Soil microbial responses to rewetting depend on drying intensity and soil properties

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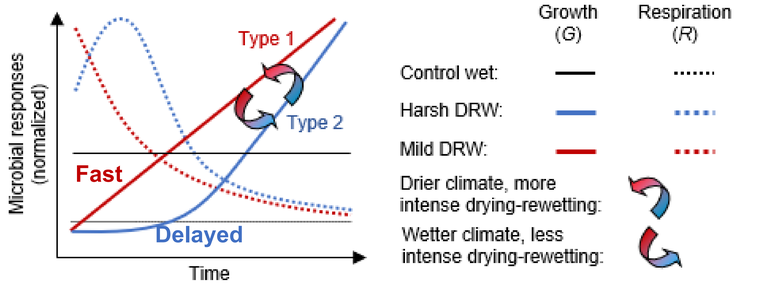
Outstanding Student & PhD candidate Presentation contest

1. Motivation

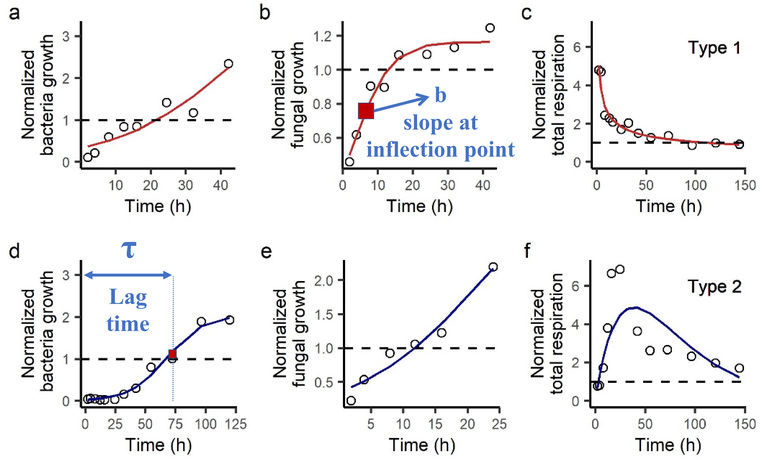
Harshness perceived by soil microbes can regulate microbial growth recovery after drying and rewetting (DRW)



Can we quantify harshness? What are the drivers?

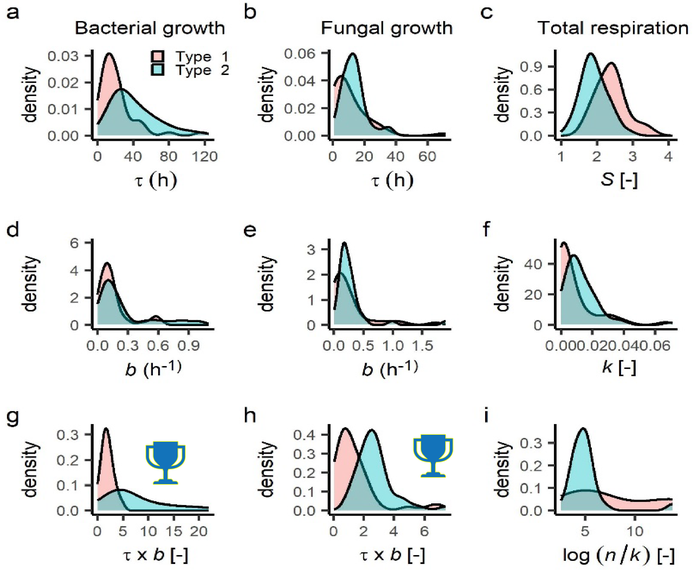
2. Methods

Microbial responses: $G(t)=\frac{G_{max}}{1+e^{-b(t-\tau)}}$, $R(t)=C\frac{k^n t^{n-1} e^{-kt}}{\Gamma[n]}$



3. Results

τ×b was used to quantify harshness, because it allows separating type 1 and 2 responses

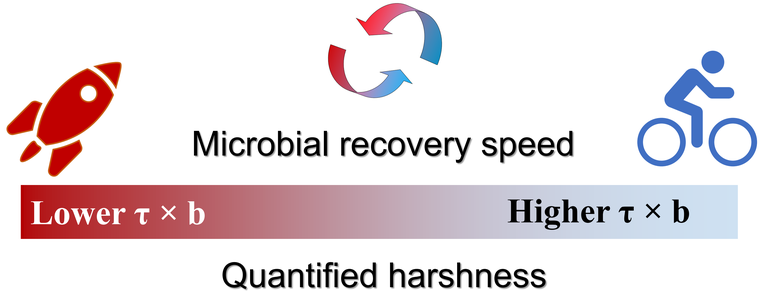


τ × b is increasing

Drier Climate* → Lower pH, Drying intensity

4. Our contribution

Our measure of harshness (**τ×b**) captures the continuum of soil microbial responses to DRW from fast to slow, and how responses depend on pedoclimatic conditions



5. Take home message

- The continuum of soil microbial responses to DRW can be captured by a single flexible function from fast recovery to delayed recovery.
- **τ×b** was an effective index to present harshness perceived by soil microbes and can be considered a microbial response trait to DRW.
- Drying intensity and lower acidity increased harshness and delayed growth recovery.

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