

Challenges and developments on water management in the Adige River Basin

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Water and Human Systems

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Challenges and developments on water management in the Adige River Basin

- Where does water come from?
- Where does it go?
- Who owns it and who decides?



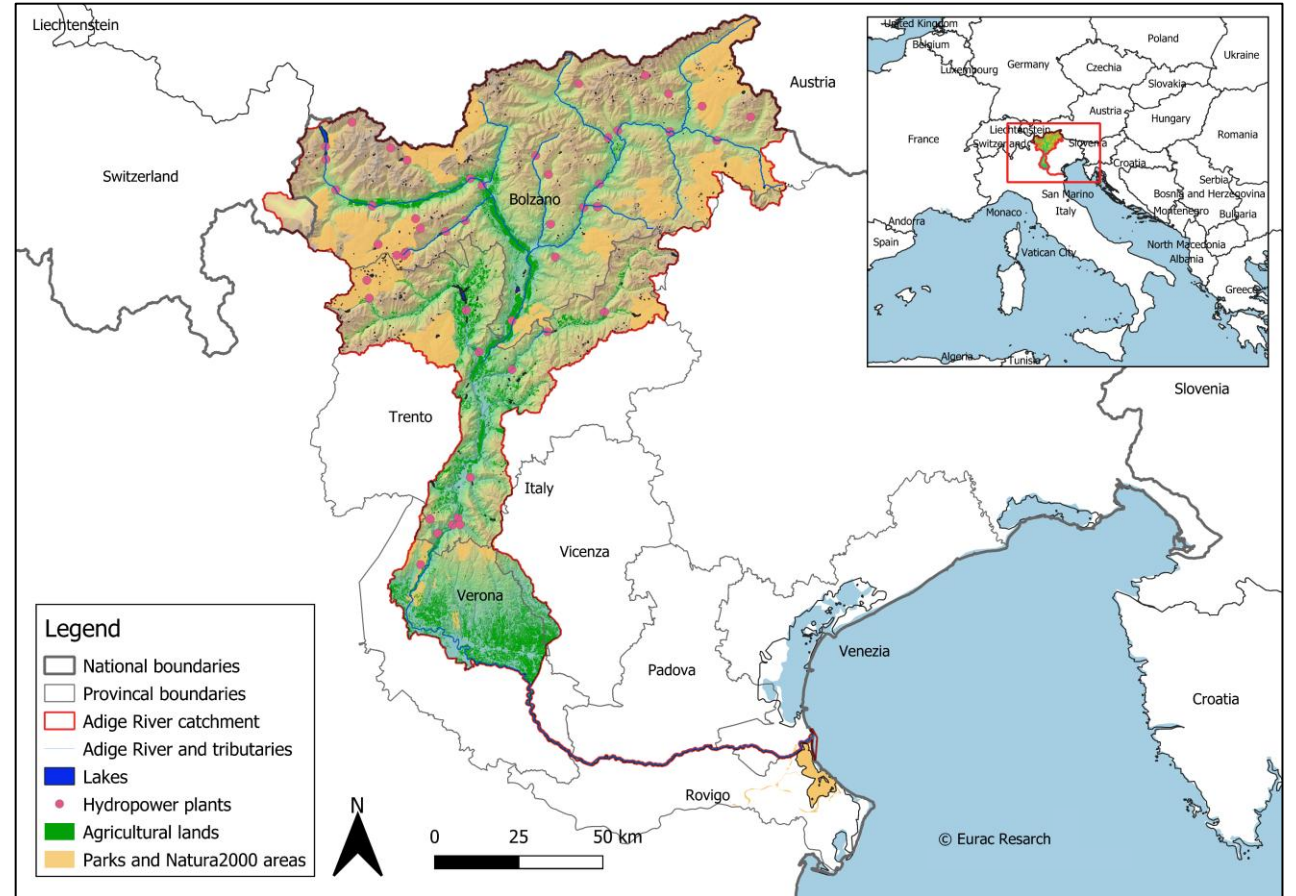
Paolo Cognetti, The Eight Mountains

If the place you step into a river is the present, then the past is the water that has already flowed away, and the future is the water coming toward you bringing dangers and surprise.



Looking upstream / in the future

- The Adige river basin
 - 2nd longest river in Italy (410 km)
- Six provinces with diverse cultures, languages, economies
- Lowland supplies 15% of EU apples
- 61 hydropower stations regulating river flow
- High pressure from seasonal tourism

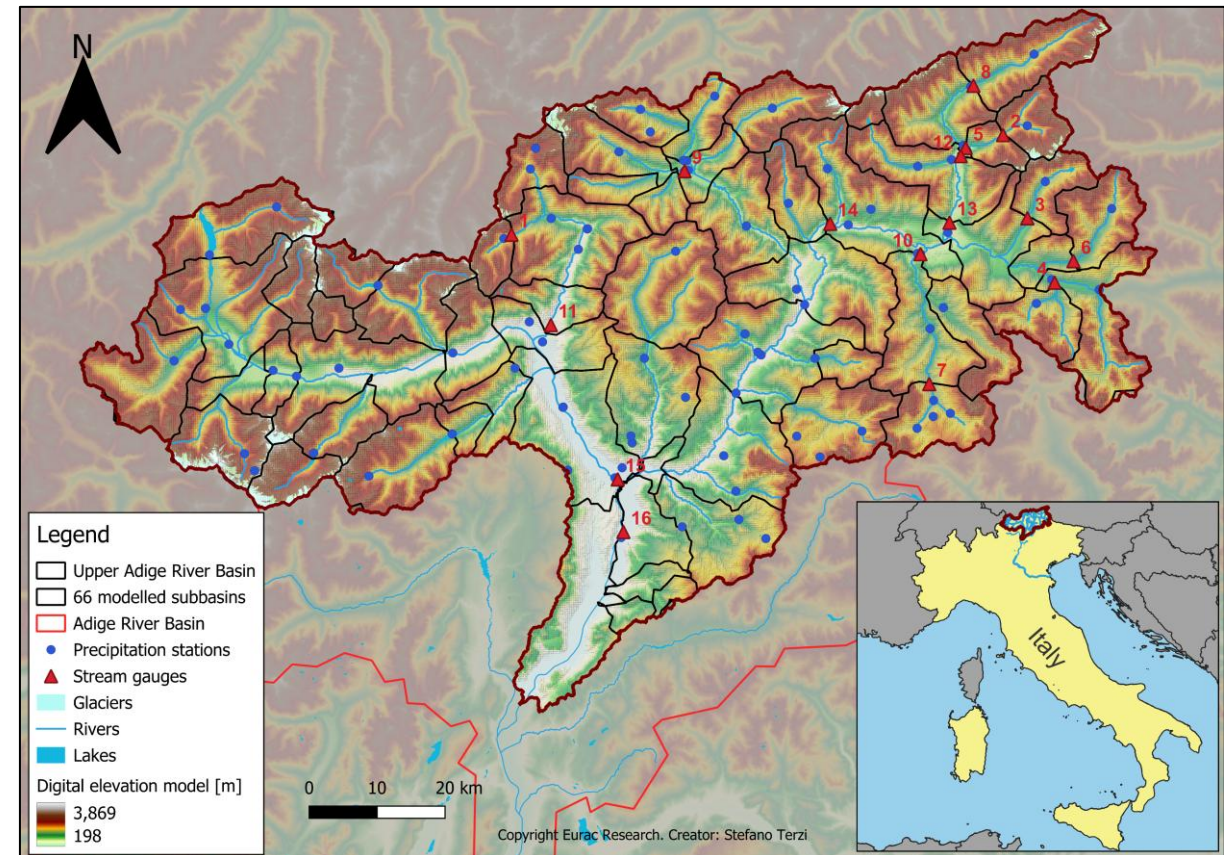


Ongoing activities

The NextWater_ST project



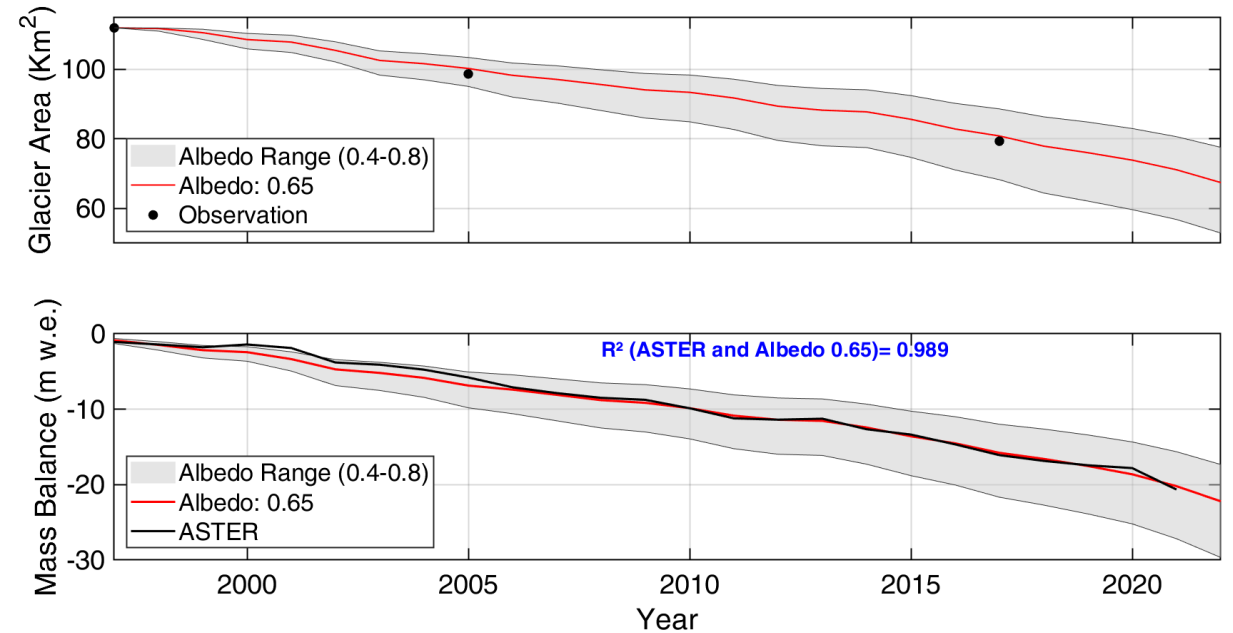
- Will future **climate and socio-economic changes** lead to unbalanced conditions of water availability vs. water demand from multiple water users, potentially leading to **conflicts** in South Tyrol?



Modelling hydrological processes



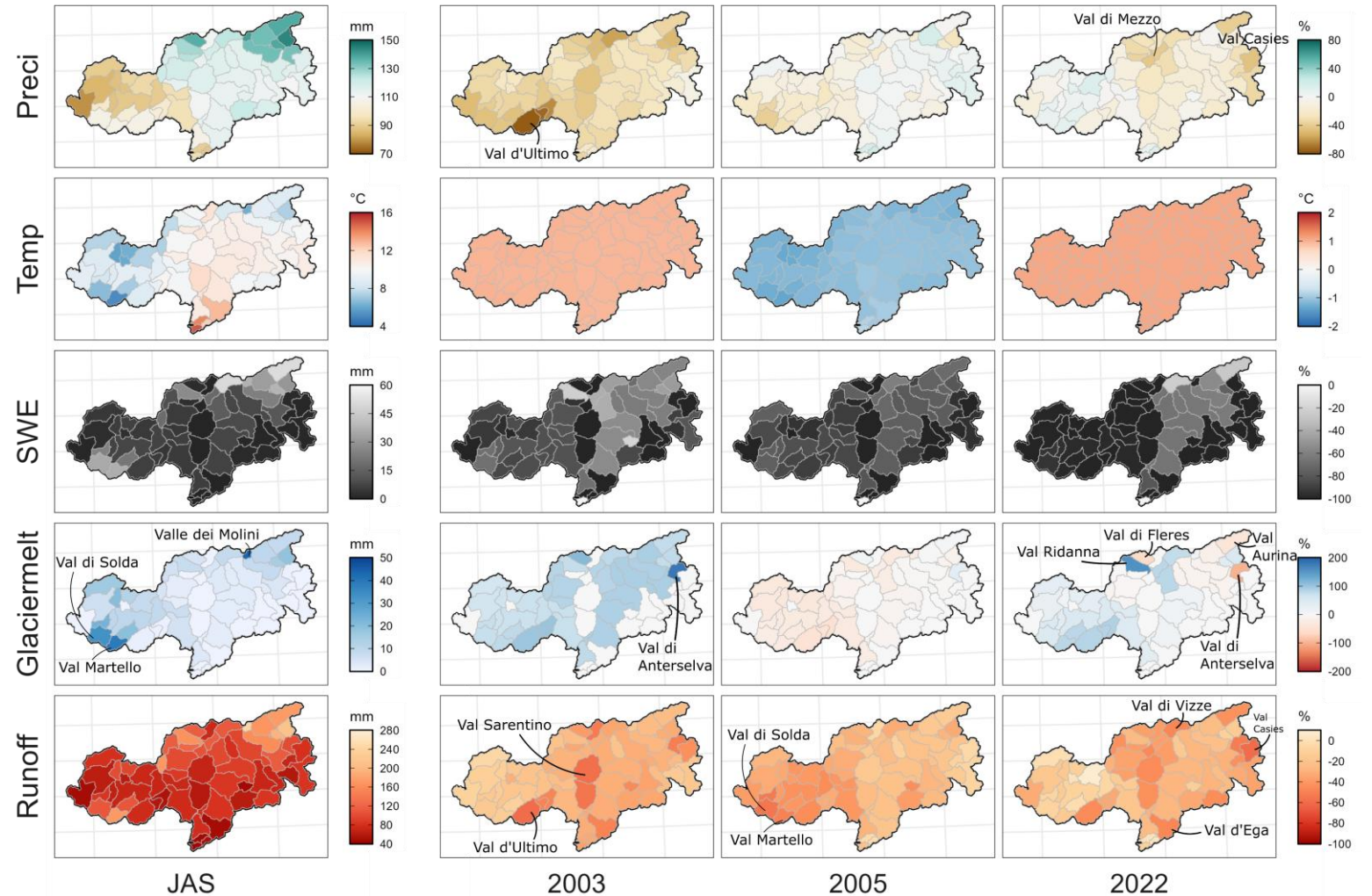
- Modelling glacier melt (area and volume) during summers
- Only 3 ground measurements on the glacier area over 26 years
- Good performance in replicating eo based glacier mass balance
- Almost monotone decreasing trend



Modelling hydrological processes



- Focus on major hydrological droughts 2003, 2005 and 2022
- Climatologies on the left for JAS
- Different meteo drivers of droughts
 - 2003 hot and dry (rain)
 - 2005 cold and dry
 - 2022 hot and dry (snow)



Studying biophysical processes to inform water governance...



Adige Water Fair

19-20.05.2025

Bolzano/Bozen, Italy

Why having the **Adige Water Fair**?



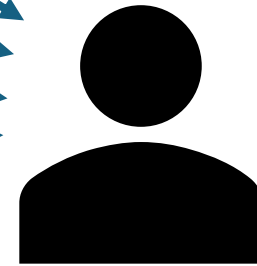
Why having the **Adige Water Fair**?



Why having the **Adige Water Fair?**



interTwin



Provincia Autonoma Bolzano - Alto Adige



Agenzia Regionale per la Prevenzione e Protezione Ambientale del Veneto

Adige Water Fair

Connecting **projects, institutions** and local **needs**



Adige Water Fair

- an **inter-project and inter-institutional event** to bring together stakeholders and those engaged in applied research on water in the Adige River basin (and its tributaries, from upstream to downstream)

Adige Water Fair

Understanding the areas of **common ground** and the **differences** in order to collaborate effectively

Adige Water Fair

- **Community feeling**
- **Identifying existing issues**
- **Proposing solutions**
- **Vision of a desirable, realistic and shared future**

Adige Water Fair

Delineate a **plan of intent* on the needed actions and desirable for a future shared water management**

***it is not a binding agreement**



- **130+ participants** from provincial agencies, private companies, dams managers and farmer unions
- Open discussion on **future water management** in the Adige River Basin
- Output: **Document of Intent**

- <https://www.eurac.edu/en/events/water-climate-and-human-systems/adige-water-fair>

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Adige Water Fair 2025 - Research and shared solutions basin 1

Water in the Adige River Basin is used by multiple interconnected sectors, leading to Scientific research often mirrors this fragmentation. To address these issues, the Ce Water Fair, an interproject, interinstitutional event. The goal was to bring together st management. This report summarizes key discussions and priorities from the event,

Access work

<https://works.eurac.edu/Adige-Water-Fair-2025-EN.pdf>

<https://doi.org/10.57749/bnz0-bz20>

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Adige Water Fair

Challenges

- Implementation of water quality and quantity monitoring systems,
- sharing of data on water use by key institutions,
- improvement of multi-model hydrological analyses,
- modelling of climate and socio-economic changes,
- need for greater active involvement of stakeholders,
- improve decision-making in situations of water scarcity

Adige Water Fair

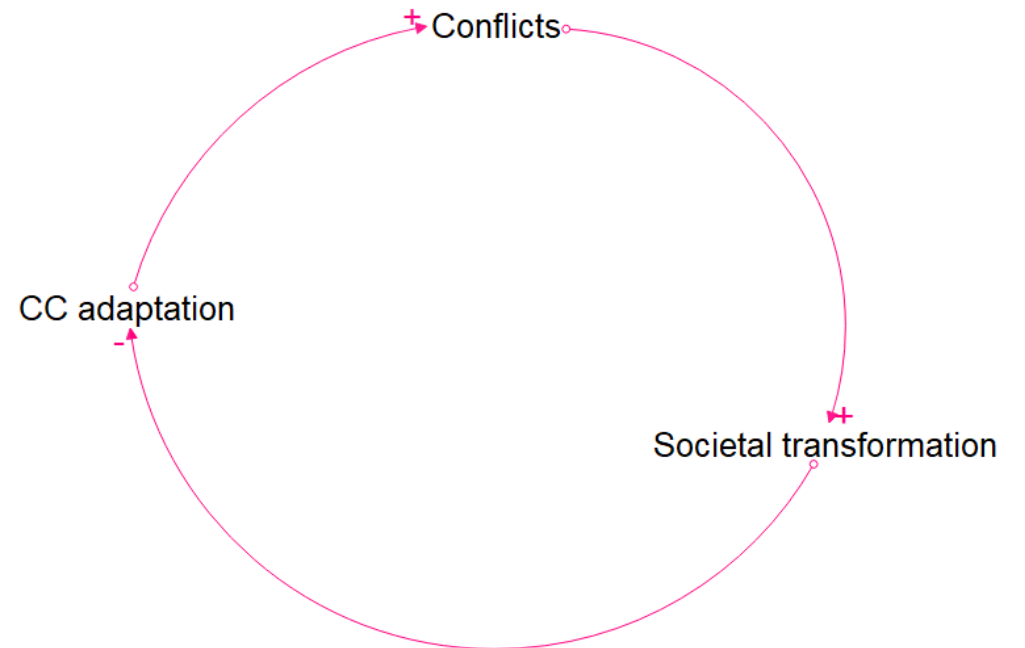
Proposed solutions

- adoption of new indicators to better describe the ecological and functional conditions of ecosystems
- systematic collection of data on the impact of drought
- standardization and sharing of data on water use in different sectors
- mapping of all hydrological models applied to the entire Adige basin
- integrating of socio-economic projections, especially for the analysis of future vulnerabilities
- data sharing among institutions

Ongoing project...

Conflicts in Climate Change Adaptation and Mitigation in South Tyrol: From Theory to Practice

- Environmental resources
- CC influence on extreme conditions
- The role of conflicts on adaptation and transformation
- Water and droughts in South Tyrol



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Thank you for your attention

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