

# Simulating the impacts of drought on the carbon dynamics in the African rainforests

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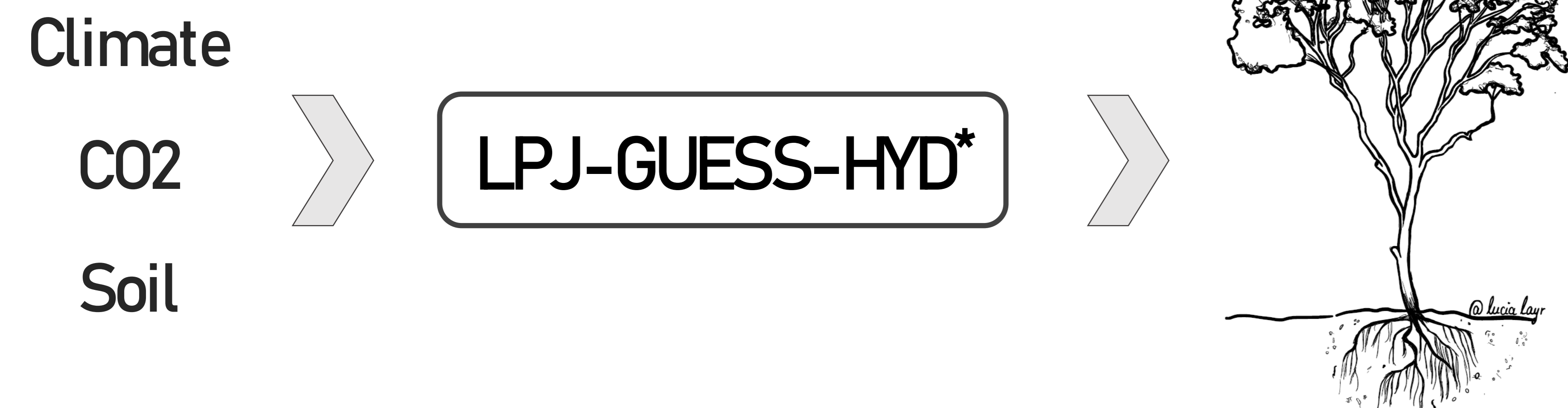
## RESEARCH QUESTION

**How does the net carbon sink response to the warmer-drier events?**

Considering that:

- African tropical rainforests are a vital terrestrial carbon sink and
- no ground data has documented the impact of drought there

## METHOD



## REFERENCES

- Bennett, A. C. et al. (2021). Resistance of African tropical forests to an extreme climate anomaly.
- Smith, B. et al. (2001). Representation of vegetation dynamics in the modelling of terrestrial ecosystems.
- Papastephanou, P. (2020). A dynamic model for strategies and dynamics of plant water-potential regulation under drought conditions.

\* LPJ-GUESS-HYD is a newly developed version of LPJ-GUESS (a global dynamic vegetation model) integrating plant hydraulics, parametrized for tropical broadleaves.

\*\* Units for variables: Net Carbon Sink, Carbon gains, Carbon losses: kg C m<sup>-2</sup> yr<sup>-1</sup>; CO<sub>2</sub>: ppm; Mean Annual Temperature °C; Precipitation: mm; Vapor Pressure Deficit: kPa; Maximum Cumulative Water Deficit: mm.

**Drought in the African rainforest has caused slight instantaneous mortality and an overall decline in primary production, which is predominantly driven by heat.**

Fig.1 The warmer-drier events lessened net carbon sink\*\*

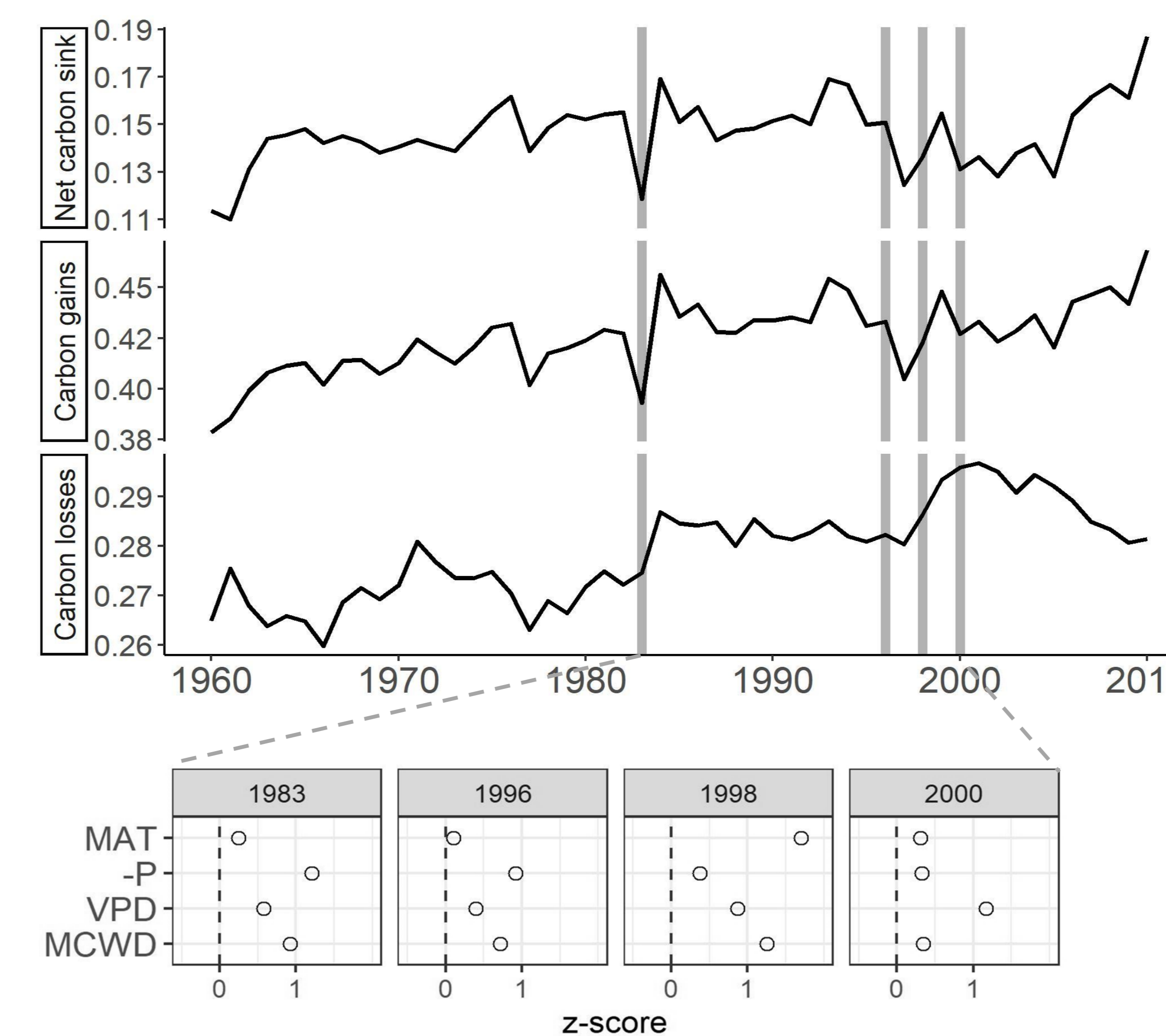


Fig.2 Potential environmental drivers\*\*

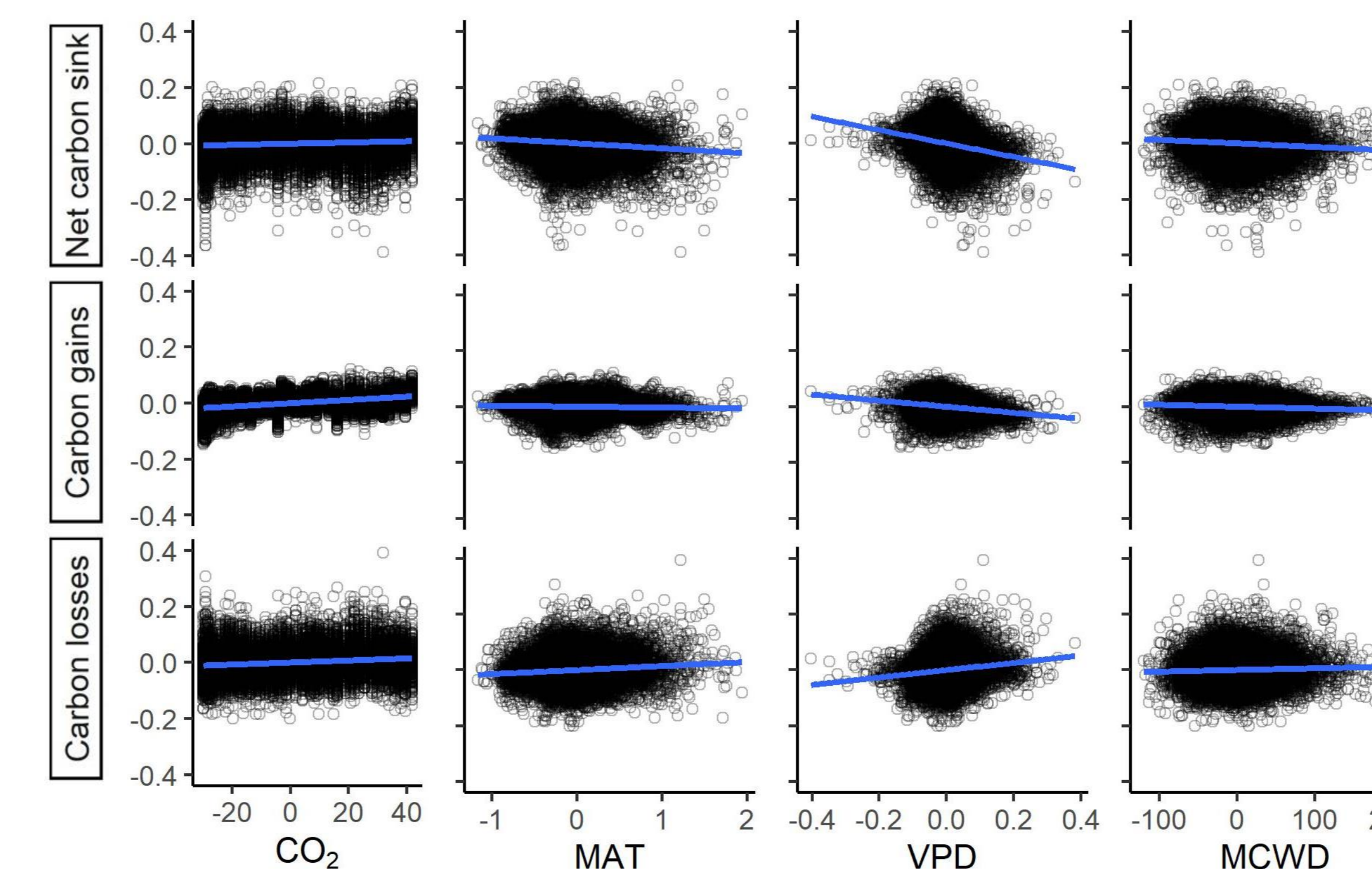


Fig.3 Low correspondence between warmer-drier events and carbon losses hotspots

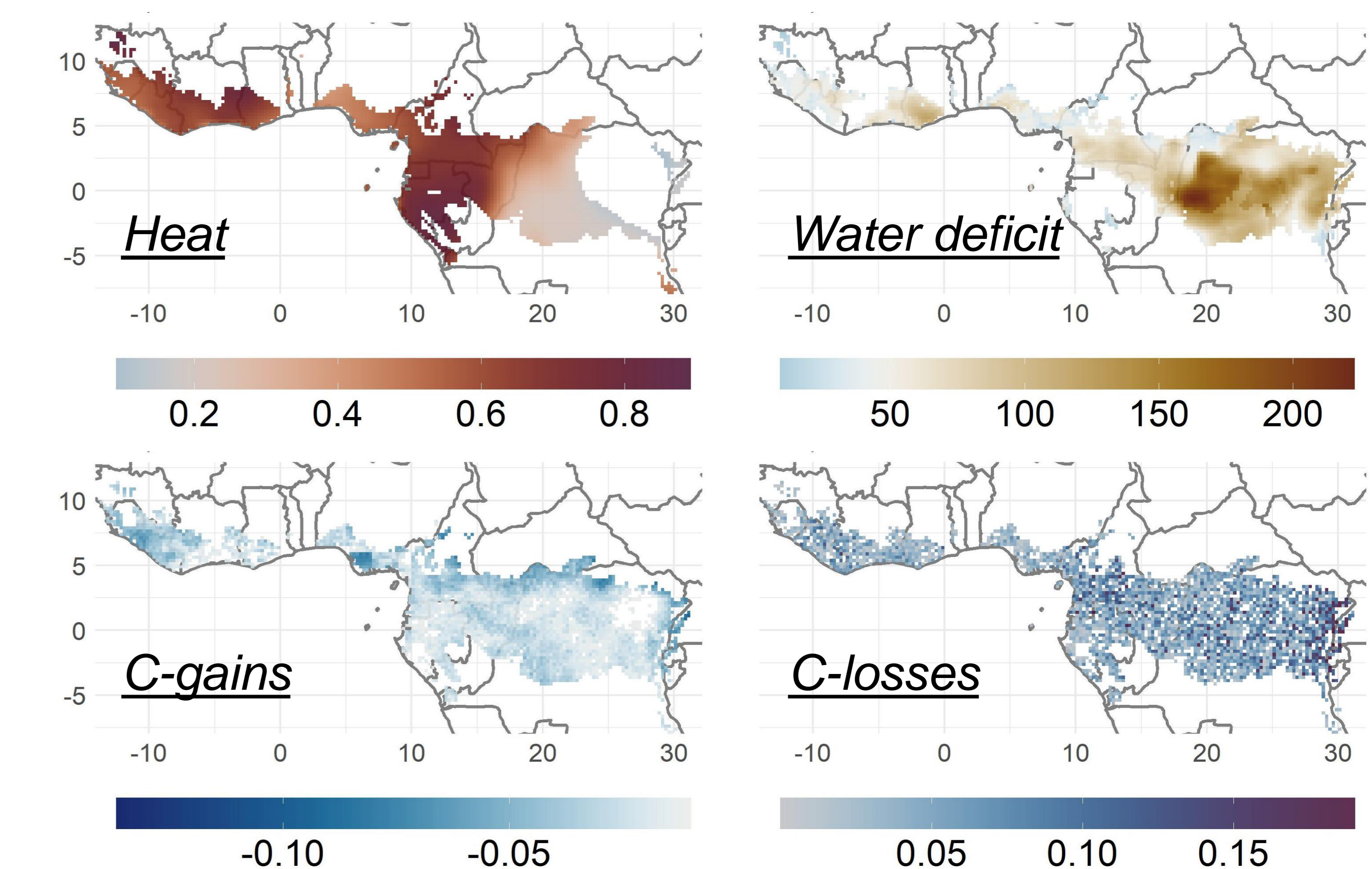


Fig.4 Effect size of environmental drivers on net carbon sink

