








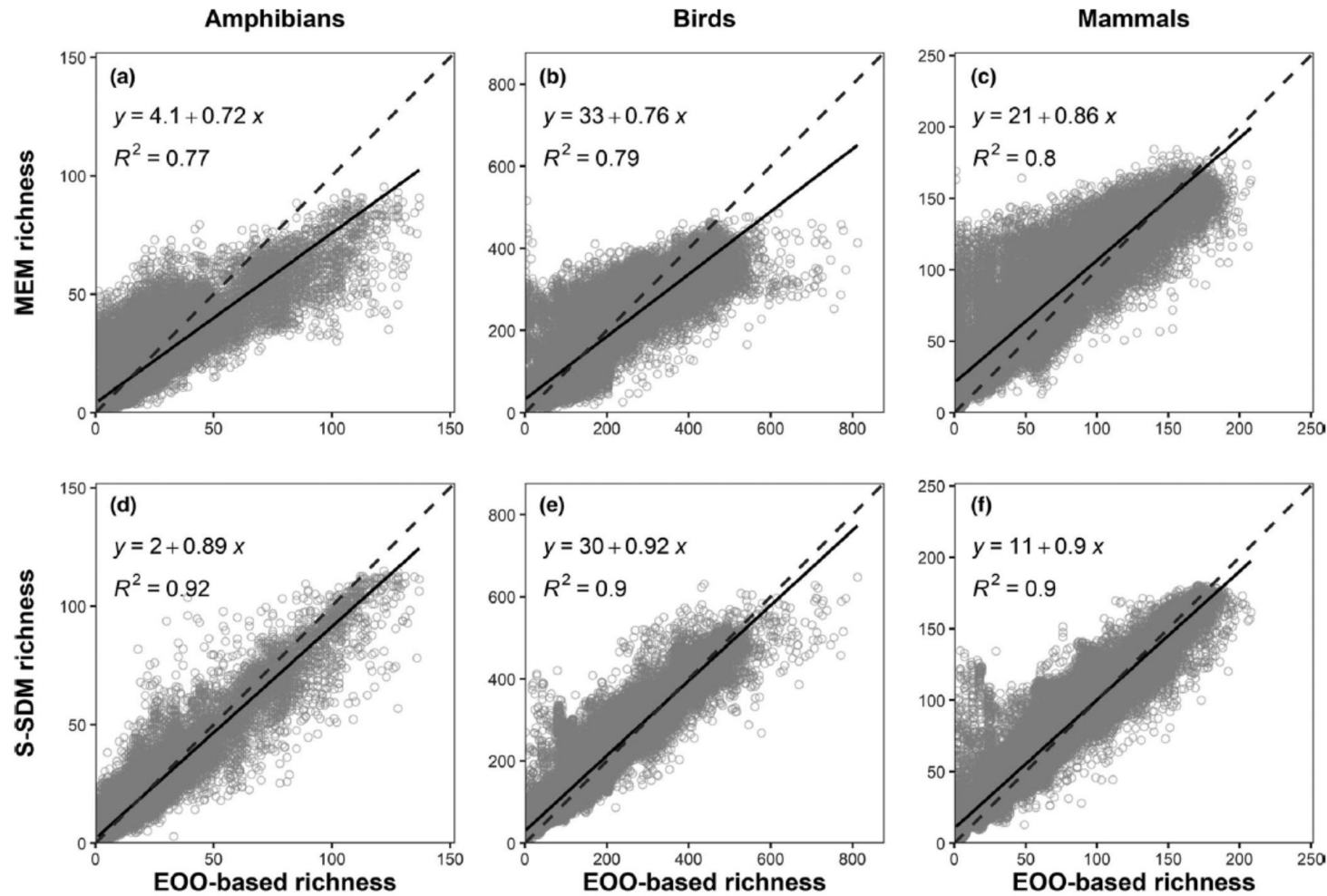
Update from ISIMIP Biodiversity Sector



A comparison of macroecological and stacked species distribution models to predict future global terrestrial vertebrate richness

Matthias F. Biber^{1,2}  | Alke Voskamp²  | Aidin Niamir²  | Thomas Hickler^{2,3}  |
Christian Hof^{1,2} 

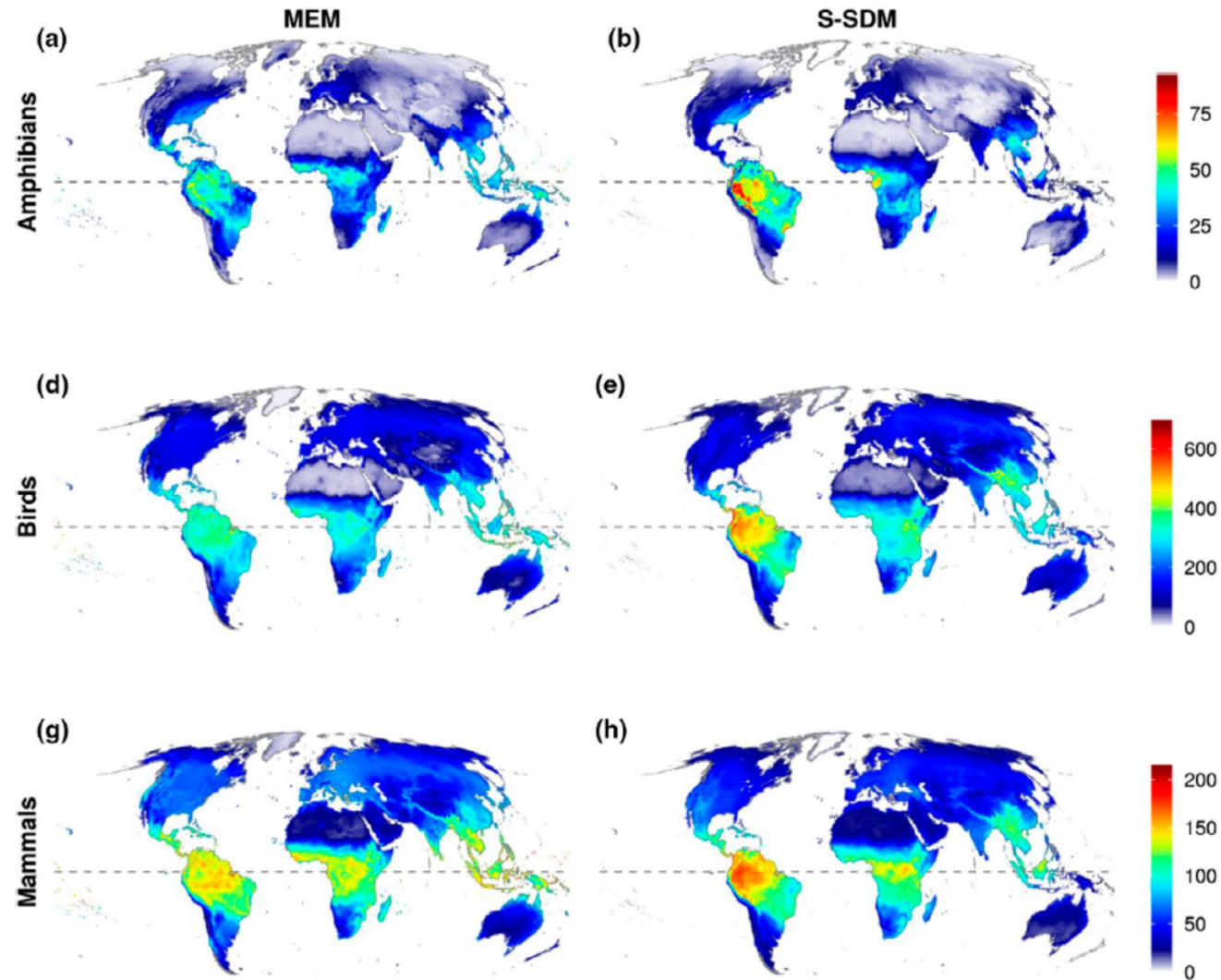
Biodiversity model ISIMIP2b



comparison to observed data
(EOO)

Biber et al. 2020

Biodiversity model ISIMIP2b



prediction for 2080
RCP 2.6

Biber et al. 2020

- impact of mitigation measures on biodiversity

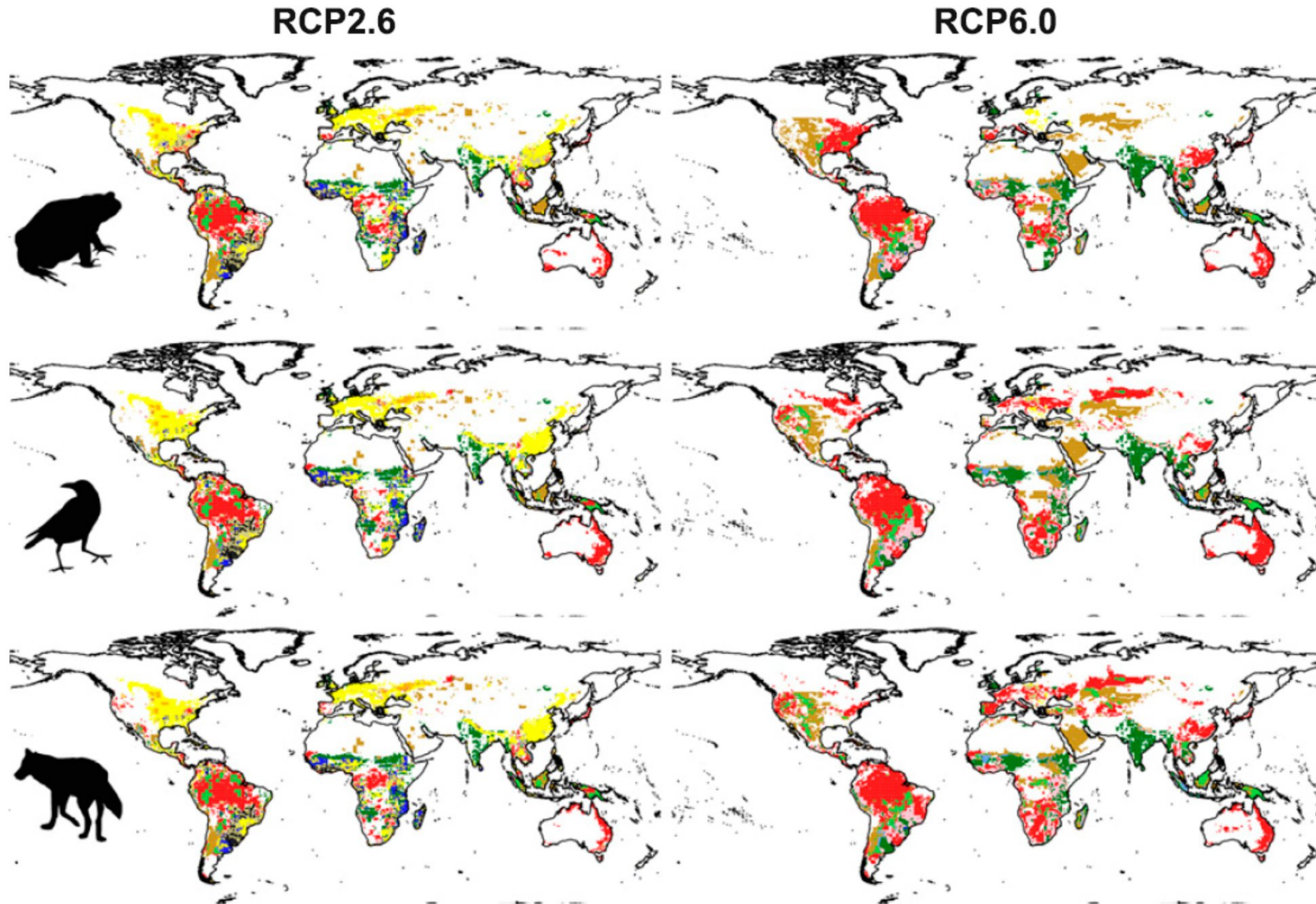


Bioenergy cropland expansion may offset positive effects of climate change mitigation for global vertebrate diversity

Christian Hof^{a,b,1,2}, Alke Voskamp^{a,c,1}, Matthias F. Biber^{a,b,1}, Katrin Böhning-Gaese^{a,d}, Eva Katharina Engelhardt^{a,b}, Aidin Niamir^a, Stephen G. Willis^c, and Thomas Hickler^{a,e}

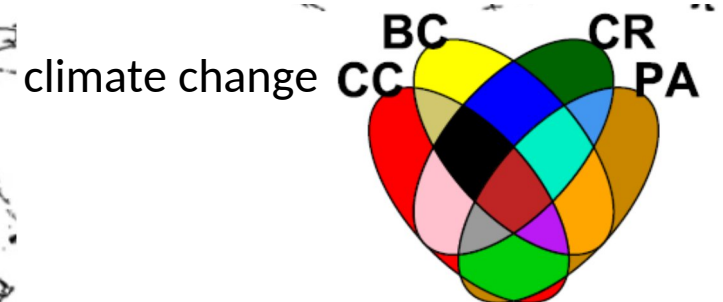
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Biodiversity model ISIMIP2b



Overlap of threat from
climate and land-use change
for 2080

bioenergy cropland



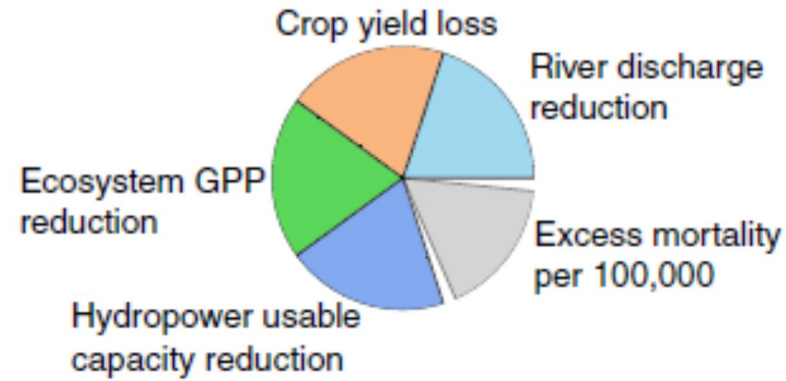
example 1: cross-sector studies

2003 heatwave across Europe

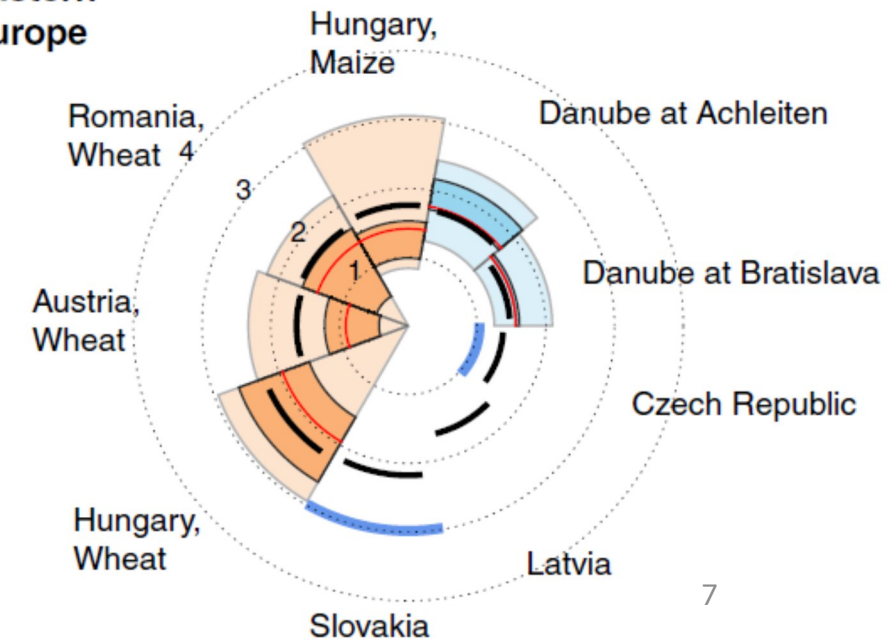
ISIMIP2a

cross-sector

- 12 crop models
- 7 hydrological models + 1 hydropower model
- 8 vegetation models

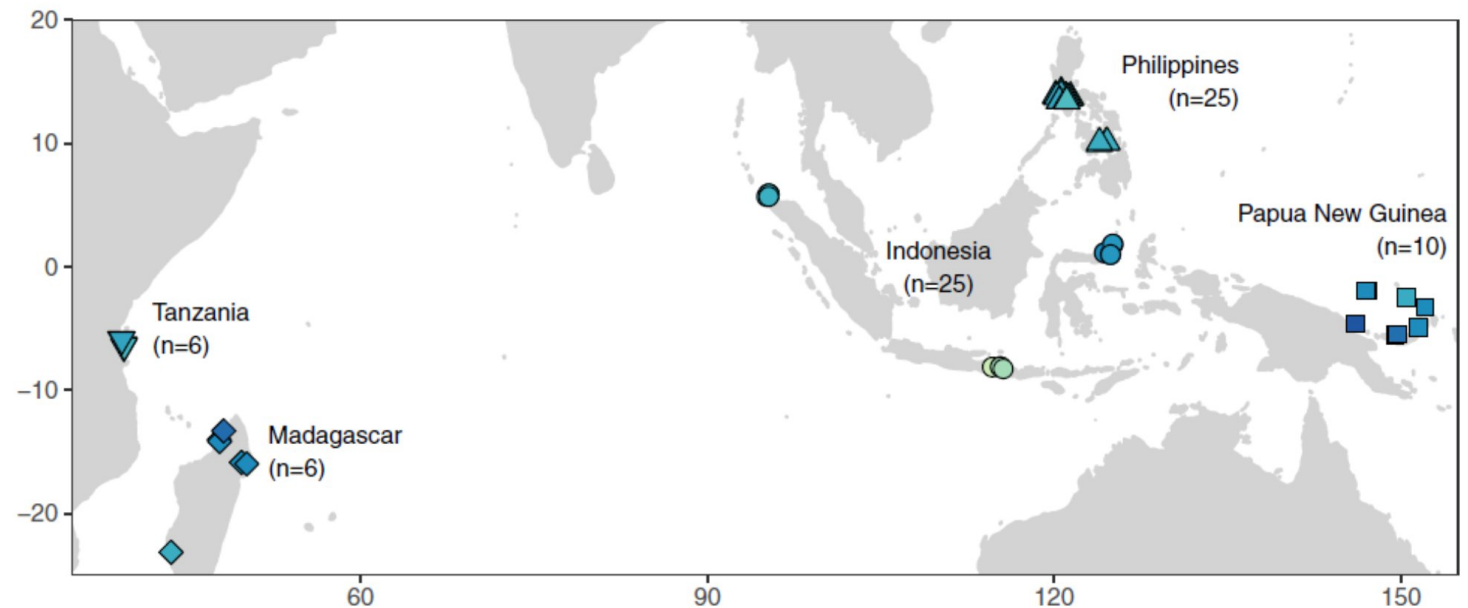


Eastern Europe

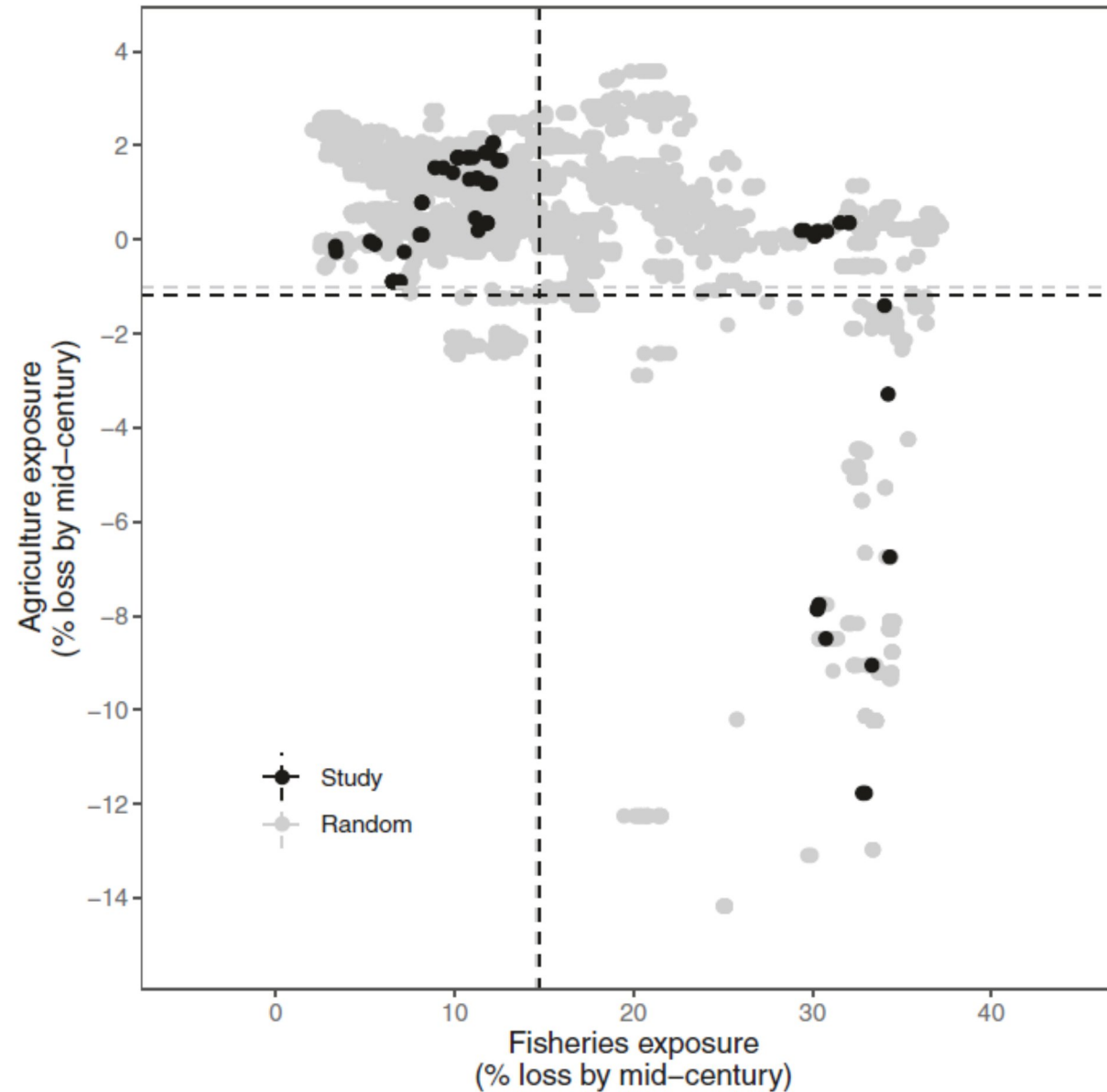


example 2: cross-sector studies

- ISIMIP3b
- 72 tropical coastal communities
- CC impact on agricultural + fisheries production



example 2: cross-sector studies

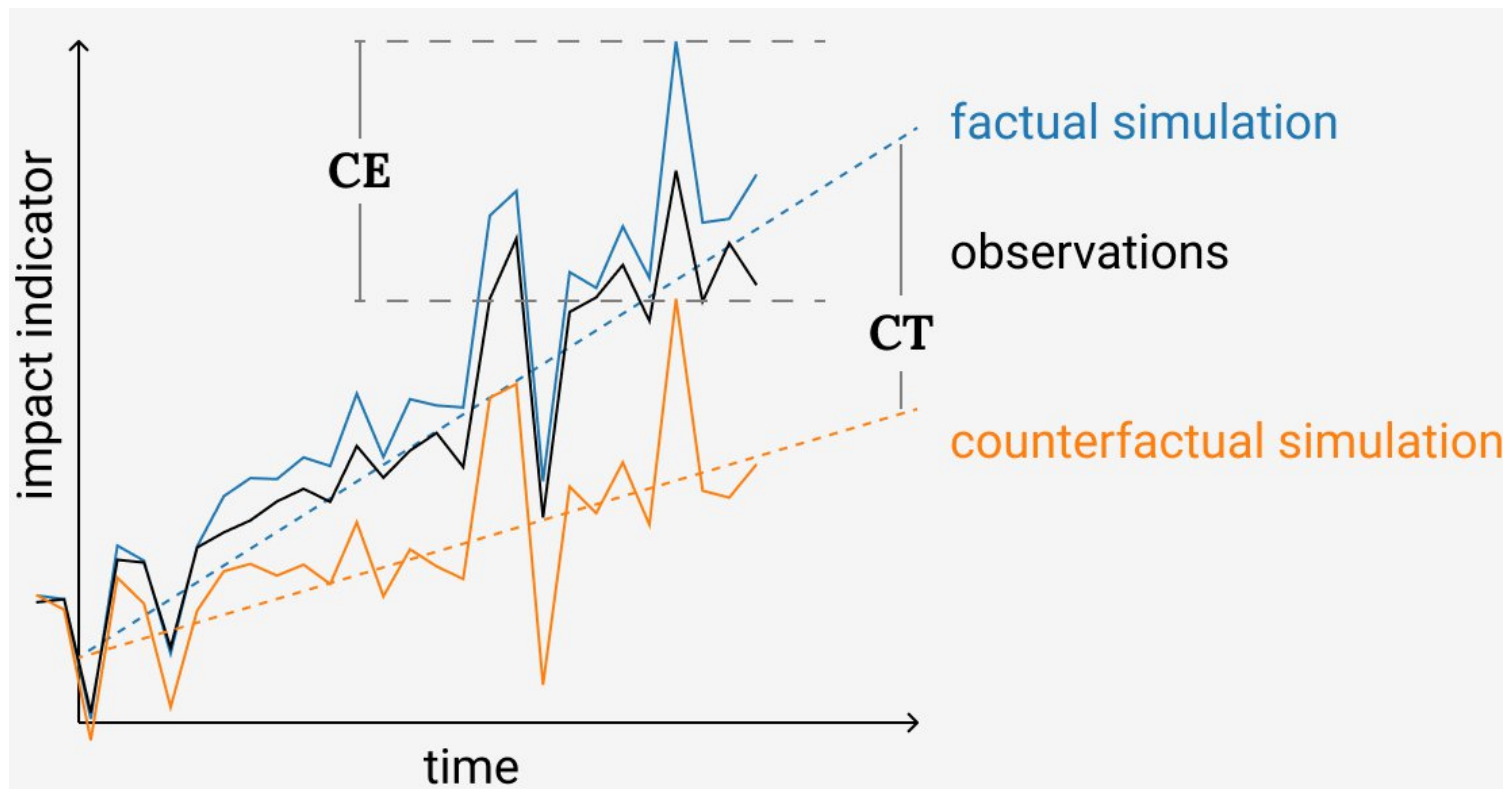


example 3: ISIMIP counterfactual runs

CC impact attribution:

difference between the observed state of a natural, human or managed system and a counterfactual baseline that characterizes the system's behavior in the absence of changes in climate

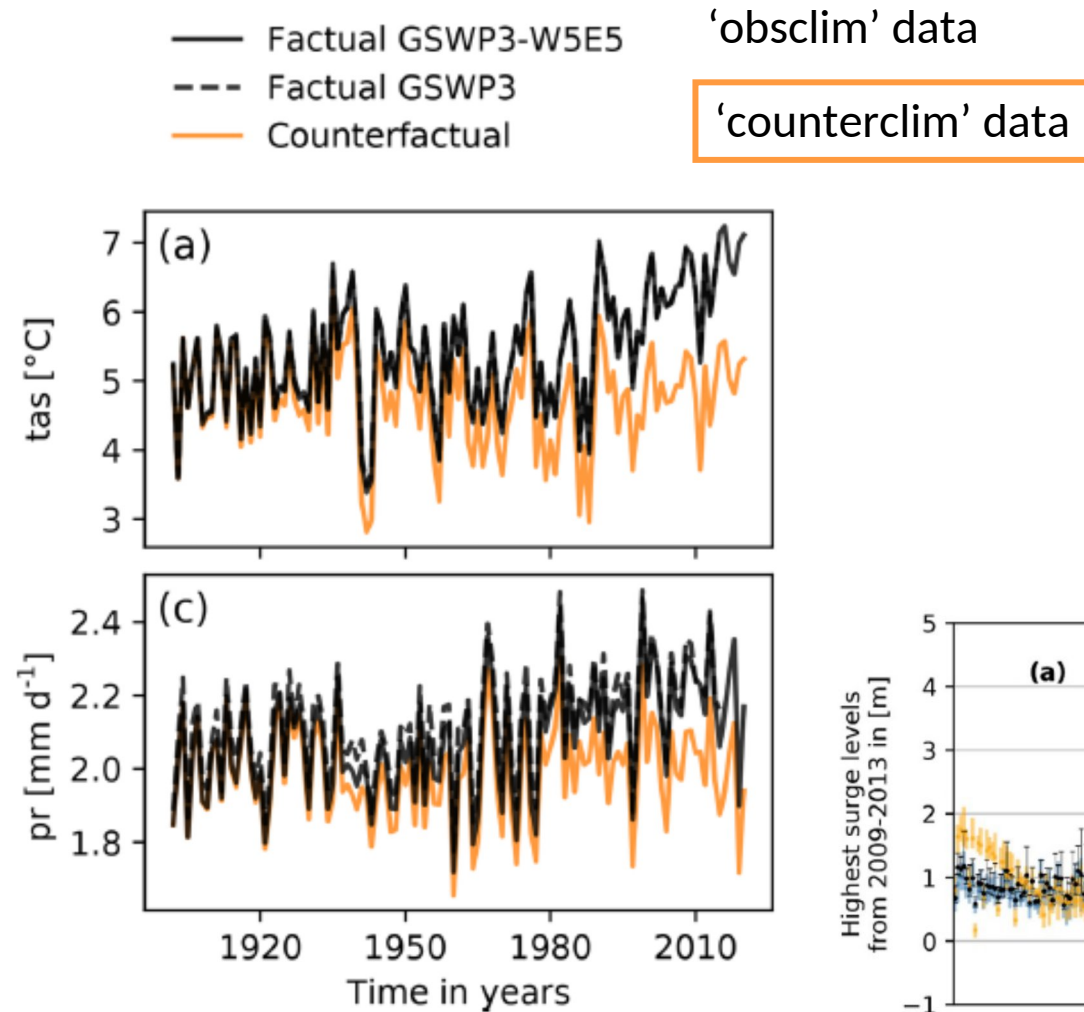
IPCC AR6 WGII



CE = contribution of climate change to impact event magnitude

CT = contribution of climate change to trend in impact

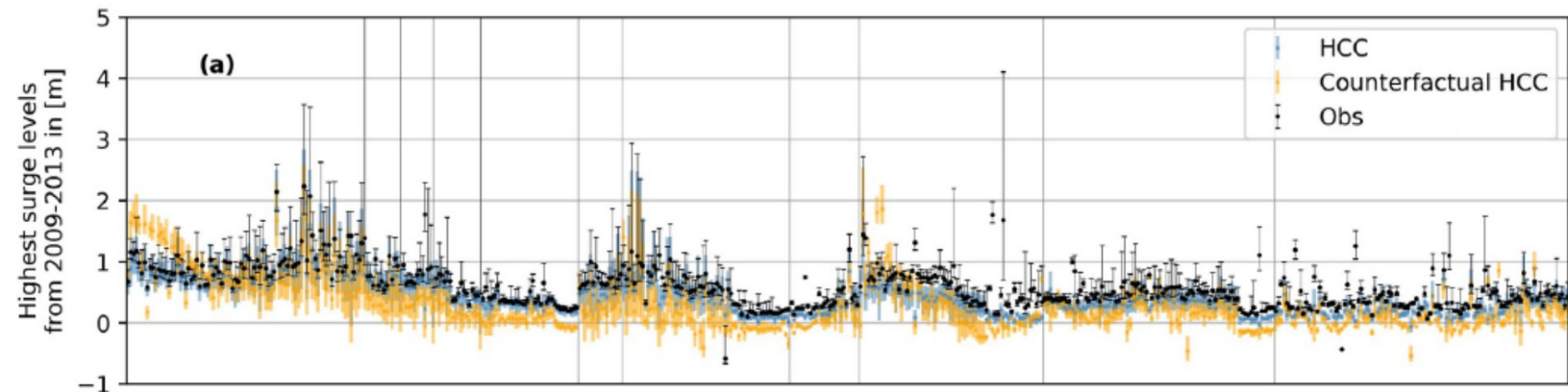
example 3: ISIMIP counterfactual runs



ISIMIP3a

counterfactual

- climate data
- coastal water level



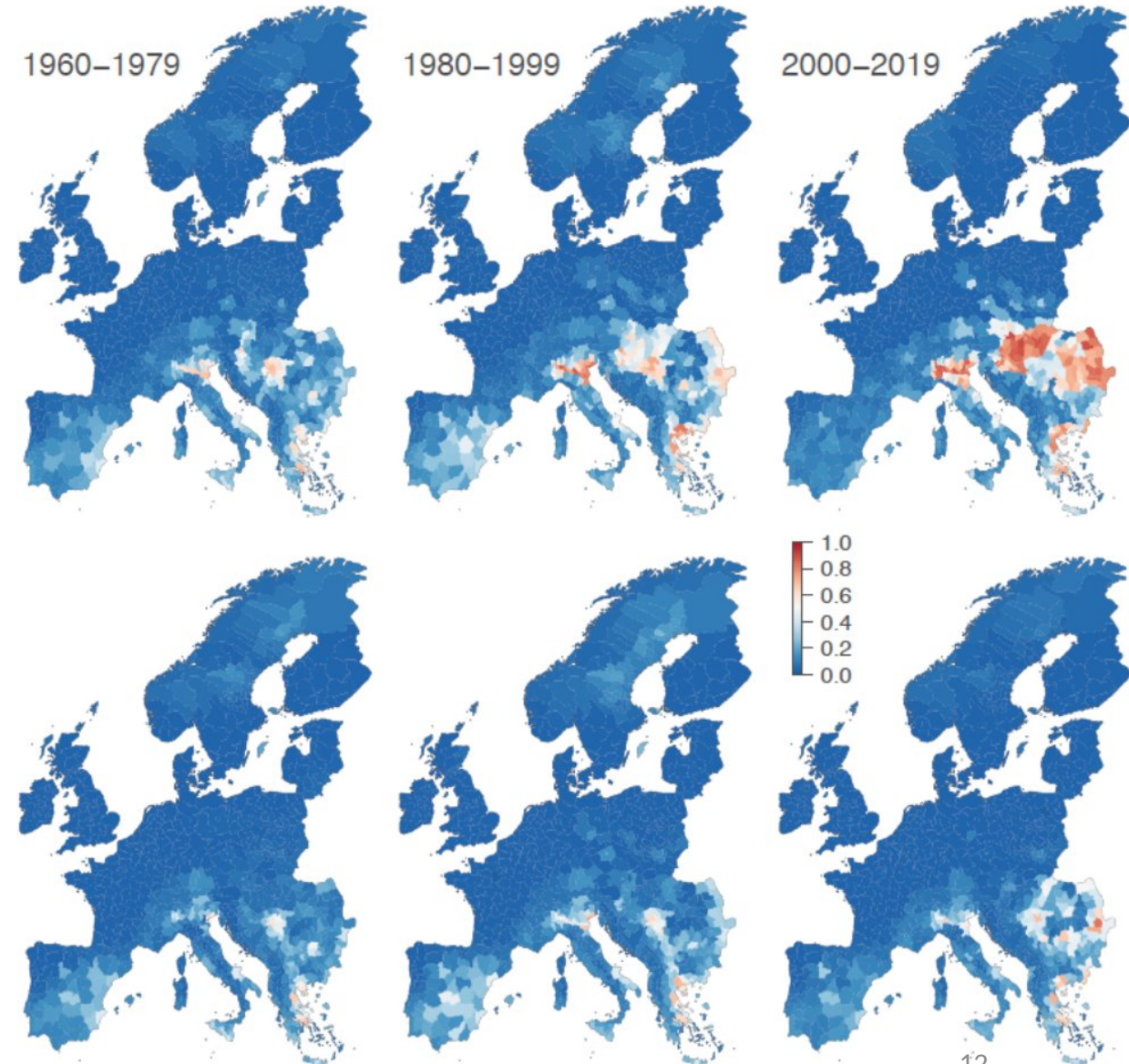
example 4: ISIMIP counterfactual runs

West Nile virus in Europe

- ecological niche models
- changes in the ecological suitability

factual

counterfactual



ISIMIP 3 – DHF now available

- Land-use data available now available for ISMIP3
 - MAgPIE, IMAGE, GLOBIOM [almost]
- other direct human forcings
 - fertilizer, N-deposition, ...

ISIMIP 3 – next steps for biodiversity sector

- rerun SDMs for ISIMIP3 ?
 - ☾ to include in cross-sector studies
 - ☾ CC impact attribution
- include other biodiversity models ?
 - ☾ biodiversity papers
 - ☾ compare different biodiversity models, etc.
- Christian Hof left as sector coordinator ☾ need new sector coordinator