

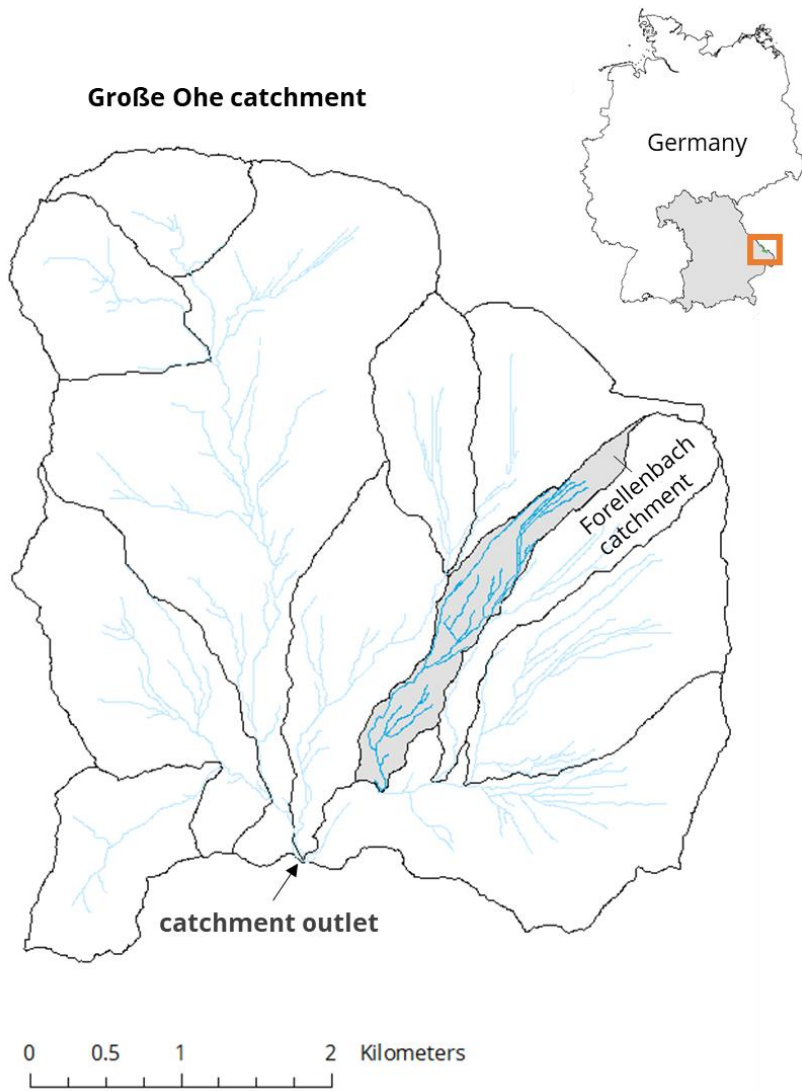
Hydrological mobilization of dissolved organic carbon (DOC) during flood events



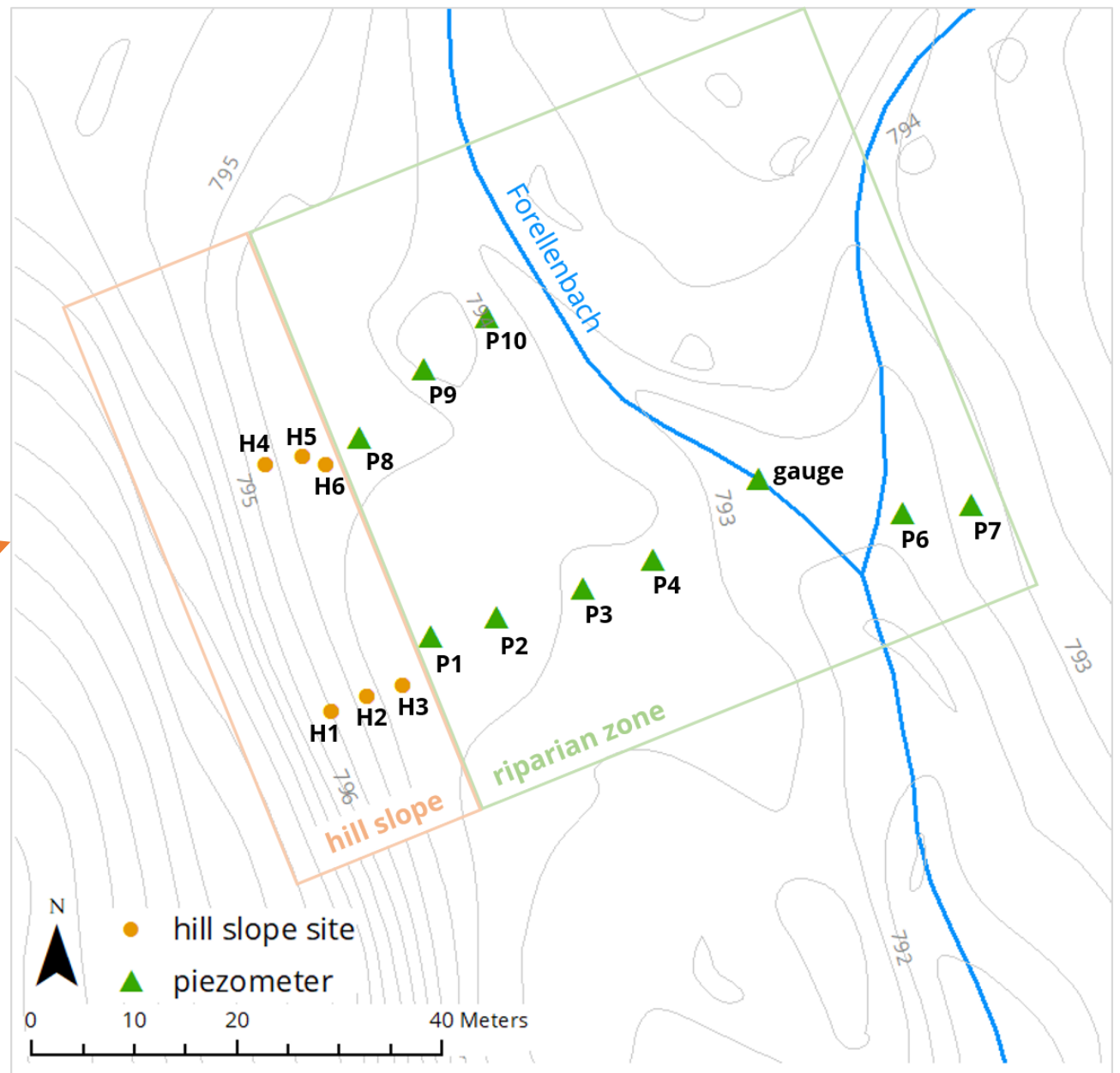
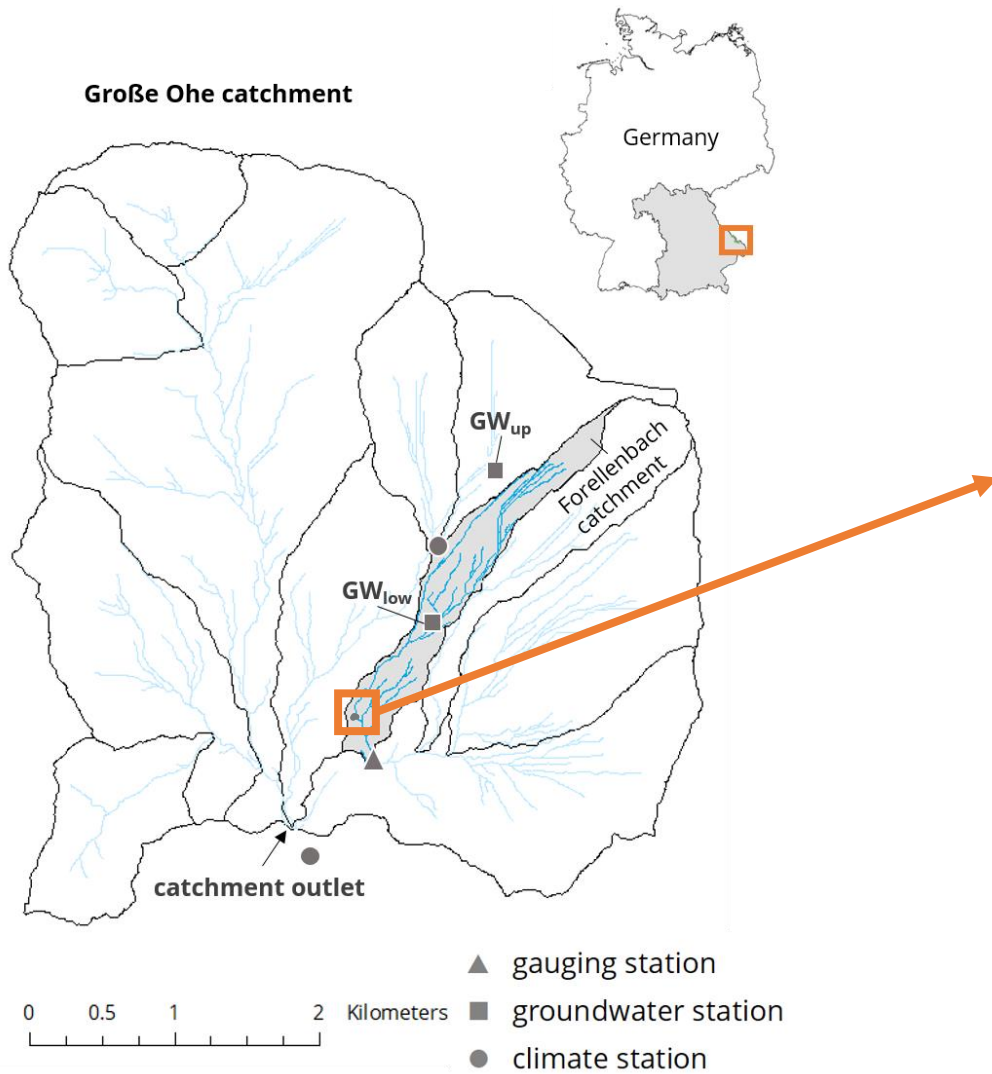
Lisa Kuhnert,
Burkhard Beudert, Thomas Wöhling

DOC Workshop Tharandt
31.05.2023

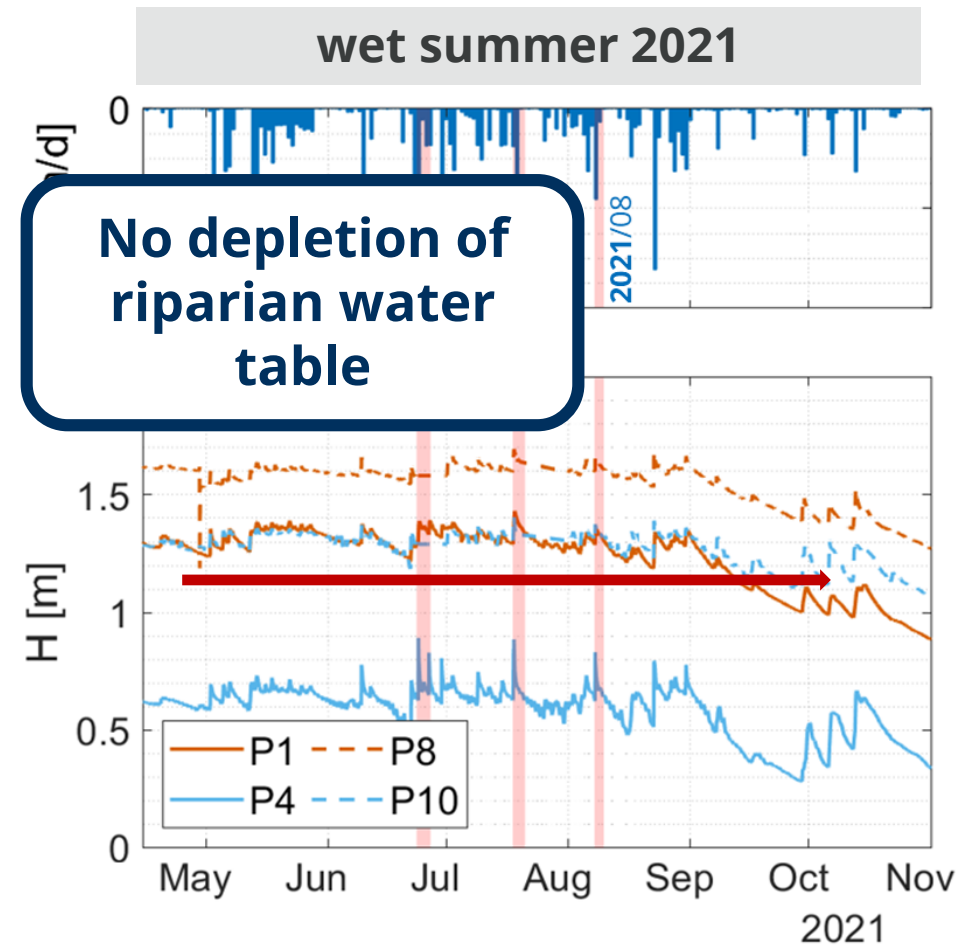
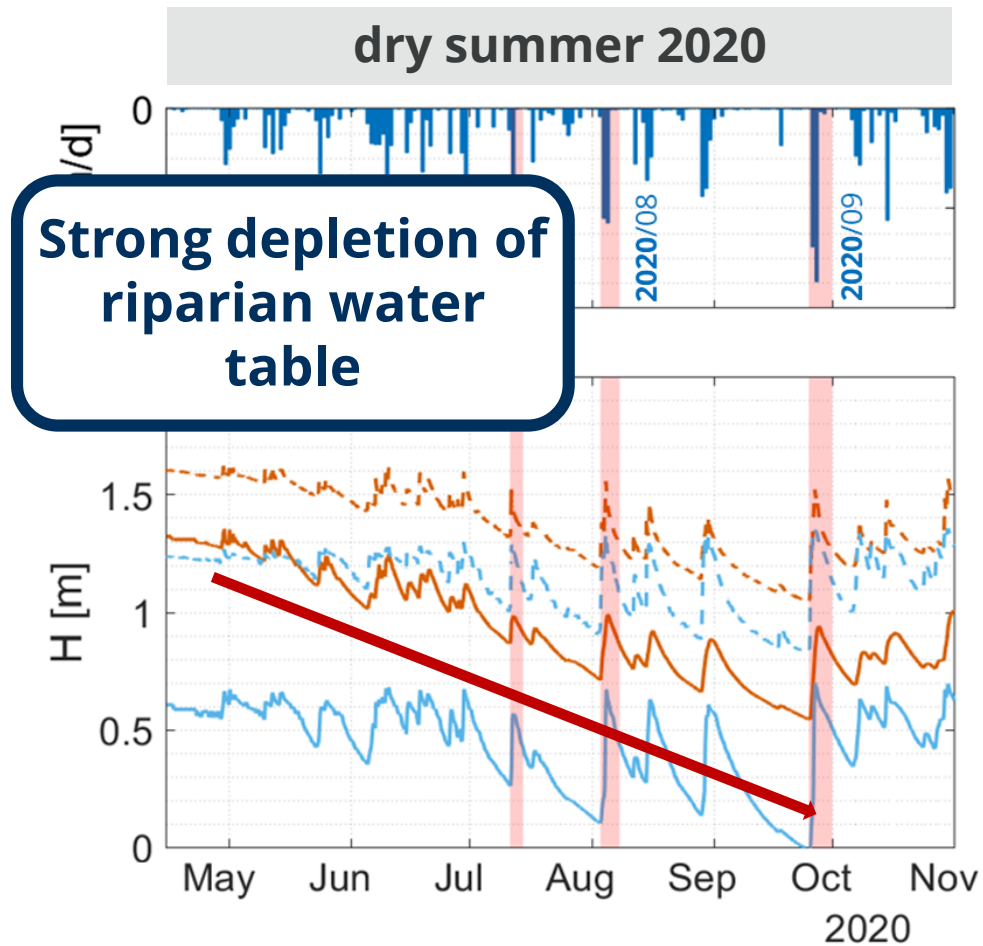
Motivation - DOC sources in the catchment



Field campaign

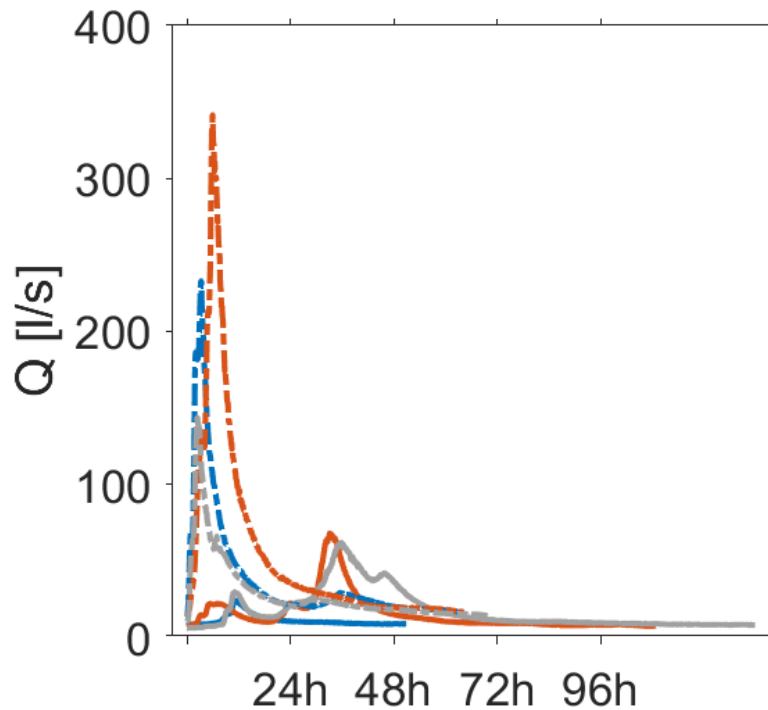


Hydrological condition in 2020 and 2021

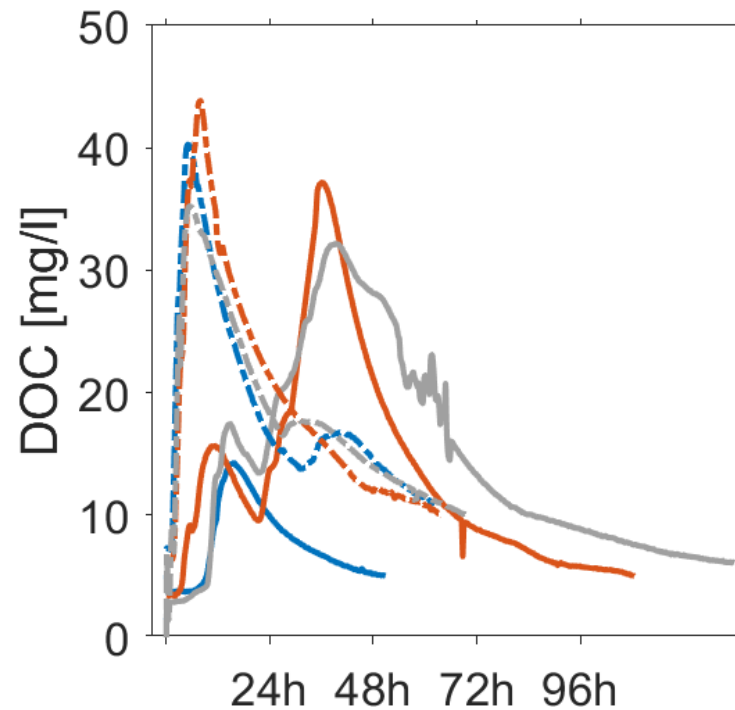


Hydrological mobilization of DOC during runoff events

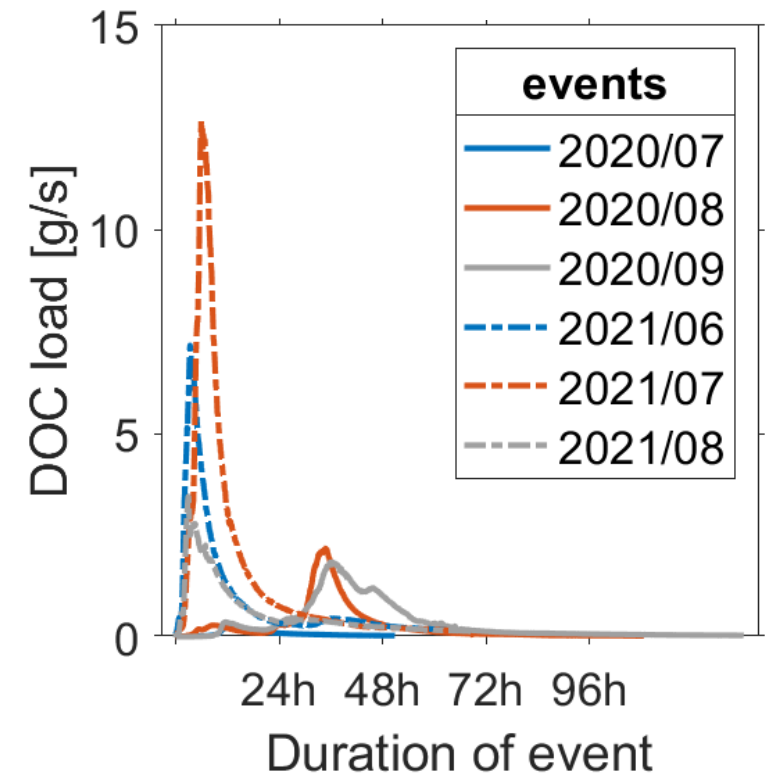
storm runoff



DOC concentration

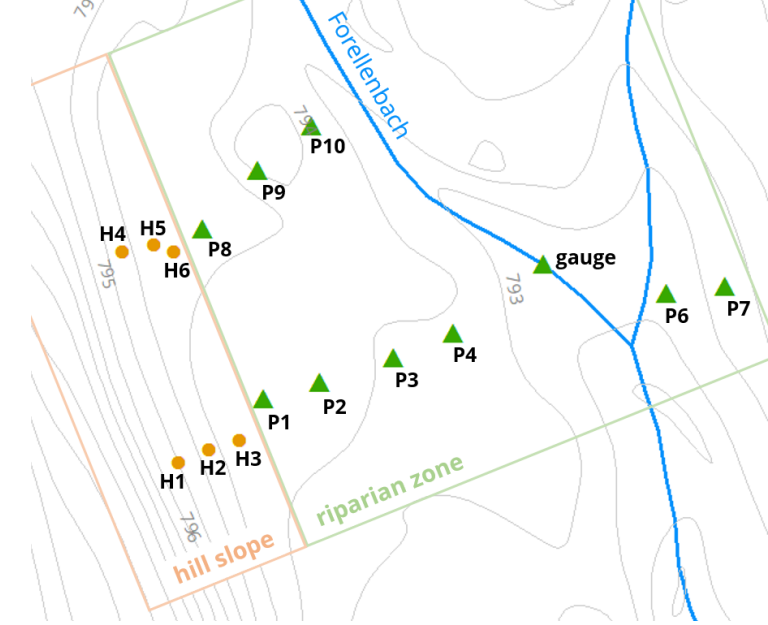
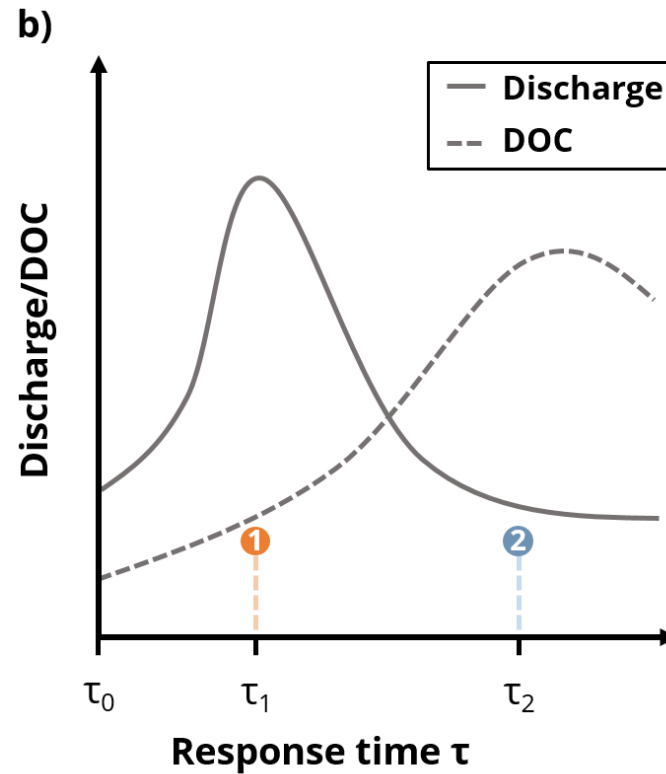
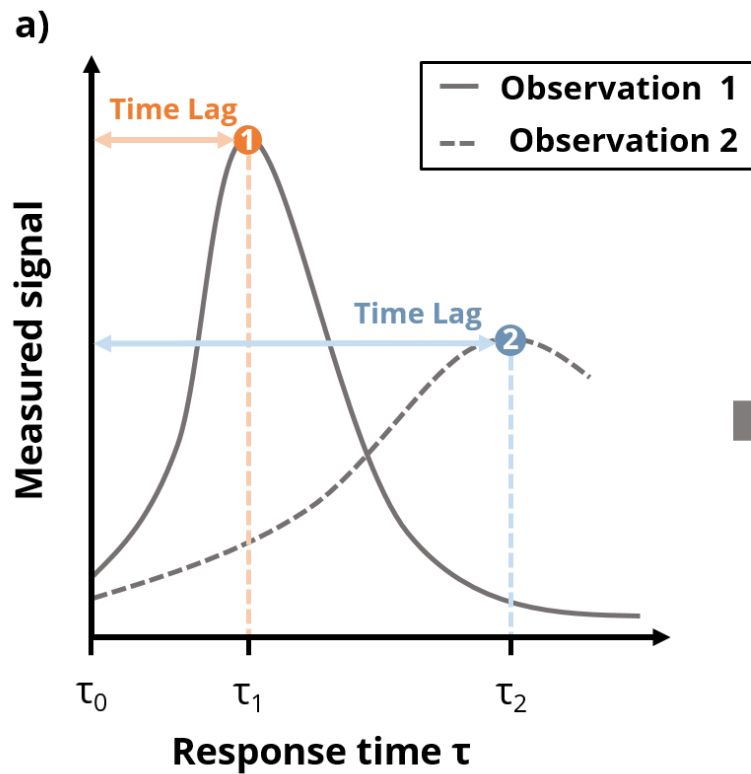


DOC mass export



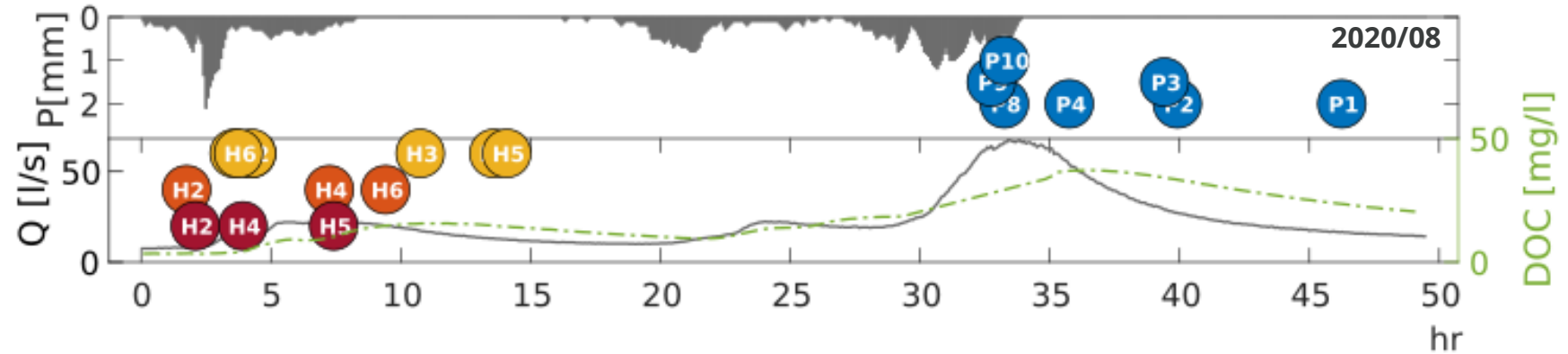
Hydrological Response - Response Time

= duration between the onset of precipitation until the peak response of the observation

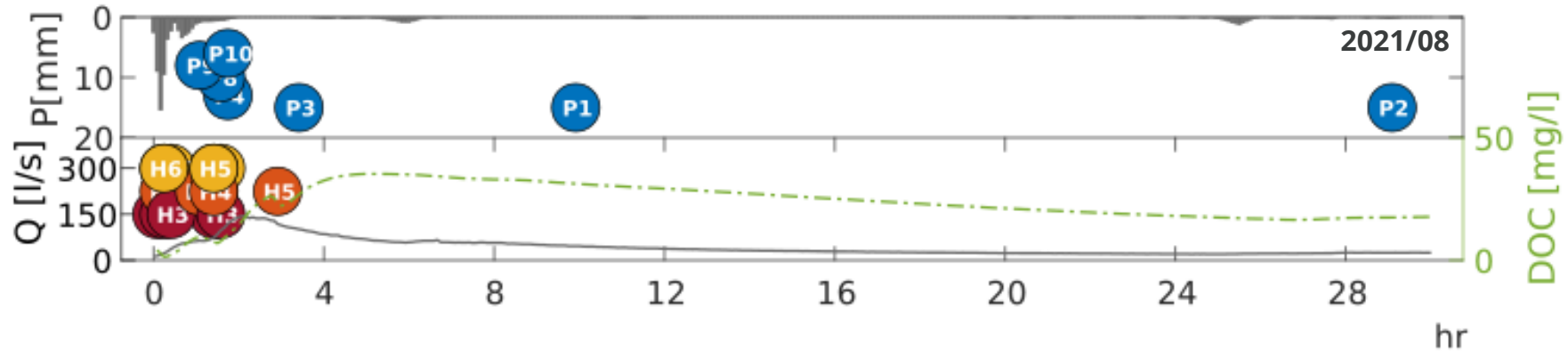


Hydrological Response - Response Times

dry summer

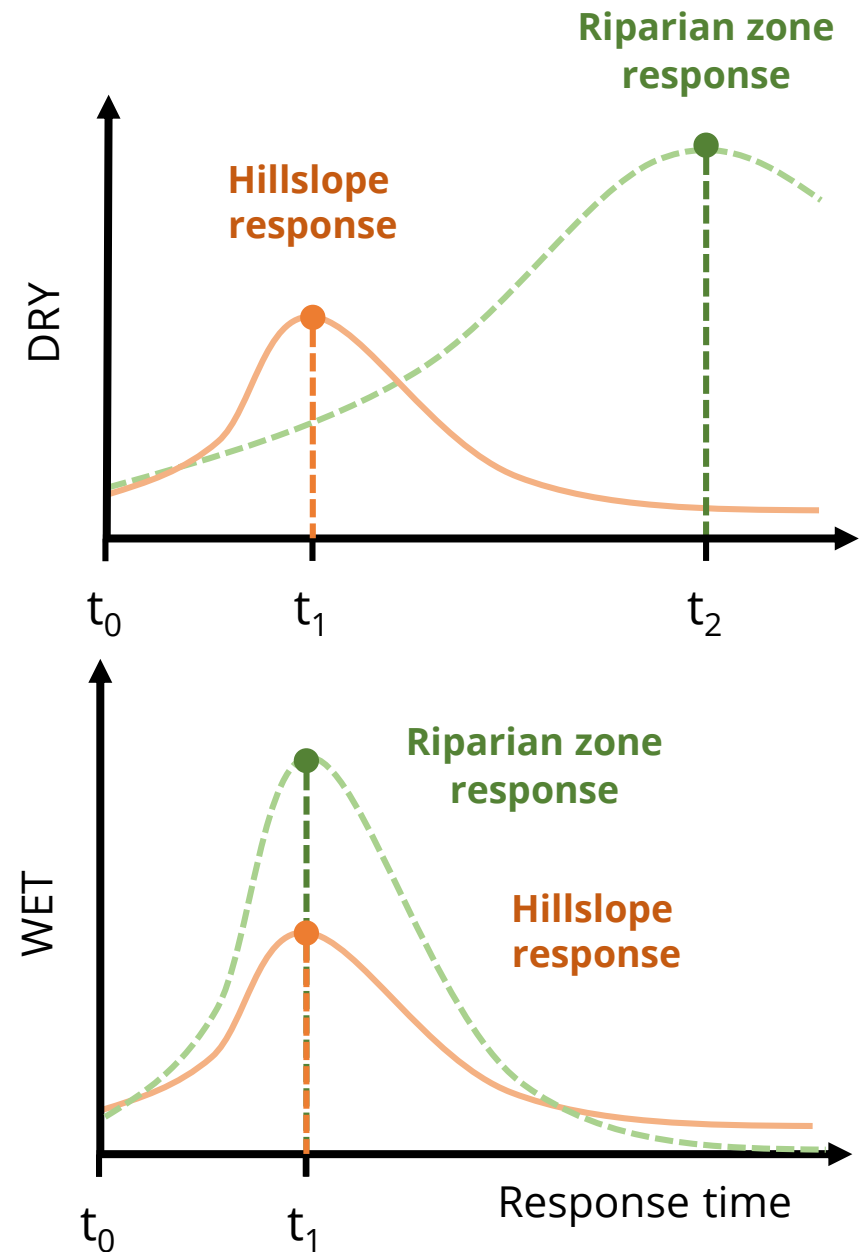


wet summer



Hydrological Response - Response Times

- **Dry antecedent conditions:**
 - prolonged response times in riparian zone
 - double peaks
- **Wet antecedent conditions:**
 - superimposition of hillslope- and riparian zone response
 - single peaks



What we learned so far...

- **different response times** of hillslope and riparian zone shaped runoff hydrograph and DOC mobilization
- **Hydrological activation of riparian zone** essential for DOC export

... What's next?

- Implementation of **response times in hydrological modeling** to estimate timing of hot moments of DOC export
- Characterize **thresholds** for activation of riparian zone?
- Test **transferability** to similar catchments

Thank you!



We would like to thank the **GLASER-Stiftung** and **PLETTNER-Stiftung** in the *Stifterverband für die Deutsche Wissenschaft* for the financial support.

We would like to thank the **Deutschen Hydrologischen Gesellschaft** for financial support of the field campaign. 