**Microbiomes across a climate gradient**

**Introduction**

One overarching question in ecology is how ecosystems function. This broad question simply goes to microbiomes that (). Tremendous efforts have been dedicated to addressing this question in microbiomes.

How is composition of a microbial system shaped ?

Why do we turn to a climate gradient and conduct (reciprocal) transplantations ?

A follow-up question around utilizing a gradient is why not litter type was also manipulated ?

It is noteworthy that there are cases of similar composition but different functioning. This points to trait-based quantification of community that can tell real differences between communities in terms of functioning.

Here we limit our discussion of function to litter decomposition.

Hypothesis:

We tested this hypothesis in a climate gradient setting by applying the trait- and individual-based microbial systems modelling framework—DEMENTpy. This work is expected to conceptually move forward understanding of roles of composition in sustaining microbial systems functioning and methodologically exemplify trait-based modelling in complementing experimental methods towards deciphering microbial systems functioning.

**Methods**

**Model description**

**Litter parameterization**

Desert: <https://ameriflux.lbl.gov/sites/siteinfo/US-SCd>

Scrubland: <https://ameriflux.lbl.gov/sites/siteinfo/US-SCc>

Grassland: litter (*Avena barbata and A. fatua*)

<https://ameriflux.lbl.gov/sites/siteinfo/US-SCg>

Pine-oak: fluxnet info.: https://ameriflux.lbl.gov/sites/siteinfo/US-SCf

Subalpine:

**Results**