WEIHENSTEPHAN · TRIESDORF
University of Applied Sciences



From Snowmelt to Street Trees

Rethinking Water Resilience in a Changing Climate

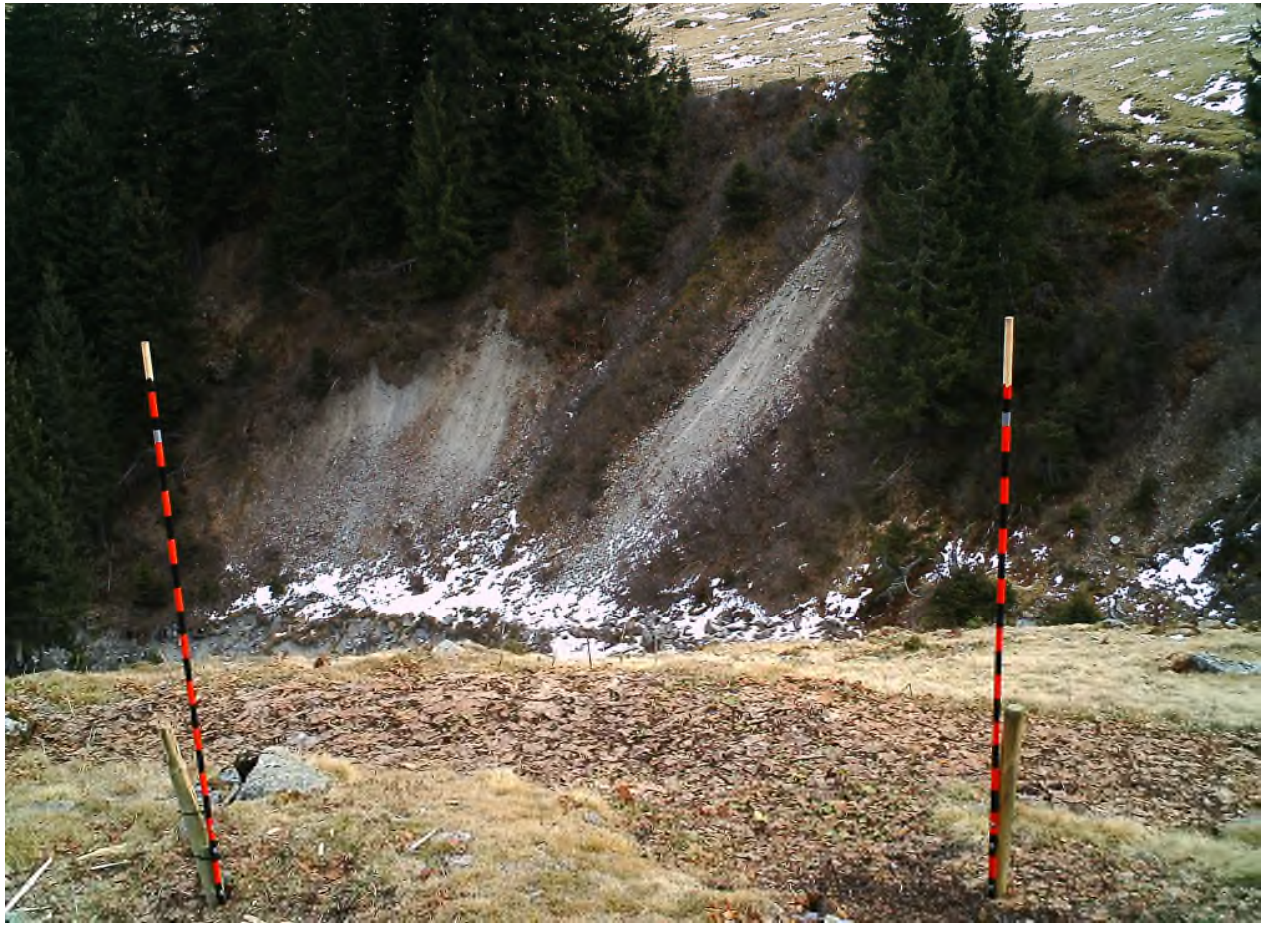
Too much water, too little water

«H2Opportunities», Nov 05, 2026

Kristian Förster

Image credit: University of Innsbruck, STELLA project; Backhaus et al. (2025)

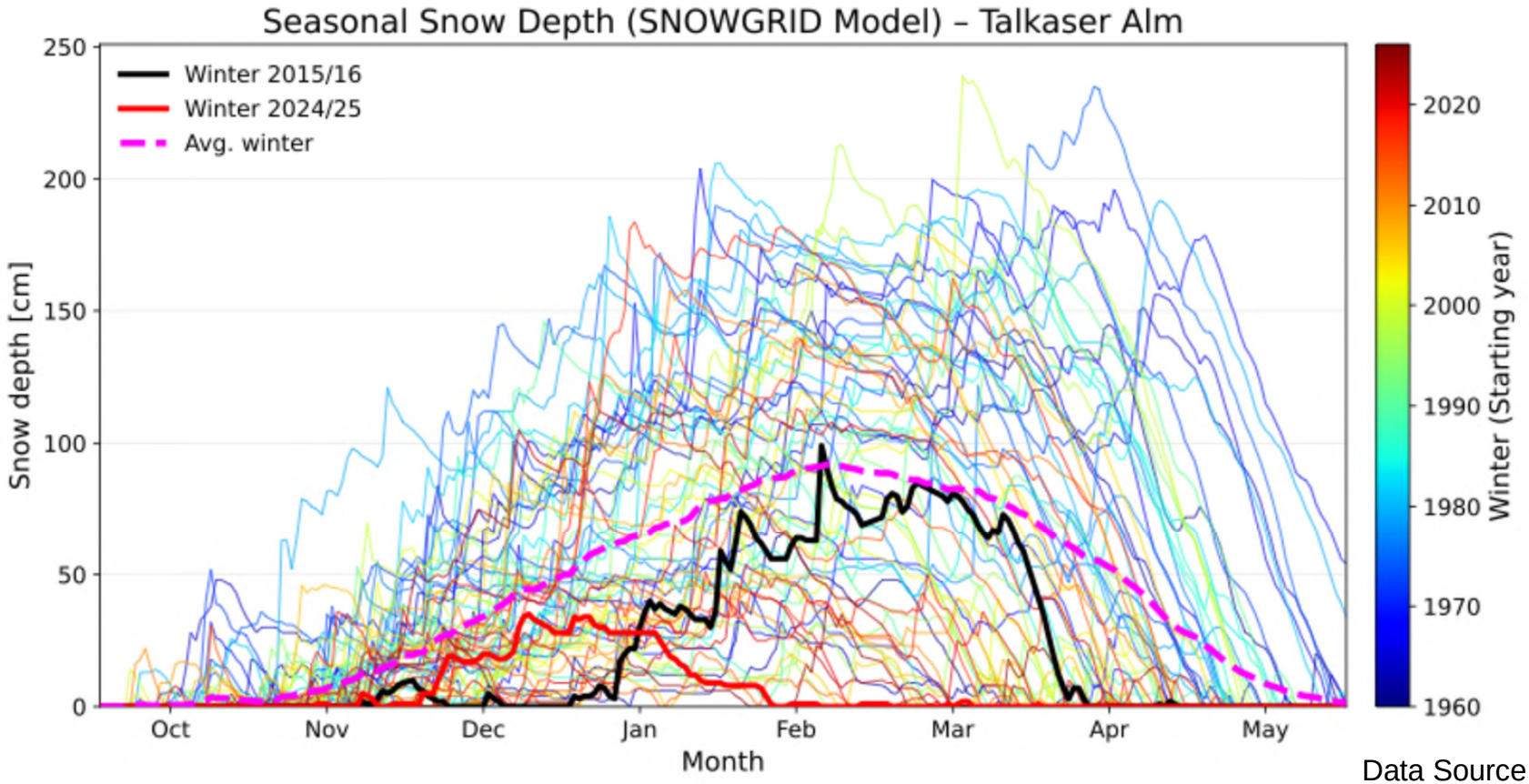
What happens in the mountains?



- Talkaser Alm - A snow stake station at 1450 m above sea level in Tyrol (Austria)
- What season do you think this photo was taken?
- End of December 2015

“Snow droughts”

- i.e. “negative anomalies in annual snow storage” (Chartier-Rescan et al., 2025)

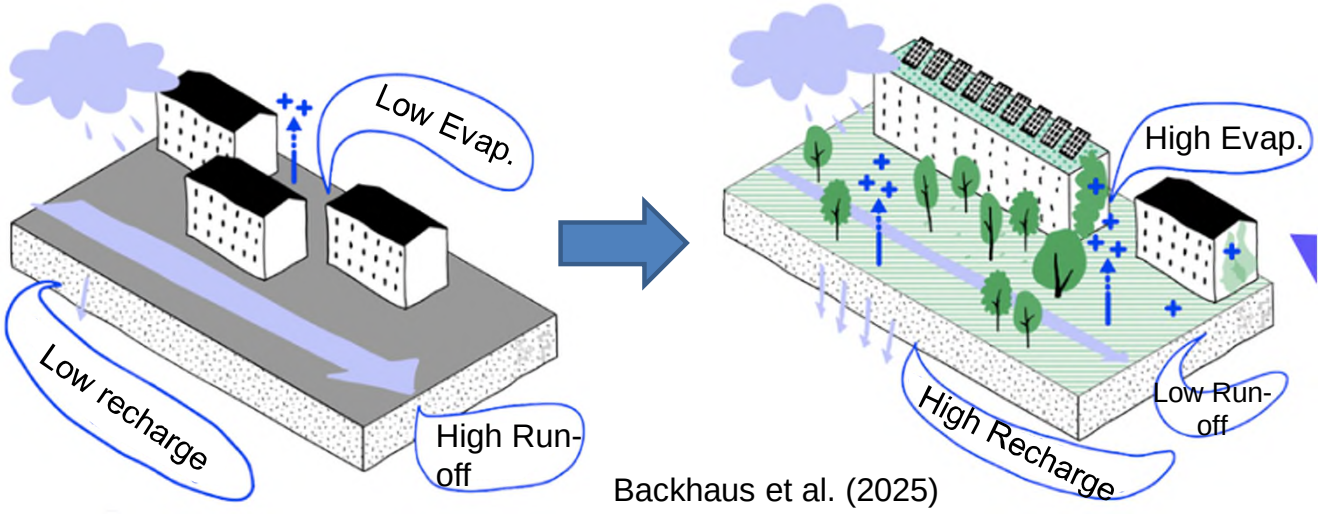


Data Source: GeoSphere Austria

What does it mean for the upcoming summer season?

- Less and earlier snowmelt suggests that snow droughts propagate to groundwater / streamflow droughts, visible in rivers (Chartier-Rescan et al., 2025)

- Urban environments generally reflect weak hydrological storage capabilities, which is why water sensitive urban design becomes increasingly important



Backhaus et al. (2025)

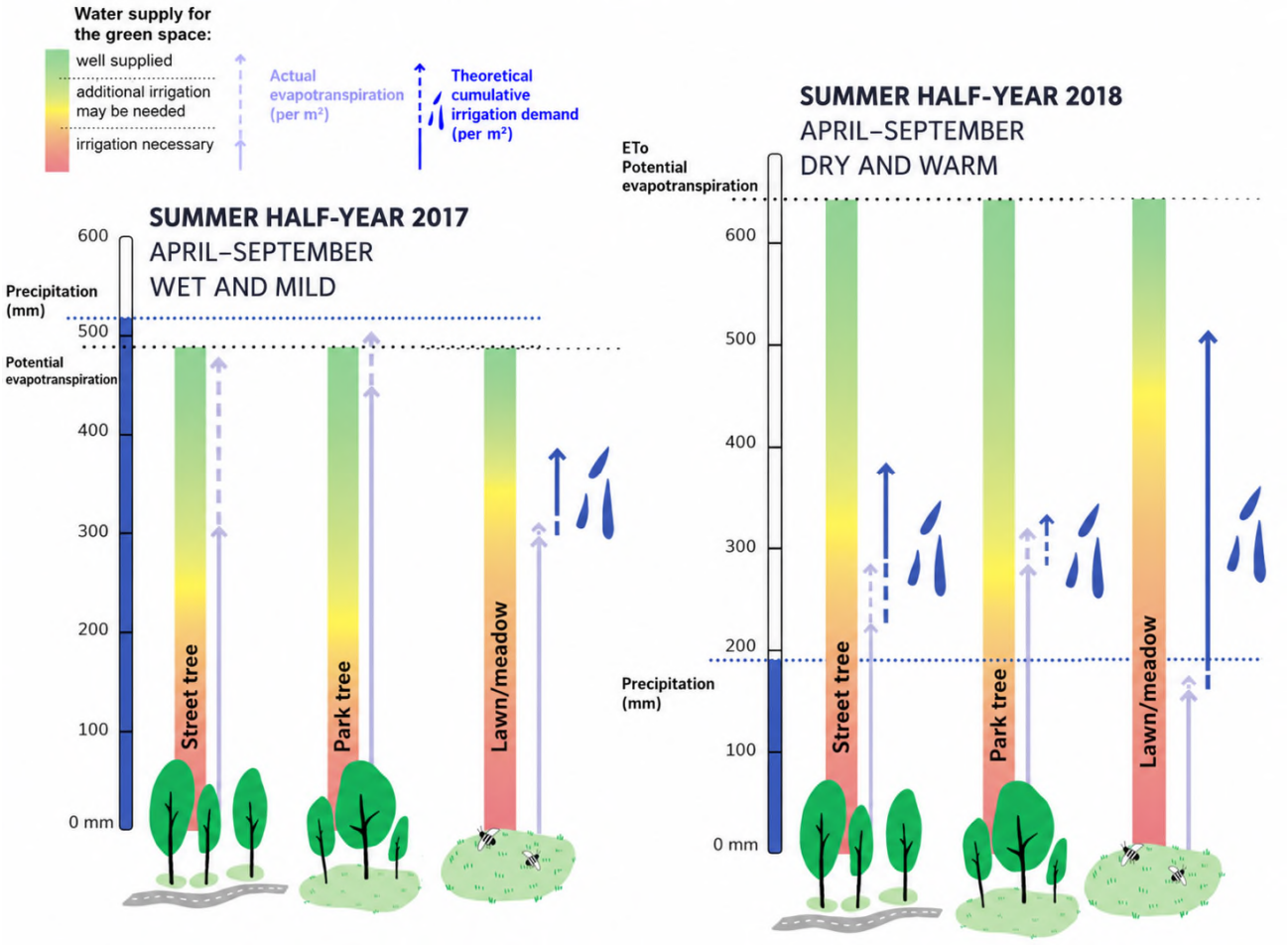


Credit: Sebastian Knoll



Backhaus et al. (2025)

What does it mean for the upcoming summer season?



- Water balance model approach for Hamburg
- In dry summers, irrigation demand for street can reach values > 50 mm (liters per square meter)
- For a tree of 10 m diameter, more than 4 m^3 water per season

Backhaus et al. (2025)

Förster et al. (2026)

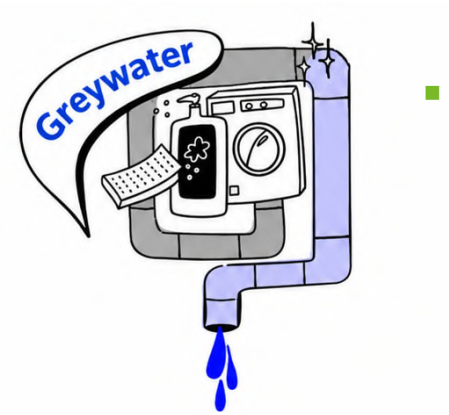
What could we do?



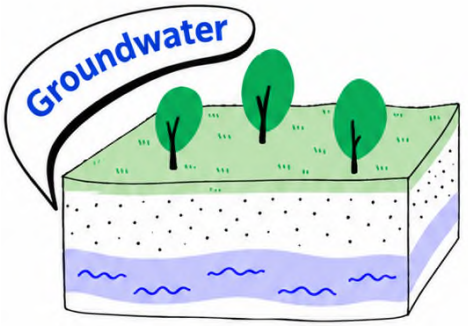
- Rainwater harvesting and collect water locally for irrigation purposes



- Consider treated wastewater if quality standards are met



- Consider purifying grey water (slightly polluted domestic waste water) for irrigation of urban green

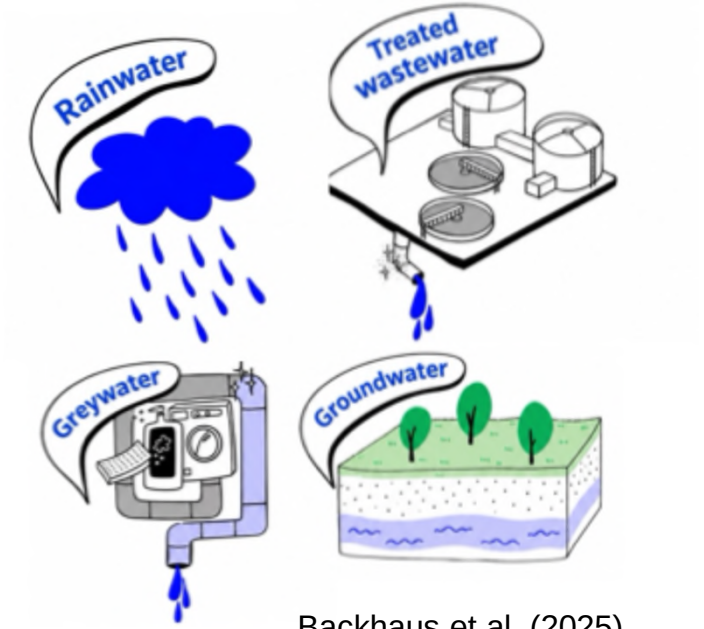


- Groundwater extraction for construction works could be strategically used for irrigation

Backhaus et al. (2025)

Summary

- Water resilience expected to be lower under climate change → shift in seasonality
- Snow droughts might ultimately lead to soil moisture, groundwater and streamflow droughts
- Even water-sensitive urban design (WSUD) is vulnerable to droughts → need to irrigate urban green, even in “water-rich” municipalities
- Alternative water resources should be considered to bridge this gap in supply and demand



Backhaus et al. (2025)

Thank you!



Image credit: University of Innsbruck, STELLA project

(Förster et al., 2018)

References

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