

Modeling of surface water pollution by hazardous substances - project TETHYS.

Miroslav Kandra

Water Research Institute, Bratislava

Webinar, 2 April 2025
10.00 – 11.00 AM

Tethys

- This project is supported by the Interreg Danube Region Programme co-funded by the European Union.

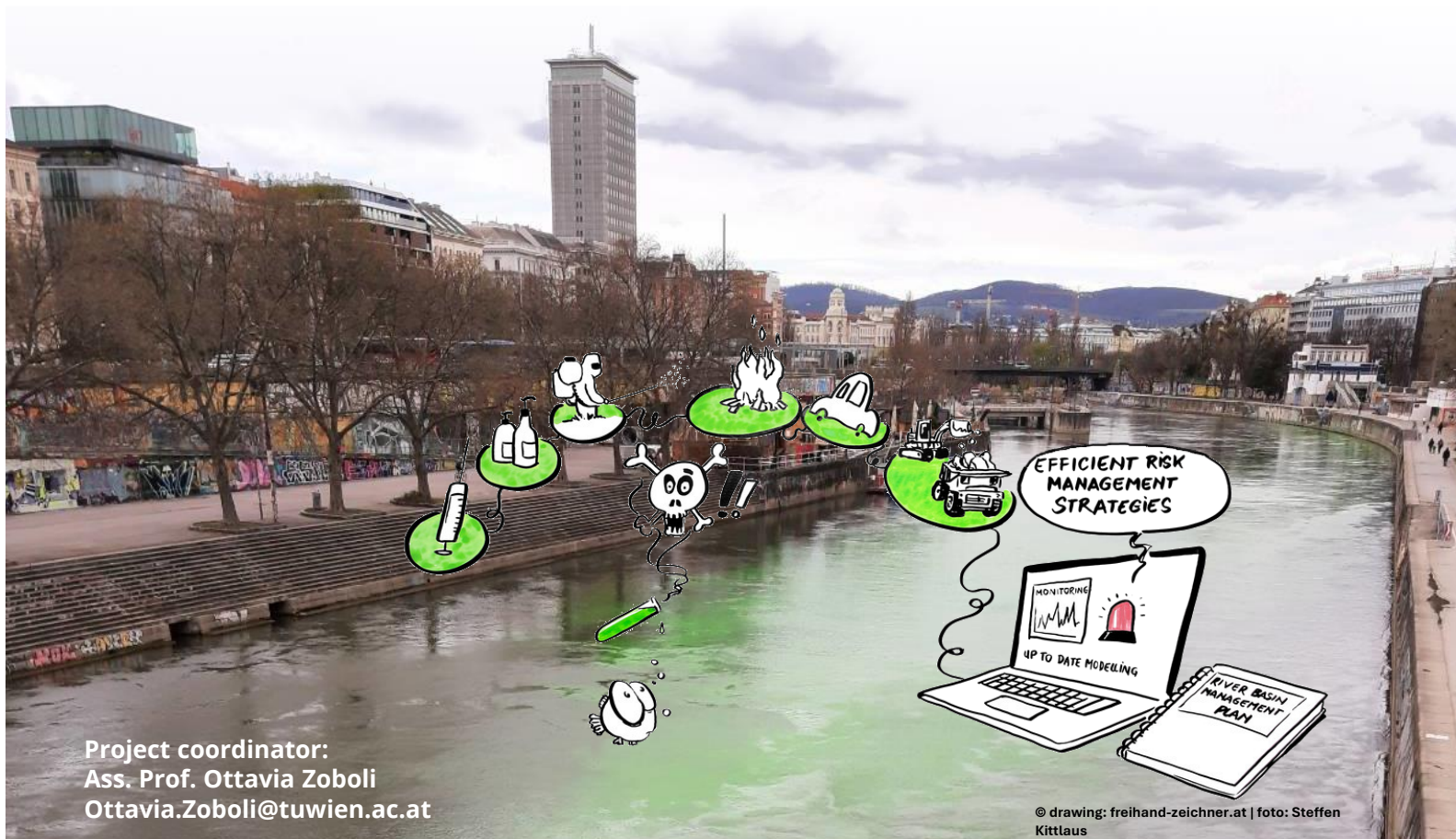
01/2024 - 06/2026

Project duration

2,937,185 €

Project Budget

- Coordinated Danube Action for the titanic endeavour of tackling hazardous substances water pollution under changing pressures, challenges and targets

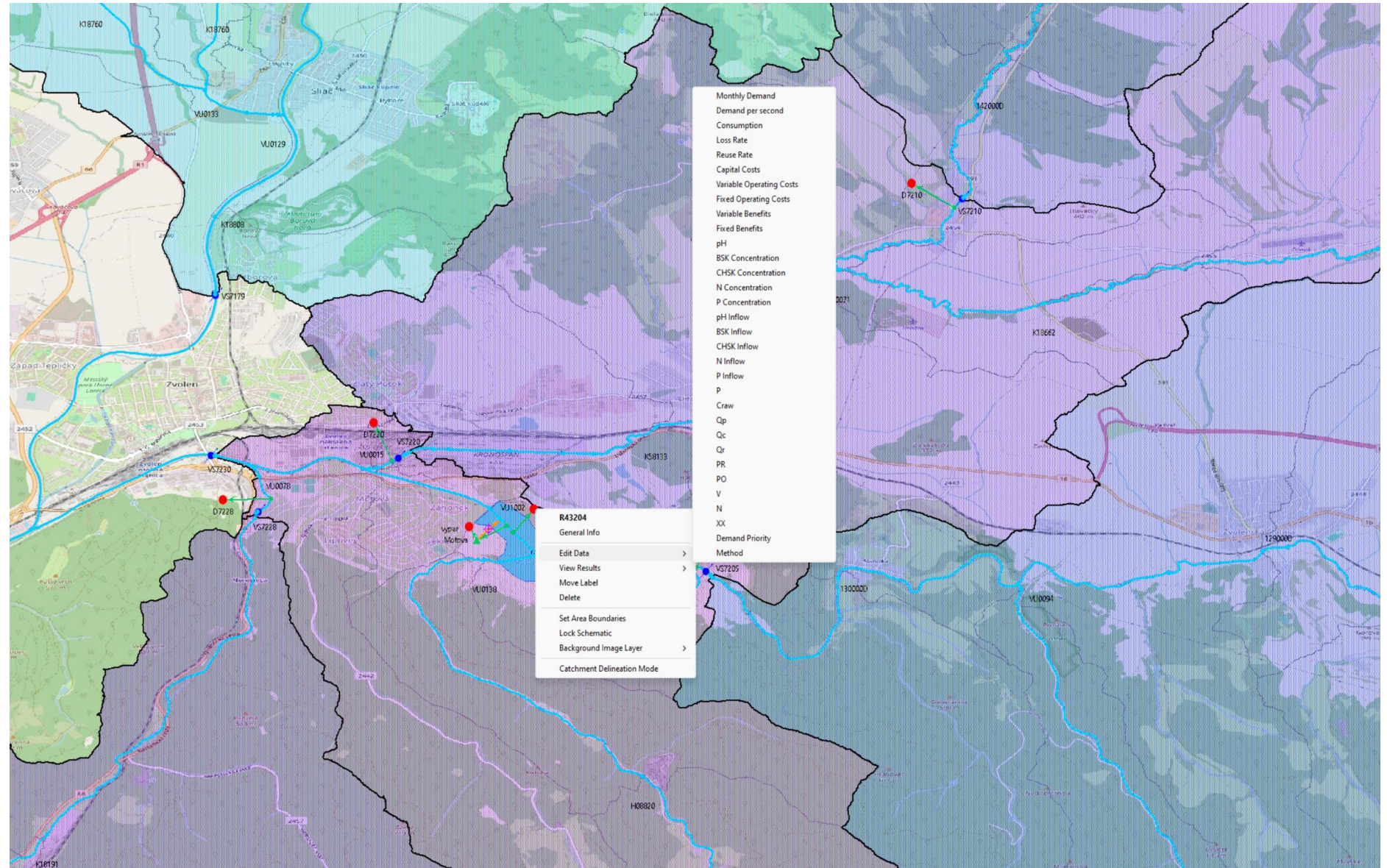


Project coordinator:
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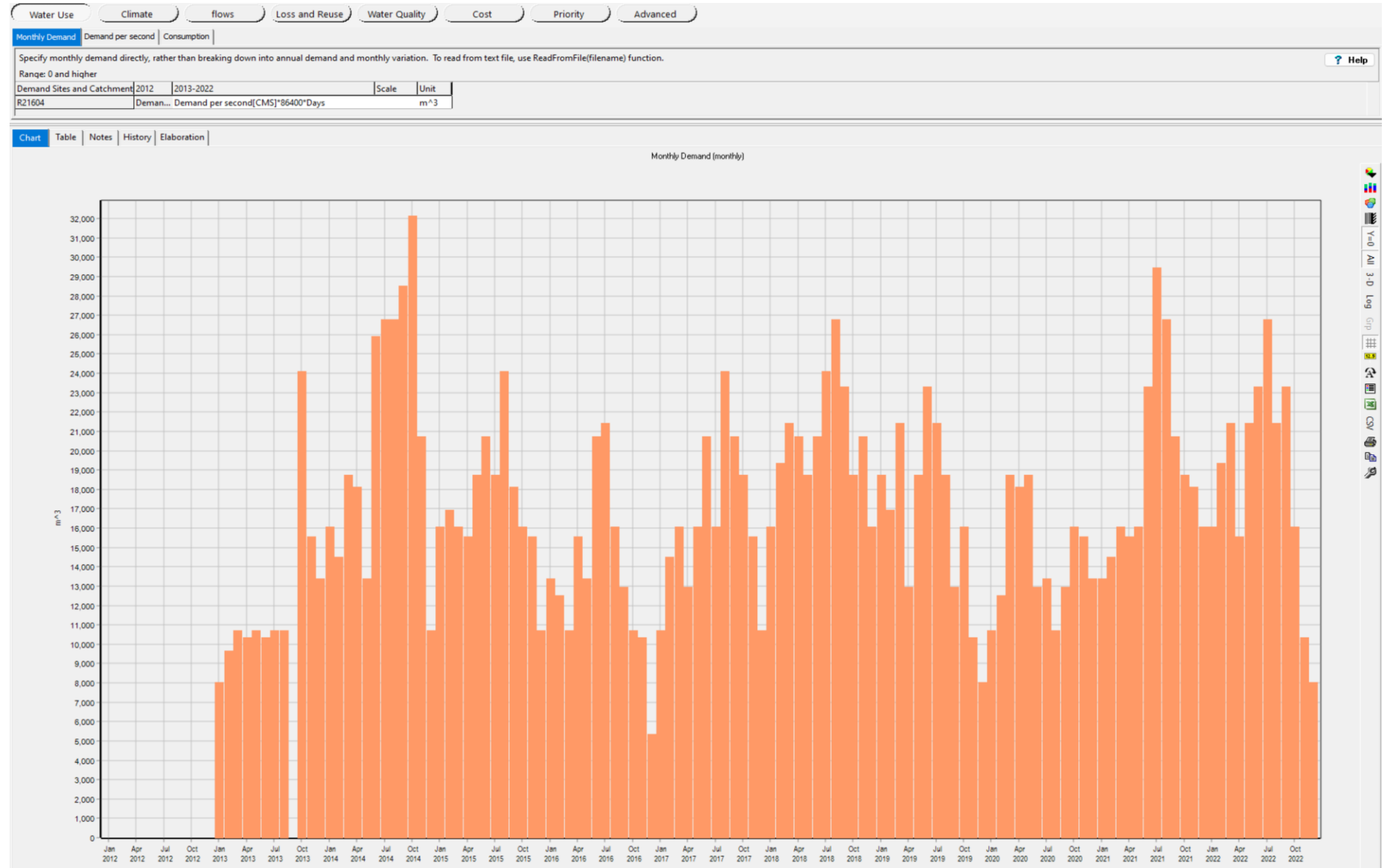
Solution: - modeling (mathematical)

- MIKE HYDRO Basin (DHI),



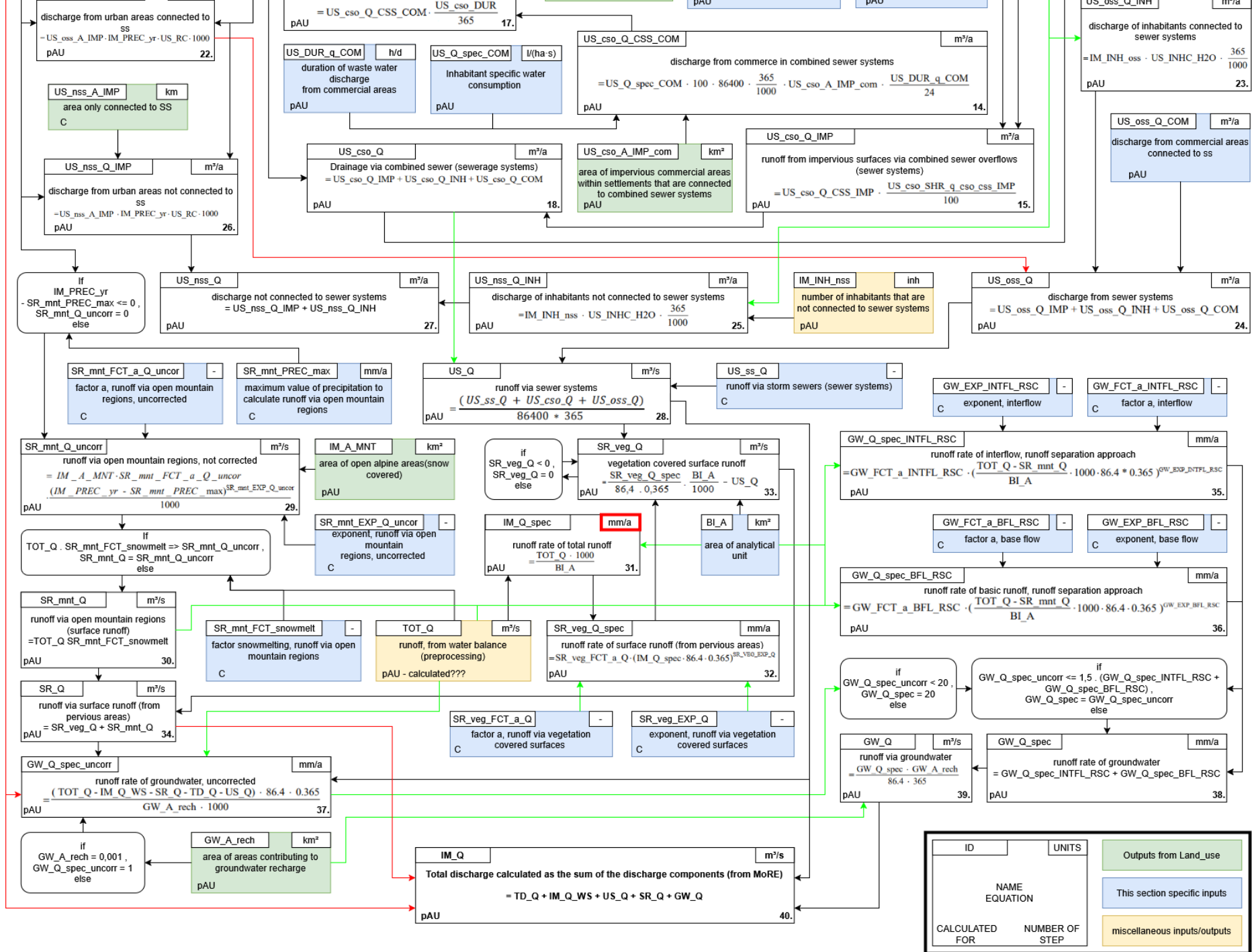
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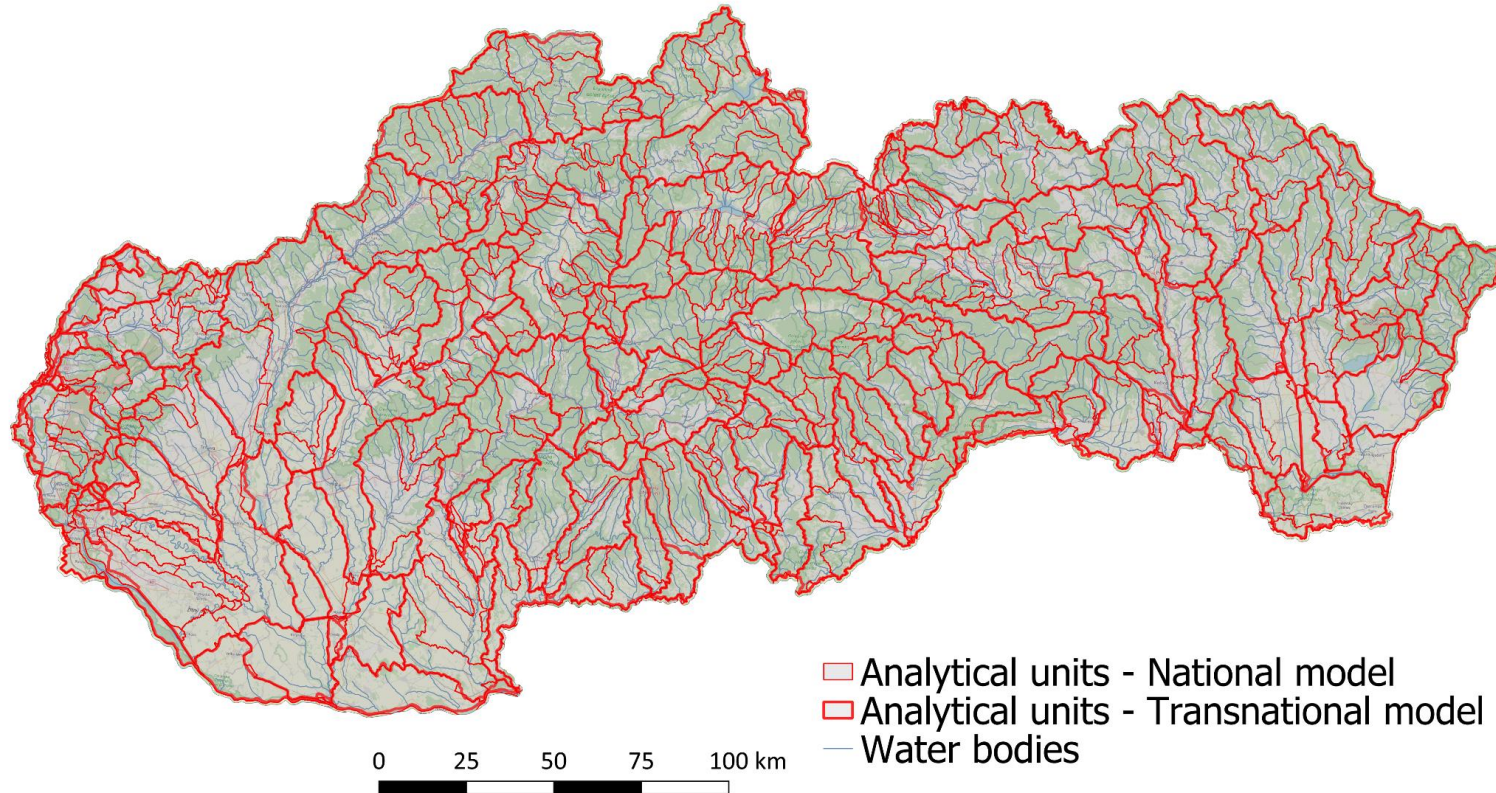


- MIKE HYDRO Basin (DHI),
- WEAP (SEI),
- MoRE (KIT).

- ✓ **Provides more data!**
- ✓ **Interconnect things together and show impact!**
- ✓ **SUPPORT decision making!**



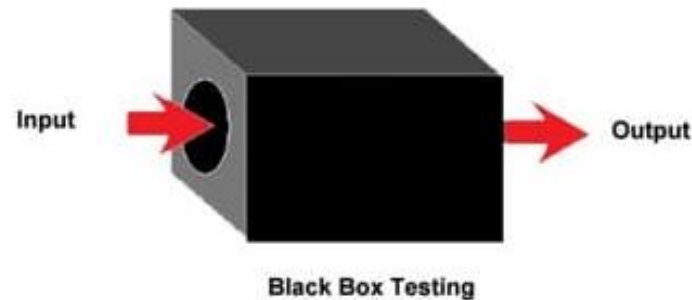
- Modeling for Tethys:**
- Annual time step (2015-2022),
 - Modeling:
 - heavy metals (Cd, Cr, Cu, Hg, Ni, Pb, Zn),
 - polycyclic aromatic hydrocarbons (benzo(a)pyrene),
 - Medicinal products (diclofenac),
 - polyfluoroalkyl substances – PFAS (PFOA, PFOS).
 - Transnational and national version.



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- Supporting tools:**
- Databases (PostgreSQL),
 - MS Excel (VBA),
 - QGIS/ARCGIS (Python, R).

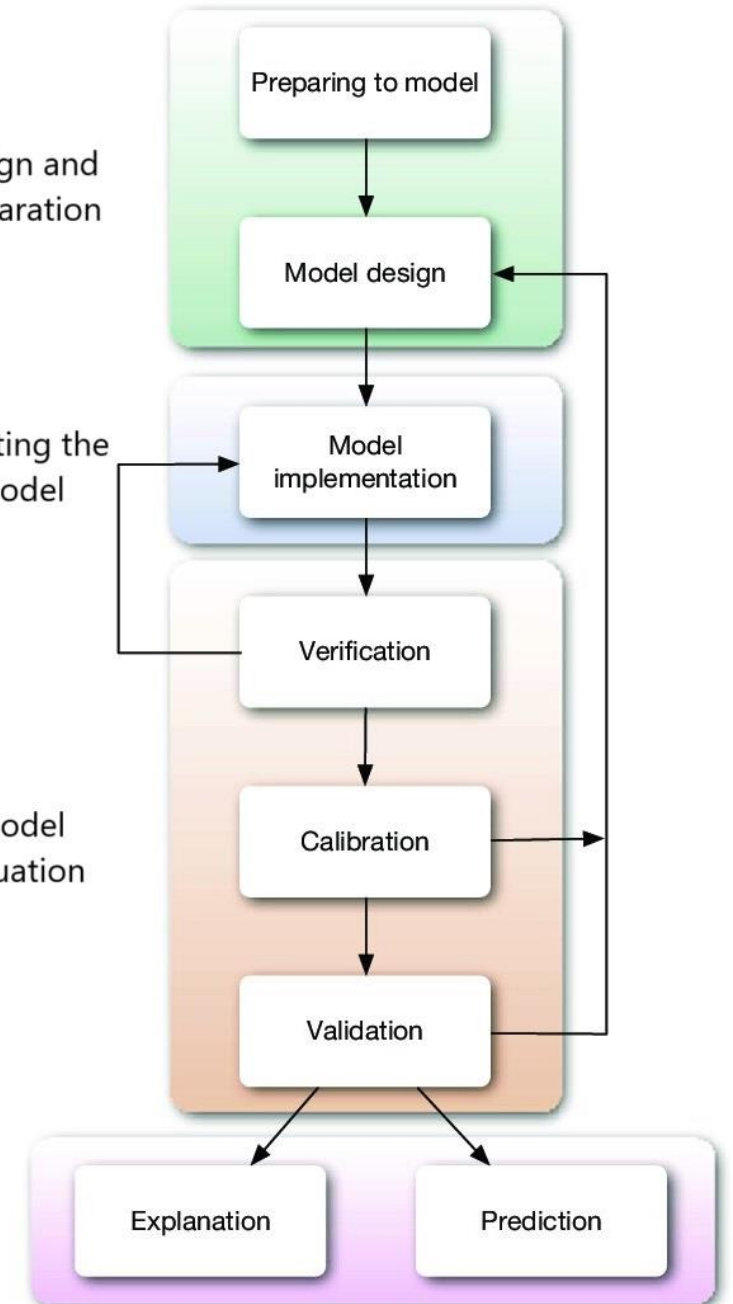
- Best practice:**
1. **AVOID BLACK-BOXES!**



Design and
preparation

Creating the
model

Model
valuation



Modeling for Tethys:

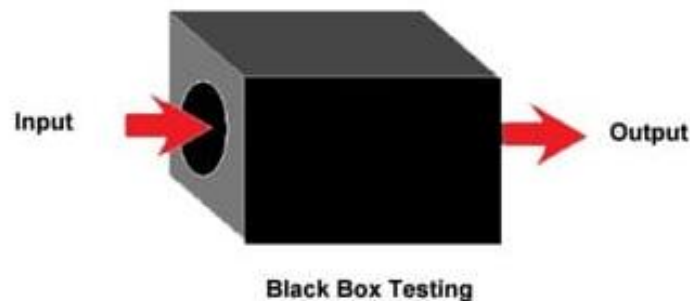
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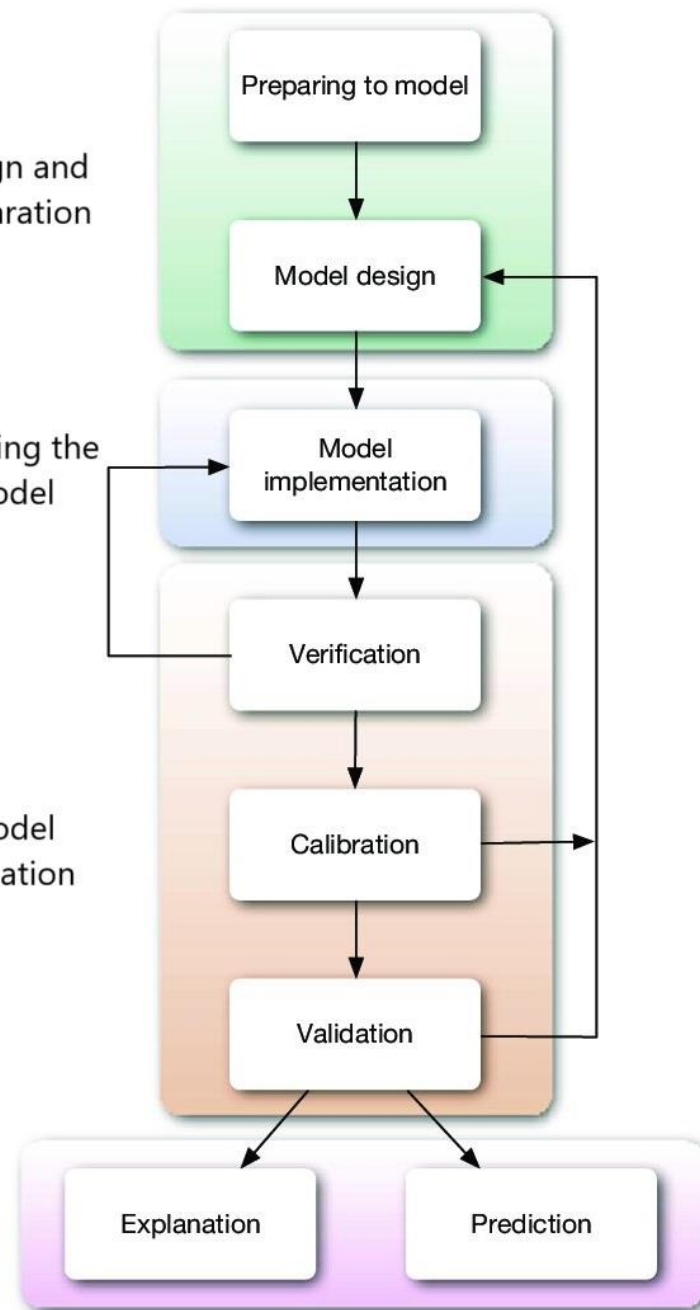
1. **AVOID BLACK-BOXES!**
2. Automate!
3. Automate!
4. Automate!
5. Automate!
6. Automate!
7. Automate!
8. Automate!
9. Automate!
10. Automate!
11. Automate!
12. Automate!
13. Automate!



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**Interreg
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Tethys

Thank you for your attention.

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