

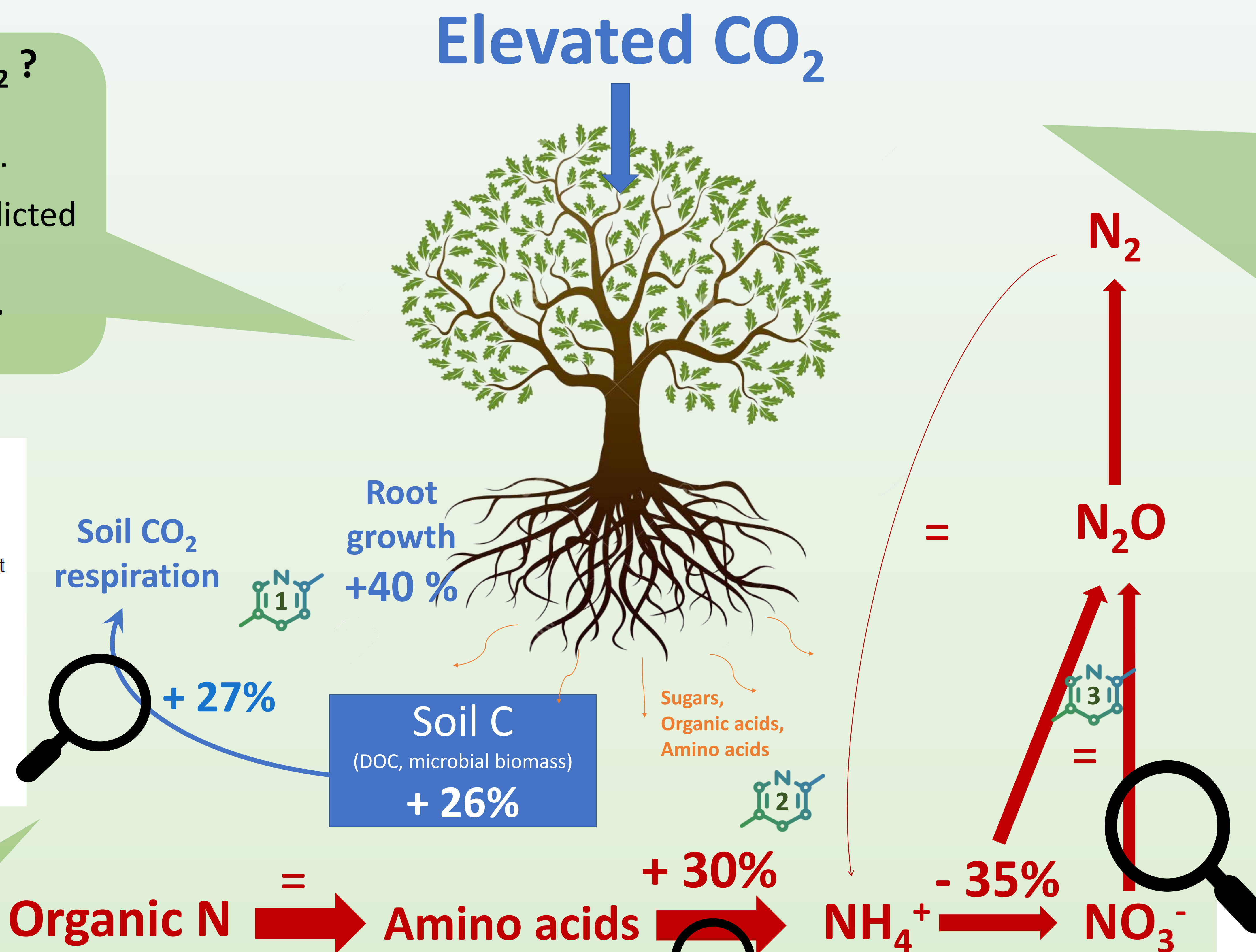
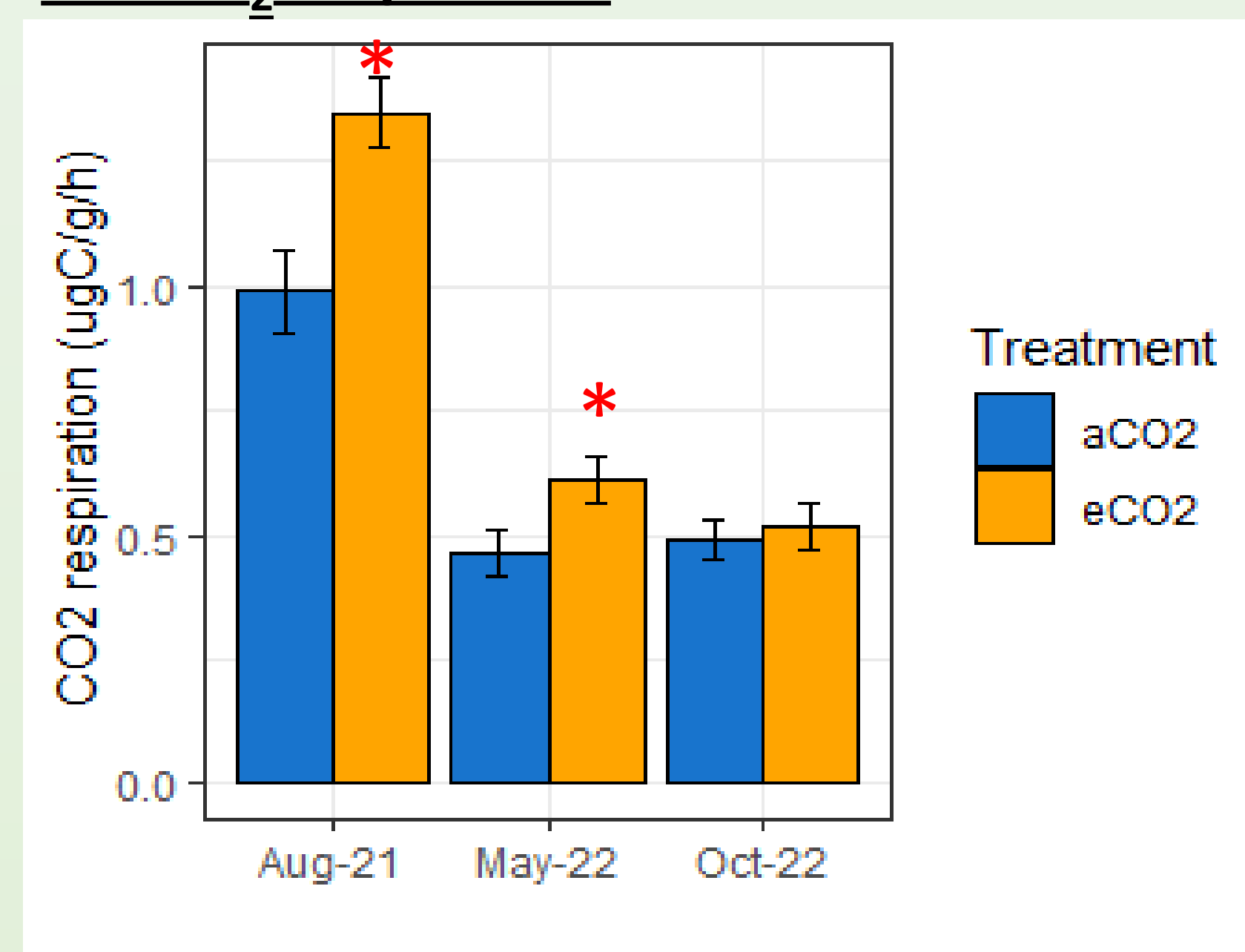
Nitrogen cycling in forest soils under elevated CO₂: response of a key soil nutrient to global change

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Why study nitrogen under elevated CO₂ ?

Rising CO₂ levels may increase nitrogen demand.
 A reduction of N availability can negate the predicted C storage under future climates by forests.
 → **Progressive Nitrogen Limitation Hypothesis.**

Soil CO₂ respiration

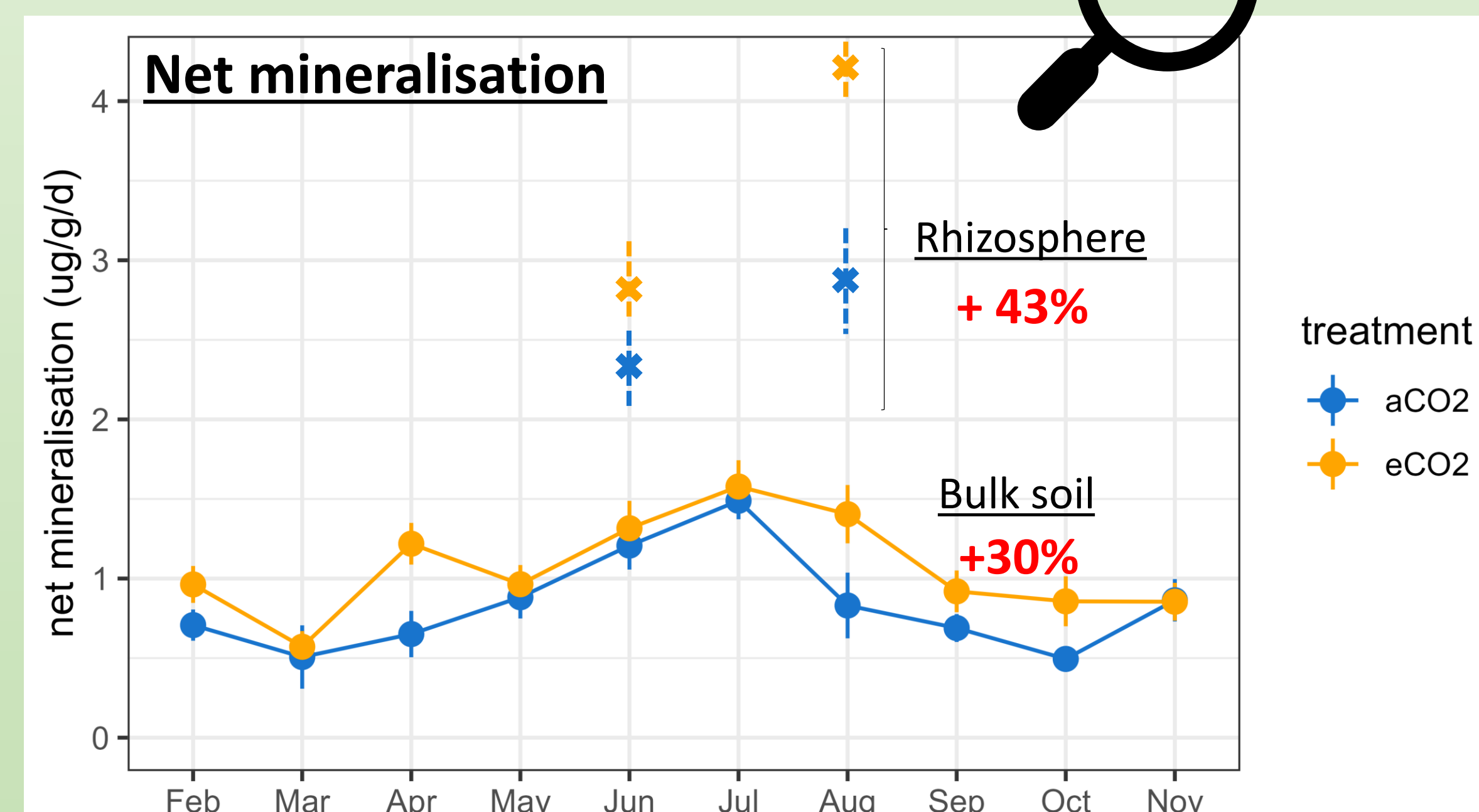


What have we learn ?

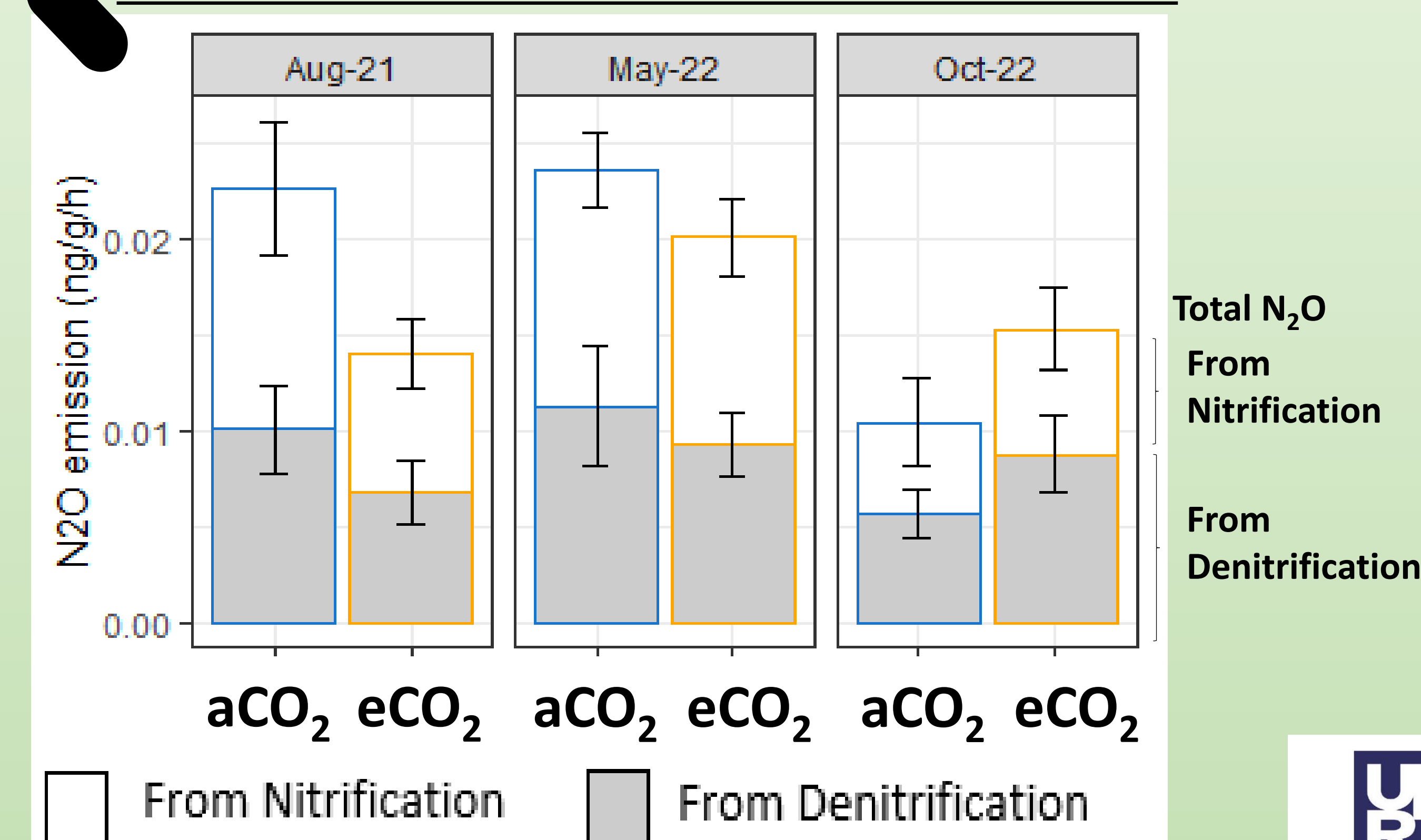
- 1) Faster C cycling in soils alleviating microbial C limitation.
 - 2) Enhancement of ammonification and downregulation of nitrification, especially in the rhizosphere.
 - 3) No effect on nitrogen losses despite the higher C availability.
- Root exudates **selectivity influence microbial communities** to conserve N and meet the higher demand. But, how long will the N supply be maintained in the face of declining nitrogen deposition in future climates ?

How to measure nitrogen fluxes ?

Addition of ¹⁵N in different forms (¹⁵N-AA, NH₄⁺, NO₃⁻, N₂) to trace the fate of the heavy nitrogen through transformations.



N₂O emission from nitrification and denitrification



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