**DISCUSSION**

1. **The effect of drought on the diversity and abundance varied depending on the ammonia-oxidizing groups**

* **The impact of drought/soil moisture on N-cycling (nitrification) (N pools) and soil moisture content (GWC) which eventually alter the ammonia-oxidizing communities (AOA, AOB, Comammox) (comparisons with the references), specifically in agricultural soils (or high-managed soils).**
* Beta diversity: observed shifts in AOA (and Comammox) (cannot tell decrease or increase?), while we did not see much differences in AOB.
* Differential abundance analysis: In contrast to the beta diversity results, AOB has more altered ASVs (mostly are the dominant member) in response to drought compared to AOA and Comammox (drought might affect rarer ASVs in AOA and Comammox, which couldn’t be detected in DAA).
* *amoA* gene abundance: more obvious in AOB and Comammox B (drought decreased the abundance).

1. **Cropping system modulated the responses of ammonia-oxidizing communities to drought treatment**

* **How do fertilization/agricultural management system modulate the effect of drought on different ammonia-oxidizing groups (references) in general**
* Hypothetical-based: How do the organic (BIODYN: manure compost/slurry & no chemical pesticides, but biodyn preparations) and conventional cropping systems (CONFYM: manure/slurry/mineral fertilizers & chemical pesticides; CONMIN: only mineral fertilizers & chemical pesticides) play a role in the observed differences effect of drought on ammonia-oxidizing communities.
* Beta diversity: BIODYN has stronger effect of drought, especially in AOA and Comammox (based on CAP PCoA plots and CAP distance analysis)
* Abundance: BIODYN and CONFYM have the larger effect of drought.