

Chronic drought effects on above- and belowground production in a temperate grassland ecosystem

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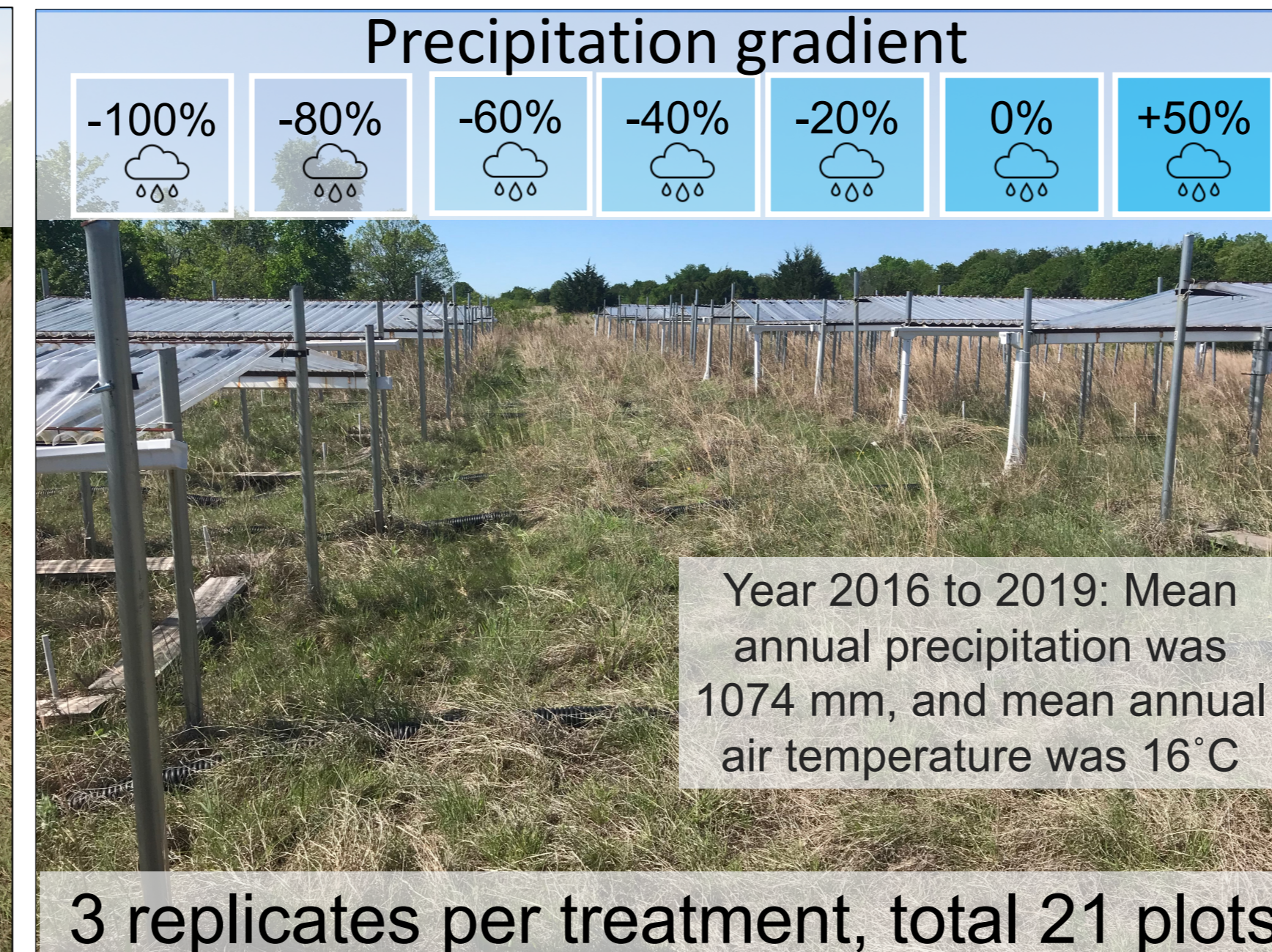
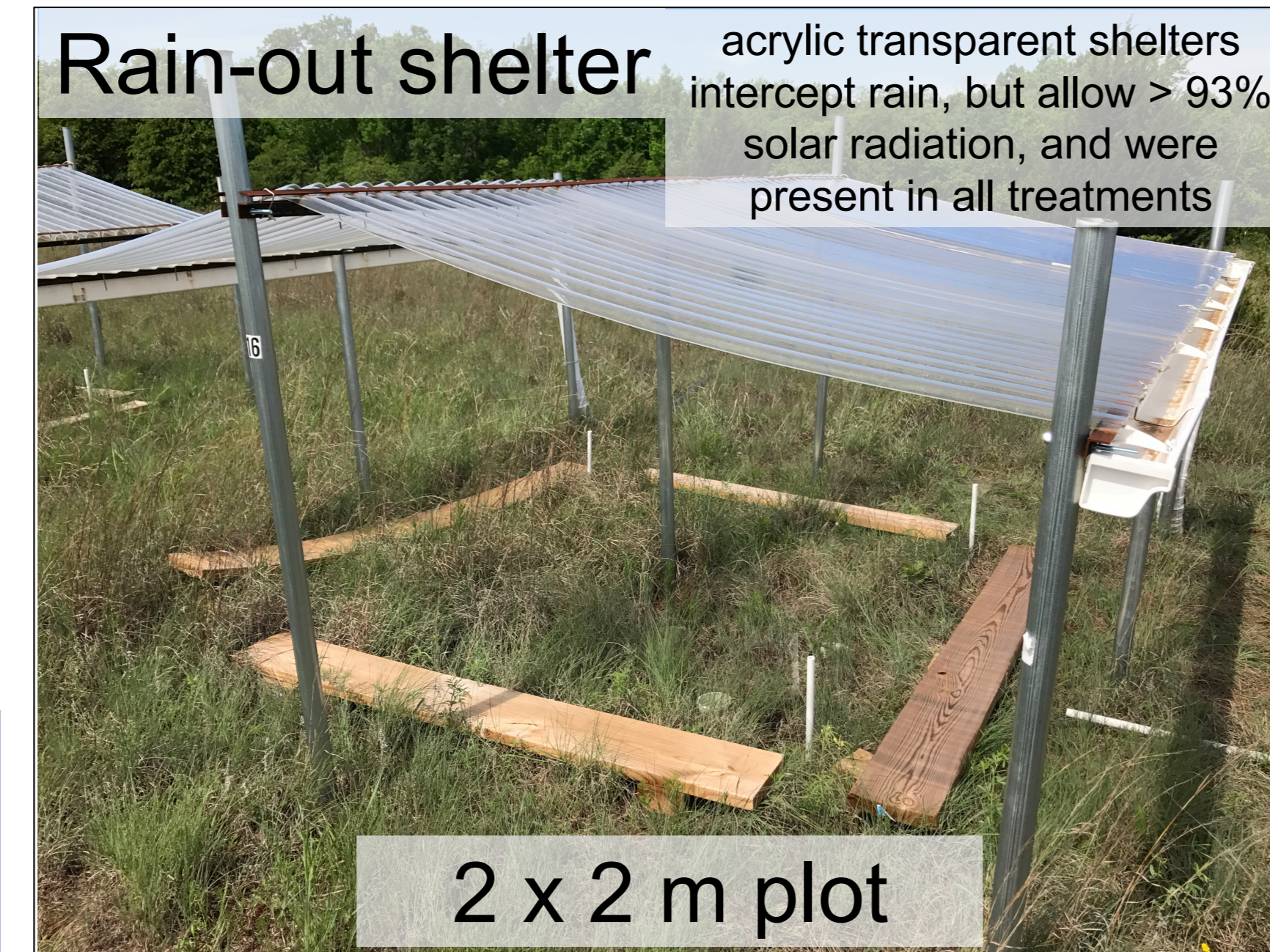
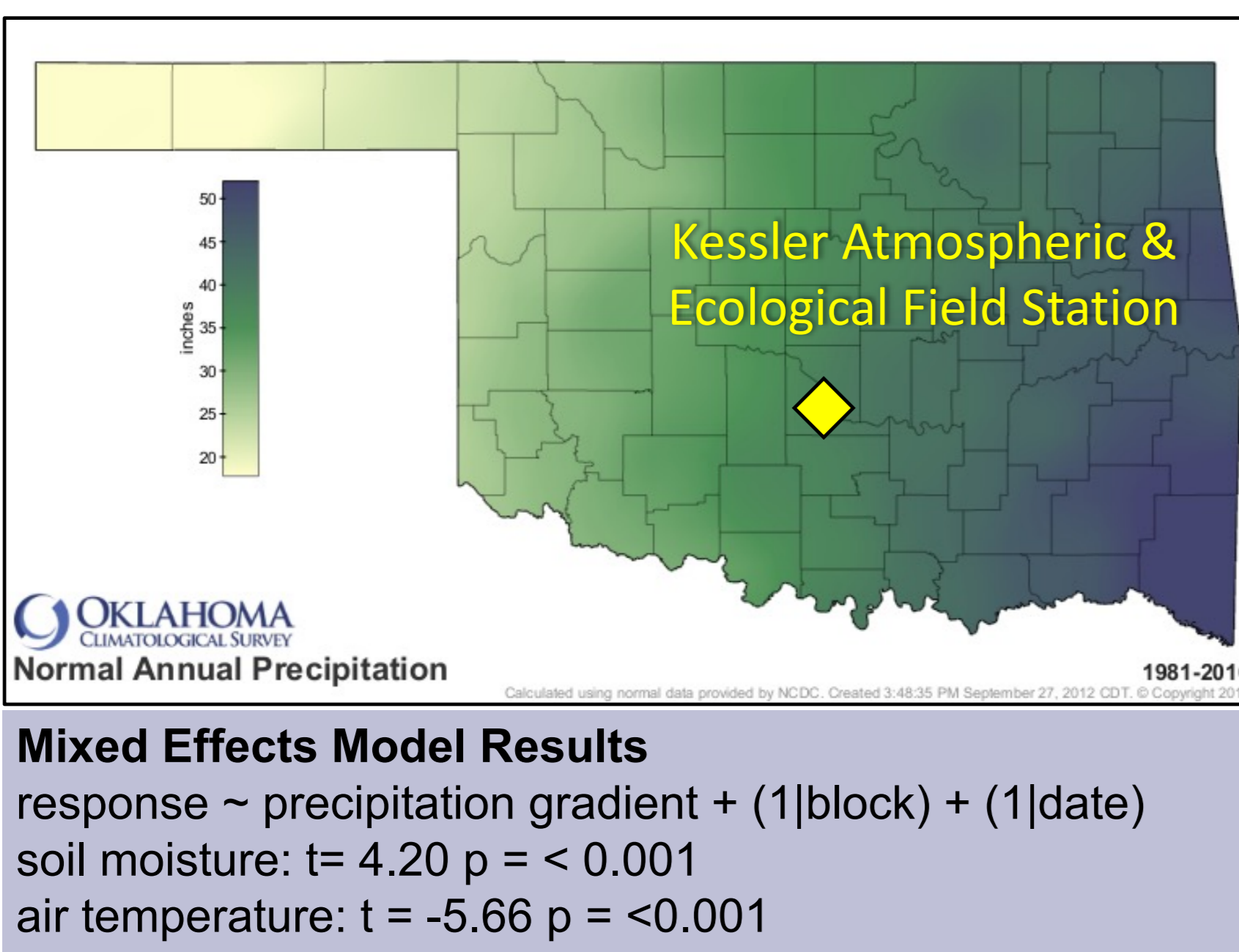
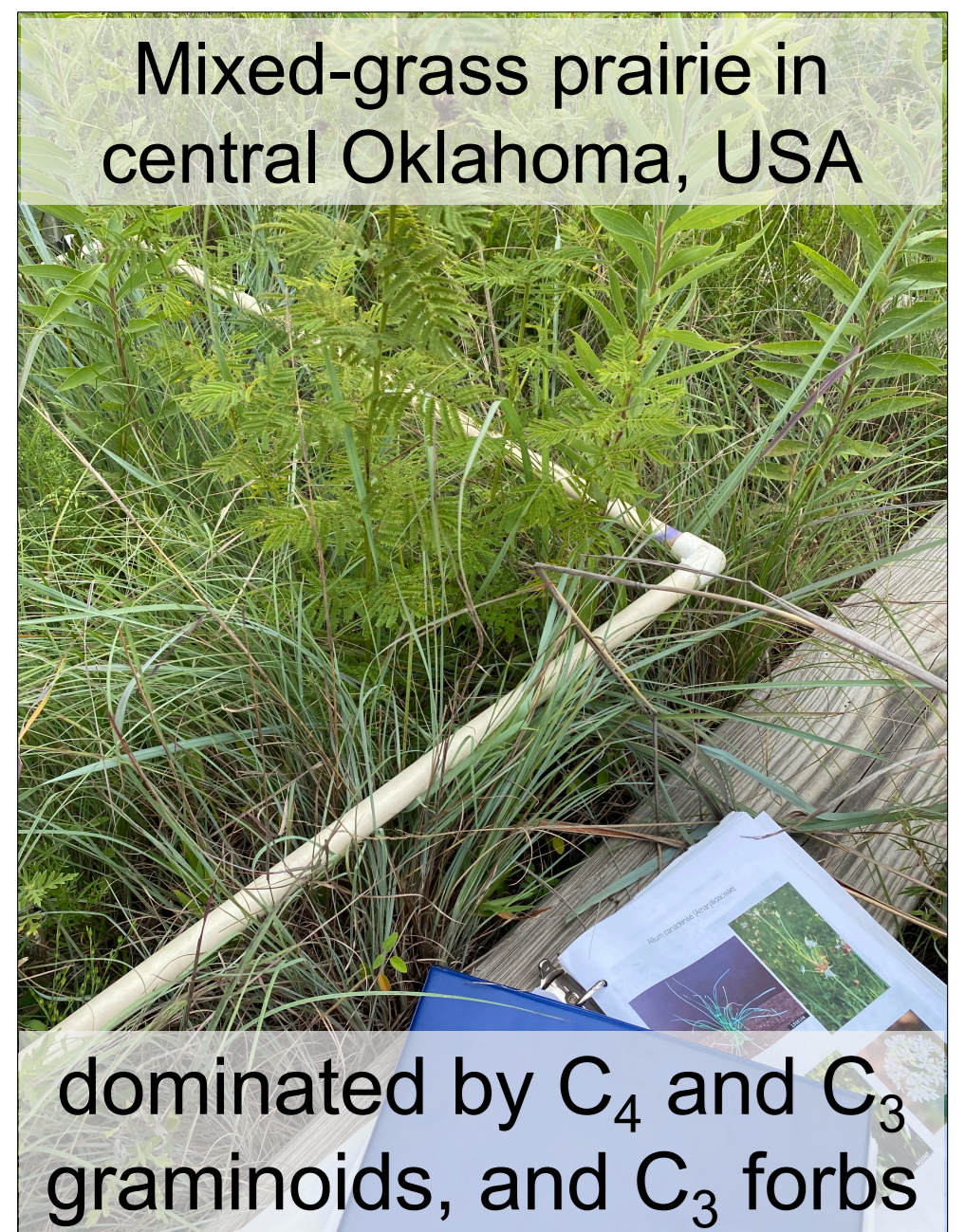
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Background

- The intensity and frequency of extreme precipitation events, including the severity of drought, are expected to increase with climate change.
- Productivity of temperate grasslands will vary depending on the precipitation regimes
- The *knowledge gap* is understanding the effect of climate variation not only on aboveground production (ANPP), but on belowground (BNPP) and total net plant production (NPP).

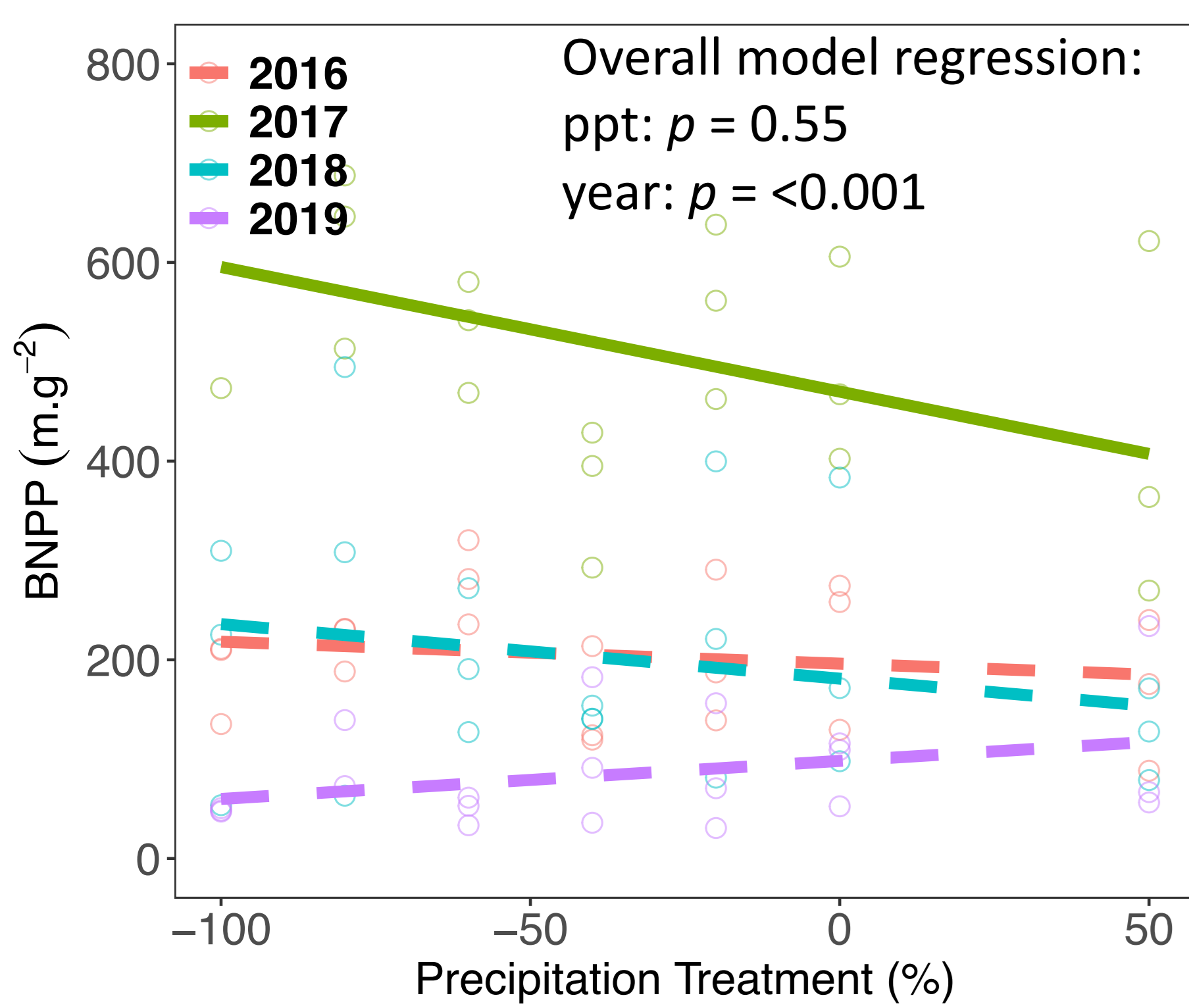
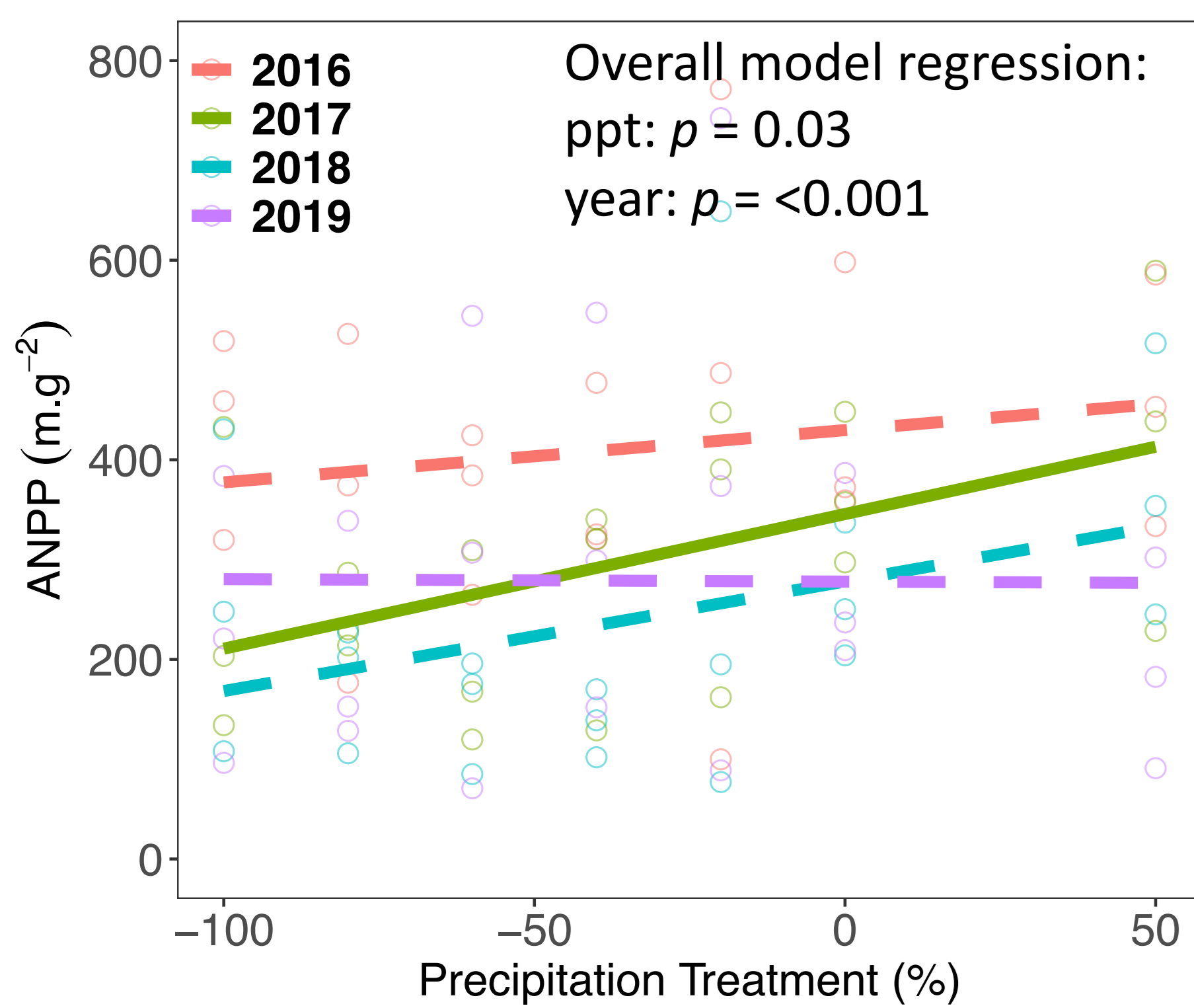
Methods



Future directions

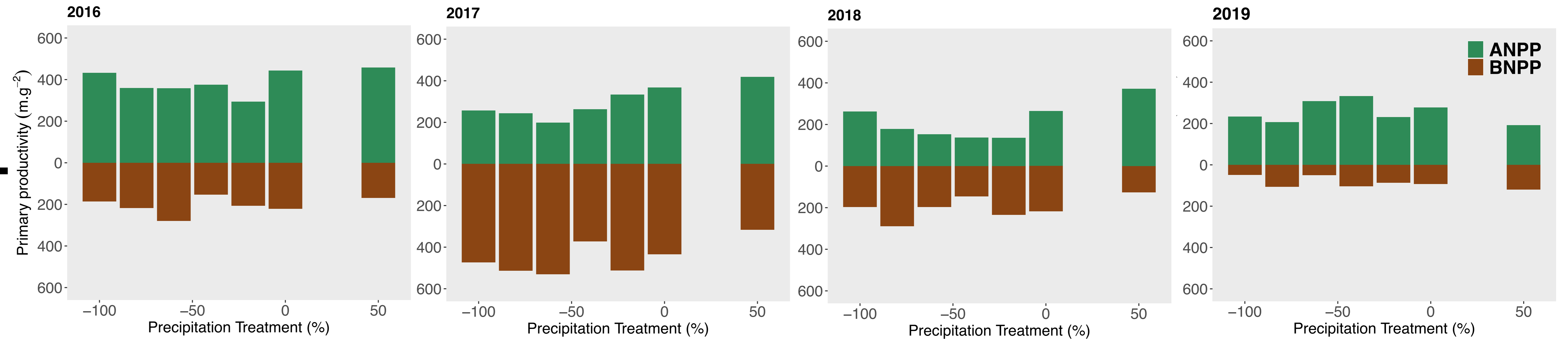
- It remains to be explored:
- what is the compensatory mechanism that allows these communities to maintain NPP in extreme drought conditions;
 - how long can this production be maintained before collapse of this ecosystem function.

Results

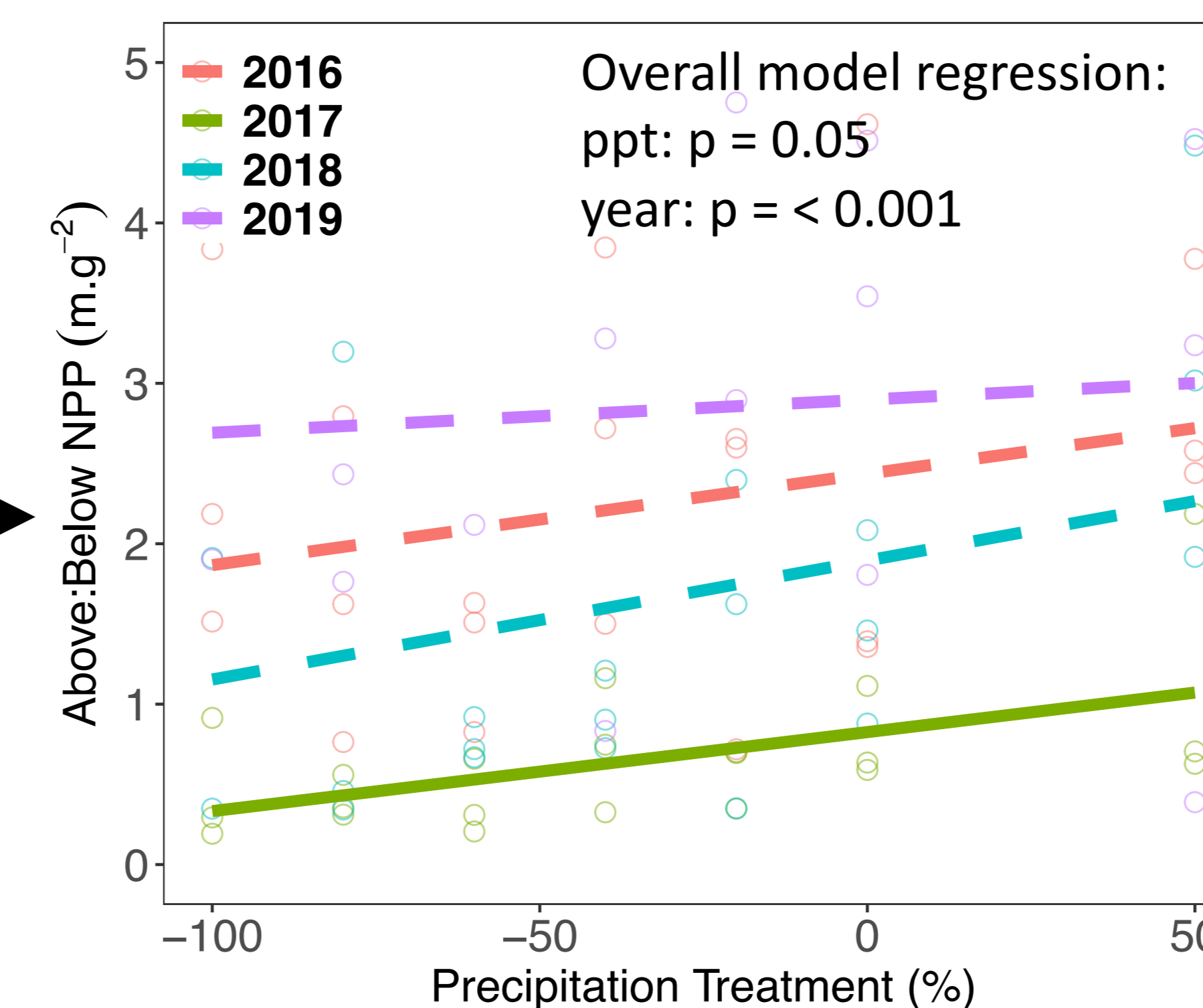


- Overall precipitation change effects was significant on ANPP, as expected.
- The effect of precipitation change on BNPP was the same as for ANPP.
- There was a non-significant trend towards a negative relationship between BNPP and precipitation, which offset the ANPP pattern enough that NPP was unaffected by precipitation treatments.

ANPP and BNPP contrast: no significant effect of precipitation on NPP ($p = 0.47$);



Exploring ANPP and BNPP ratio across the precipitation gradient:



rather, there is a shift in where production is distributed.

Drought reduces Above:Below NPP ratio, while rainfall addition increases, but this is not yearly consistent.

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