

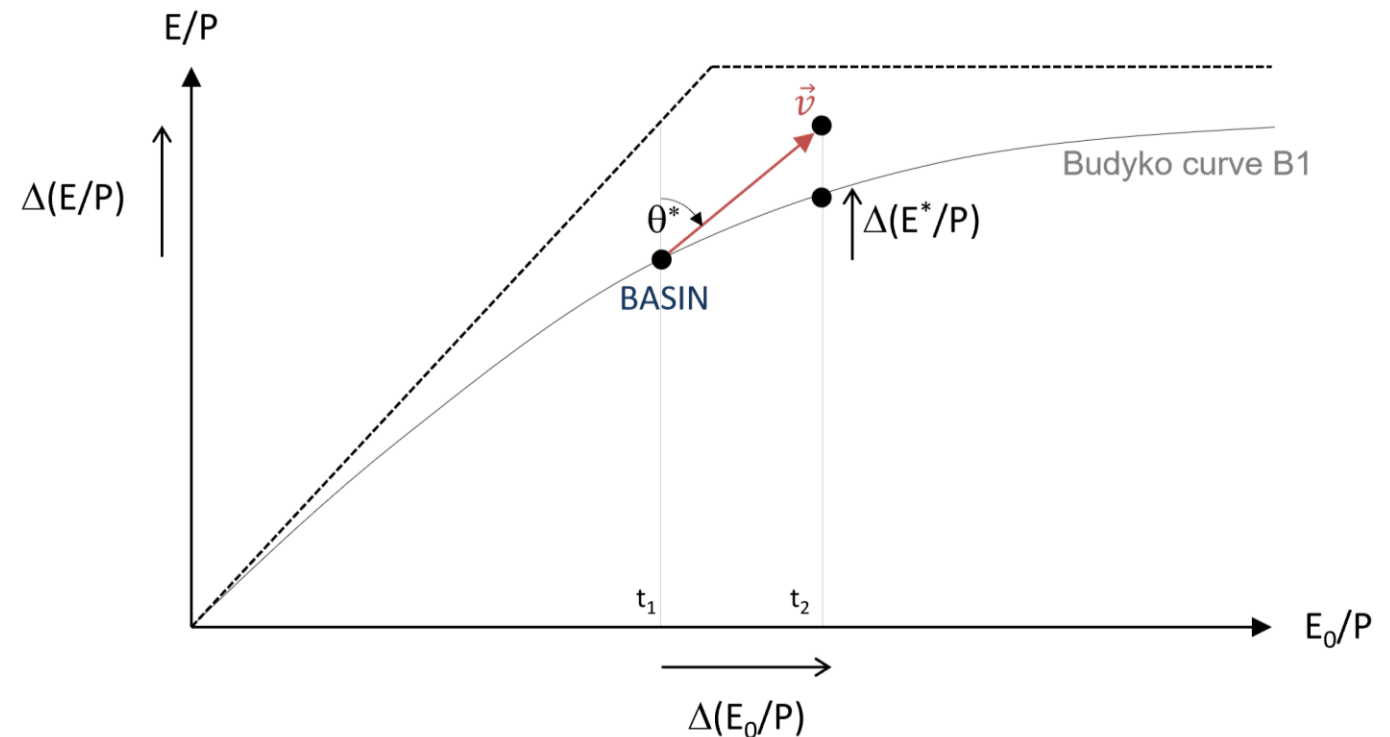
Fewer Basins will Follow their Budyko Curves under Global Warming and Fossil-fueled Development

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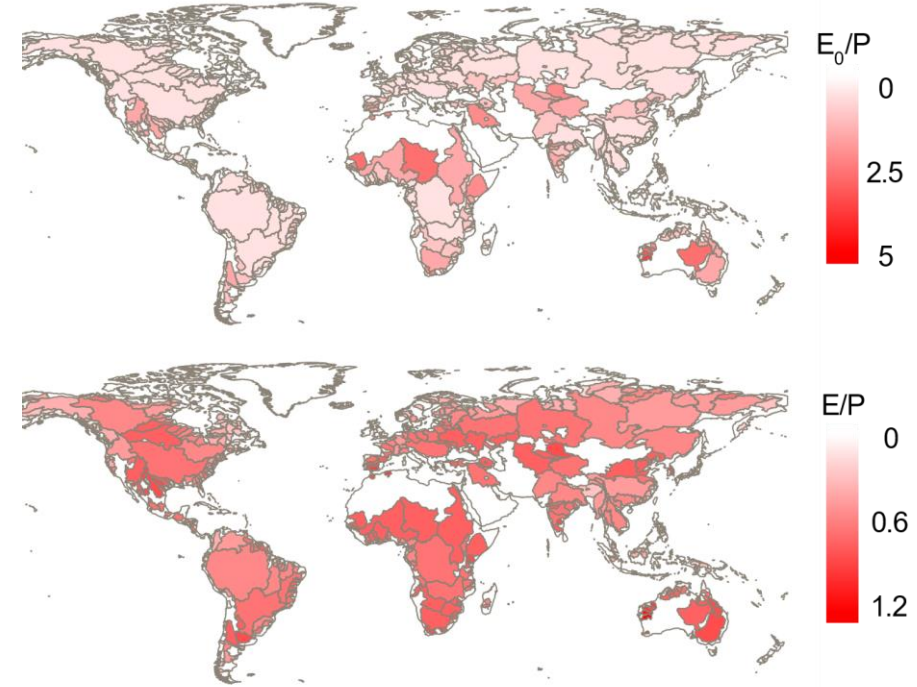
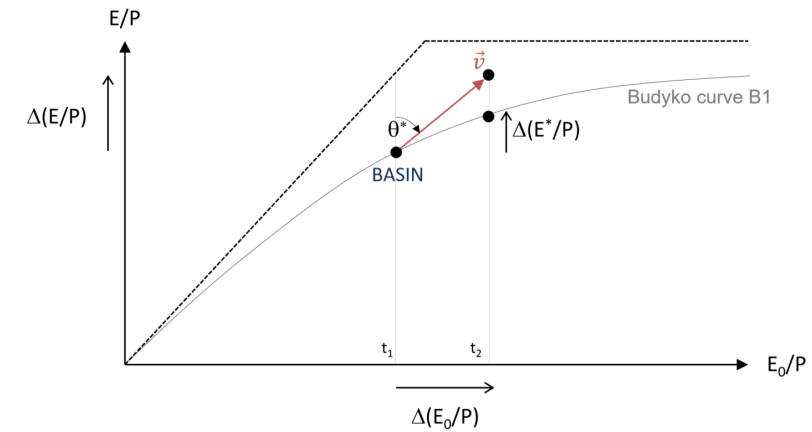
Background

1. Basins fall under a curvilinear relationship
2. Space-for-time application of the Budyko framework
3. **Research question:** Will basin deviate or follow their Budyko curves under the future effects of global warming?

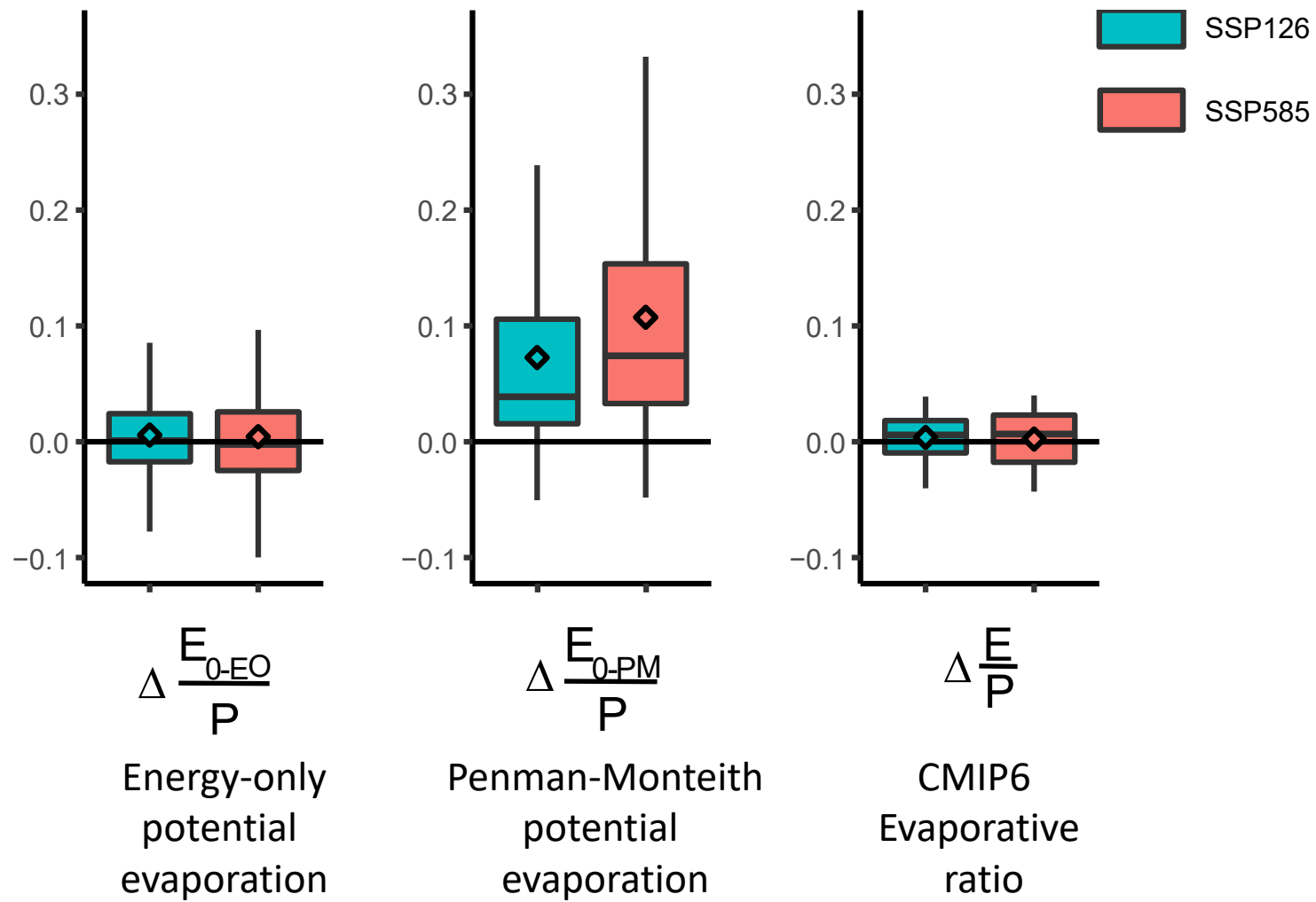


Methods

1. 405 large basins worldwide
2. Hydroclimatic projections of seven ESMs from the CMIP6: *SSP126-Low emission and SSP585-High emission*
3. Movement in Budyko space 1901-1950 to 2051-2100
4. Two potential evaporation estimates

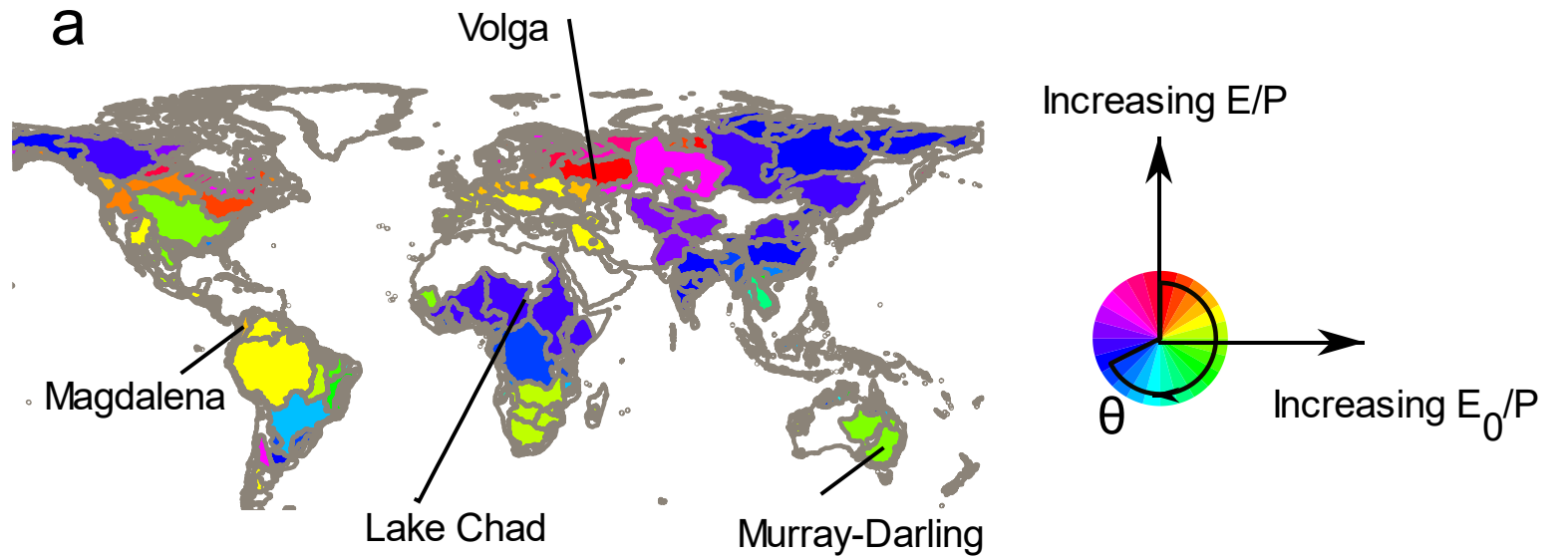


Results 1

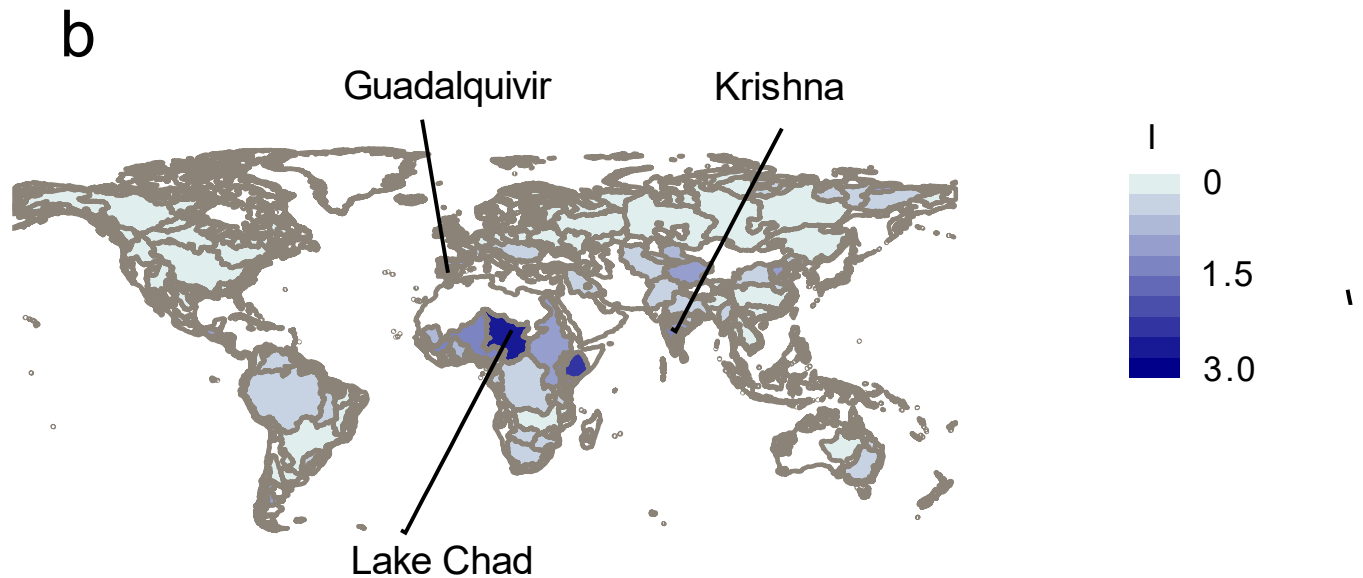


Results 2

Direction of movement

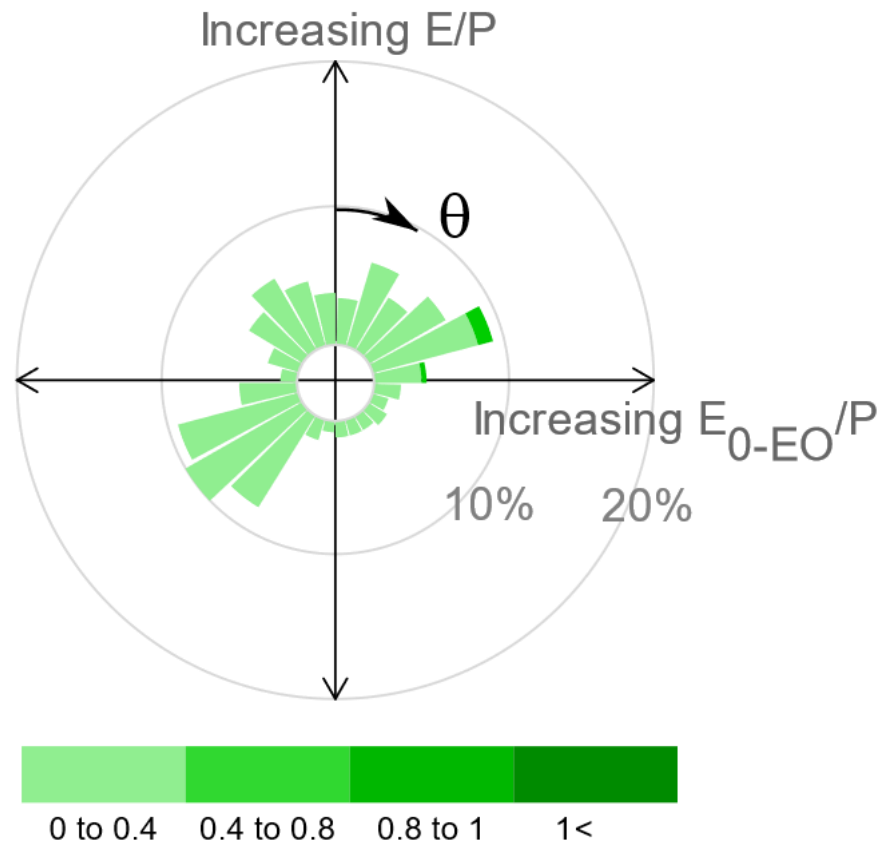


Intensity of movement

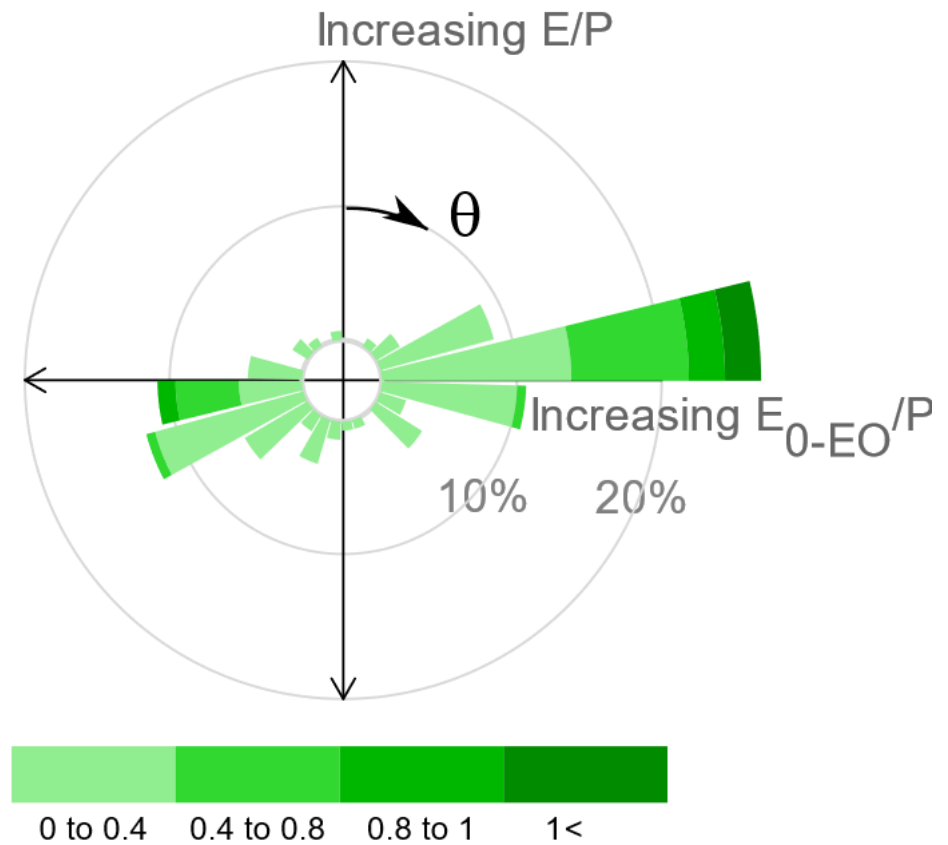


Results 3

a **Wet**; SSP585, E_{0-EO}



b **Dry**; SSP585, E_{0-EO}



Conclusions

- Most river basins not follow their original Budyko-curve trajectories (<72%)
- More deviations in SSP585 (High emission and fossil-fueled development)

Takeaway messages

- Effectivity of the Budyko framework for future hydroclimatic predictions?
- Climate and land use change responsible, or space-for-time substitution not valid?