, Washington DC, USA](#)
 - [Watermatex2004, Beijing, China](#)
 - [Watermatex2000, Ghent, Belgium](#)
- [ICA2017, Québec, Canada](#)
 - [ICA2013, Narbonne, France](#)
 - [ICA2009, Cairns, Australia](#)
 - [ICA2001, Malmo, Sweden](#)

 - [FICWTM2017, Palermo, Italy](#)

 - [AutMoNet2007, Ghent, Belgium](#)
 - [AutMoNet2004, Vienna, Austria](#)
 - [AutMoNet2002, Vienna, Austria](#)

 - [IT&Water2012, Amsterdam, The Netherlands](#)

OTHER

- Steering committee member to [IWA Digital Water Program](#) (Saba Daneshgar)
- Steering group of [IWA Cluster on Wastewater-based Epidemiological Surveillance](#) (Lluís Corominas and Sovanna Tik)
- IWA Global Trend Report 2022: Emerging Topics in Modelling and Integrated Assessment (next edition for WWC&E 2026)
- Yearly summary of MIA activities on our web sites

SOCIAL MEDIA



Follow the Modelling and Integrated Assessment Specialist Group on



<https://www.iwaconnectplus.org/group/MIA>

MIA SG open website

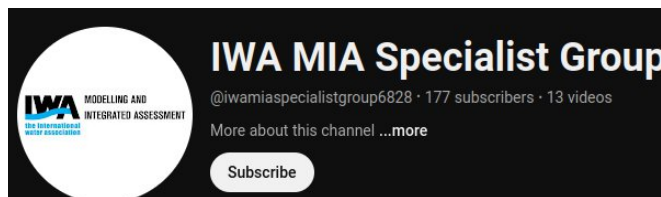
<http://iwa-mia.org>



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



https://twitter.com/iwa_mia_sg



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

AGENDA



- Introduction
- Group organization and composition
- Activities
 - Associated YWP initiatives
 - Task Groups and Working Groups
 - Webinars
 - Conferences
 - Others
- YWP positions in MIA MC

YWP POSITIONS IN MIA MC

- A recent call was open for YWPs members (the MC will be updated)
- Potentially there will be future calls again for applications for associated YWP members
- Application: Instructions will be available on IWAconnectplus and social media
- Selection: Electronic voting by senior MC members

FINAL REMARKS

- These slides will be available on IWAconnectplus (MIA) and MIA open web site
- The next MIA Open Group meeting will be either at WRRmod2026 (Barcelona, Spain, June 2026) or at WWC&E2026 (Glasgow, Scotland, 2026)

