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Supplement of

Regional scaling of annual mean precipitation and water availability with global temperature change

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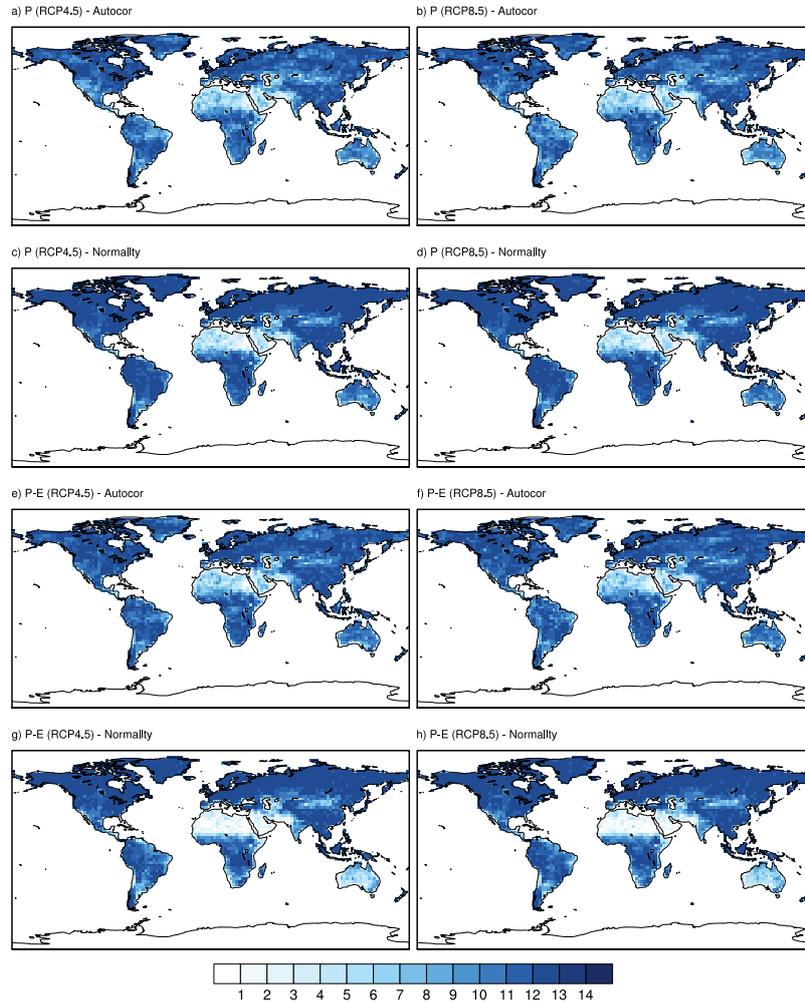


Figure S1. Number of models for which (i) the Kolmogorov-Smirnov test does not reject the null hypothesis, i.e. the residuals are normally distributed (c,d,g,h) and (ii) there is no significant lag-1 autocorrelation of the residuals (a,b,e,f) for P (a,b,c,d) and $P - E$ (e,f,g,h) under either the RCP4.5 (left column) or RCP8.5 (right column) emission scenario. If the majority of models shows that the residuals are both normally distributed and not autocorrelated, the linearity assumption is potentially valid.

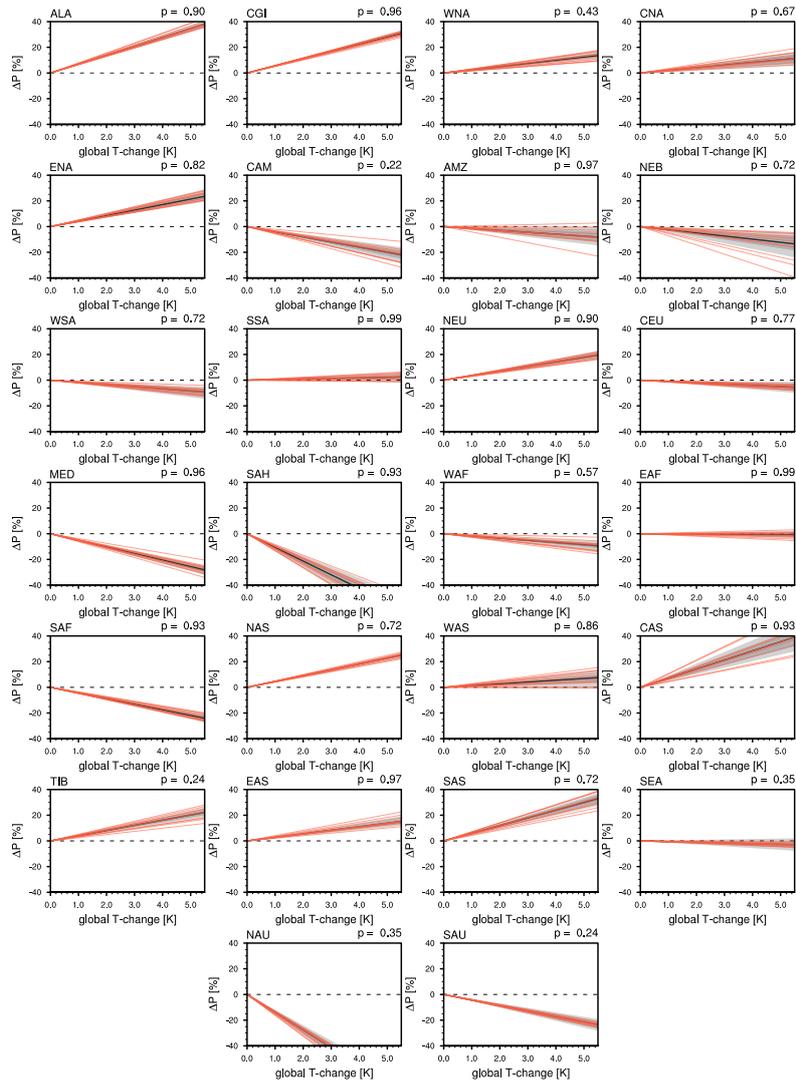


Figure S2. The uncertainty distribution of the sensitivity of P to global temperature change as a function of global mean temperature change averaged for each SREX regions from 1000 resampled slope estimates from CSIRO-Mk3-6-0 under RCP8.5 (the shading in each panel plot corresponds to those shown in Fig. 1). Red lines denote the slope estimates computed from 10 different realisations of CSIRO-Mk3-6-0 under RCP8.5. For each SREX region, the null hypothesis, that the two samples are from the same parent distribution, can not be rejected. Respective p-Values (provided for each region in the upper right of the panels) are always larger than e.g. 0.05.

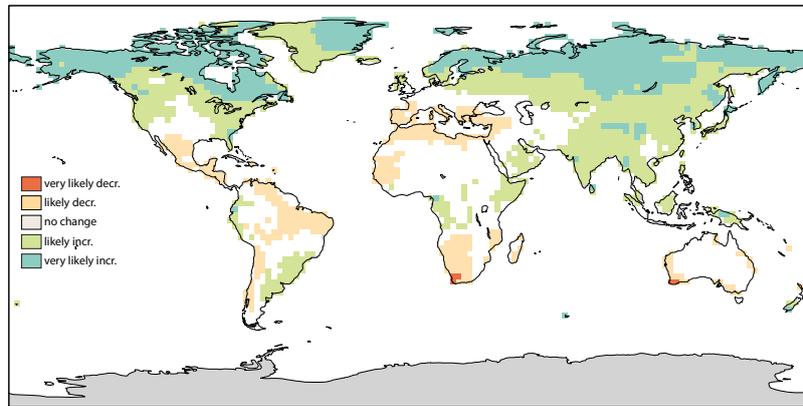


Figure S3. Conceptual summary of the probability that the slope of P is negatively/positively different from zero considering only those models available in RCP6.0.

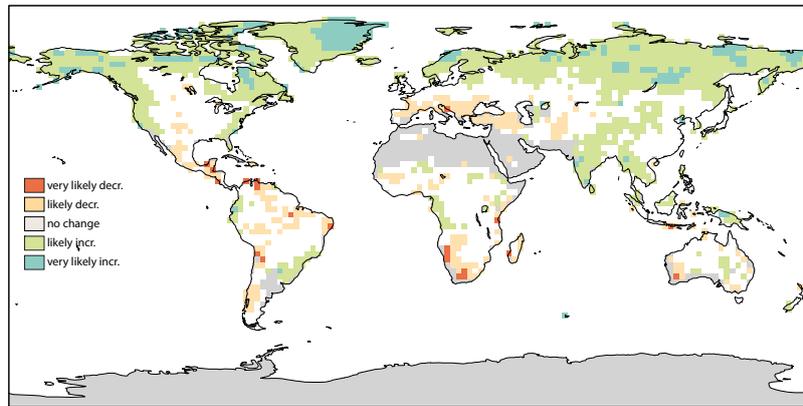


Figure S4. Conceptual summary of the probability that the slope of $P - E$ is negatively/positively different from zero considering only those models available in RCP6.0.

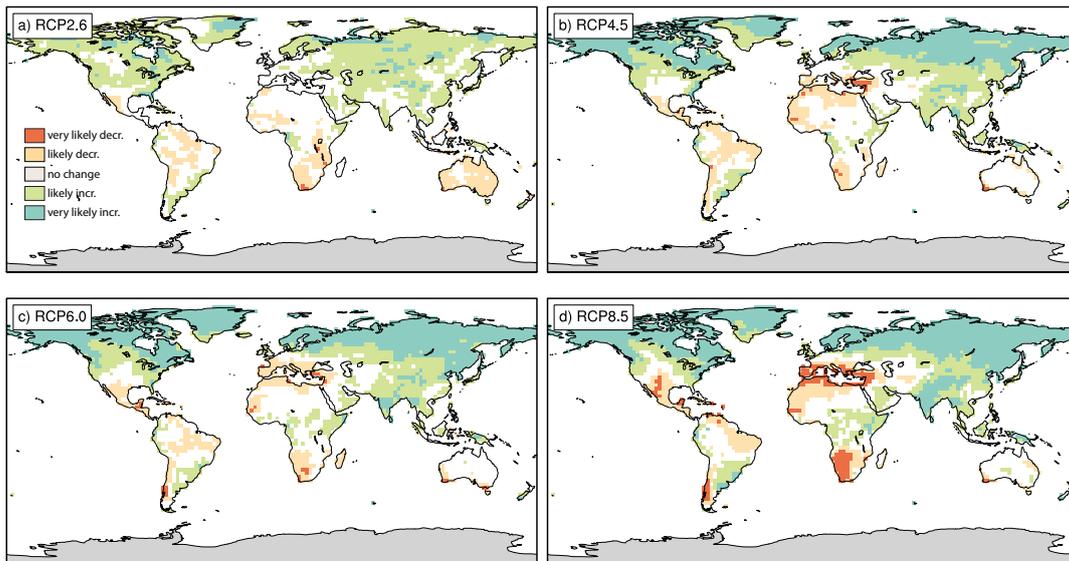


Figure S5. Conceptual summary of the probability that the slope of P is negatively/positively different from zero considering only those models available in RCP6.0 and a) the RCP2.6, b) the RCP4.5, c) RCP6.0 and d) RCP8.5 emission scenario only.

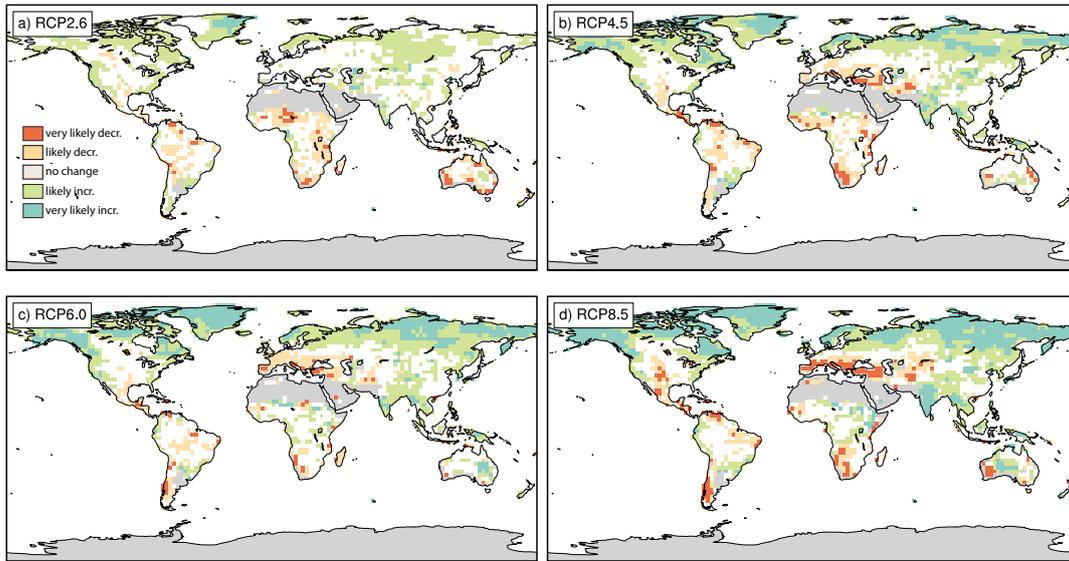


Figure S6. Conceptual summary of the probability that the slope of $P - E$ is negatively/positively different from zero considering only those models available in RCP6.0 and a) the RCP2.6, b) the RCP4.5, c) RCP6.0 and d) RCP8.5 emission scenario only.

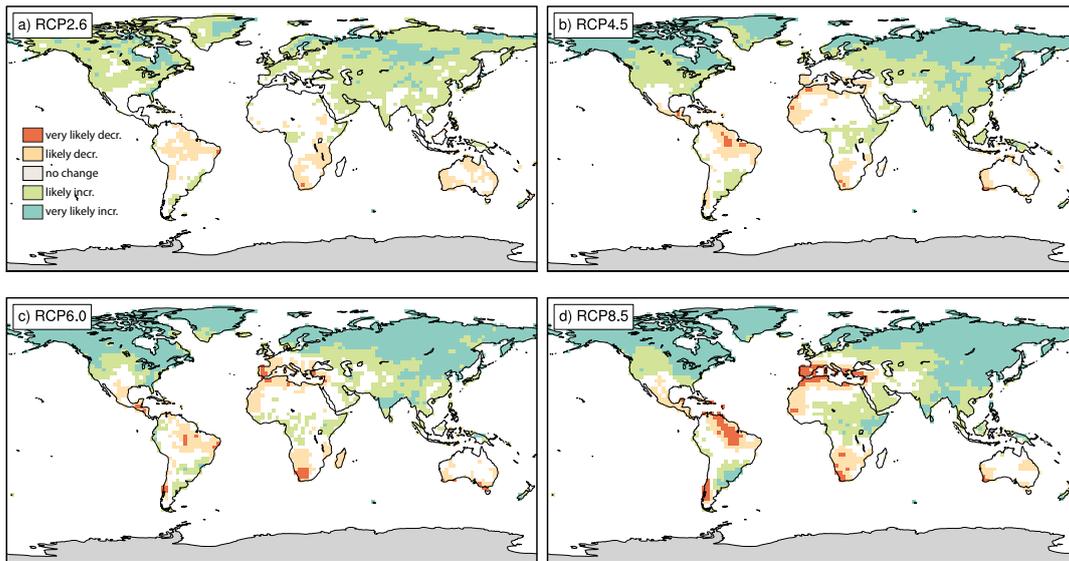


Figure S7. Conceptual summary of the probability that the slope of P is negatively/positively different from zero considering all models, except for MIROC5, IPSL-CM5A-MR and FGOALS-g2, and a) the RCP2.6, b) the RCP4.5, c) RCP6.0 and d) RCP8.5 emission scenario only.

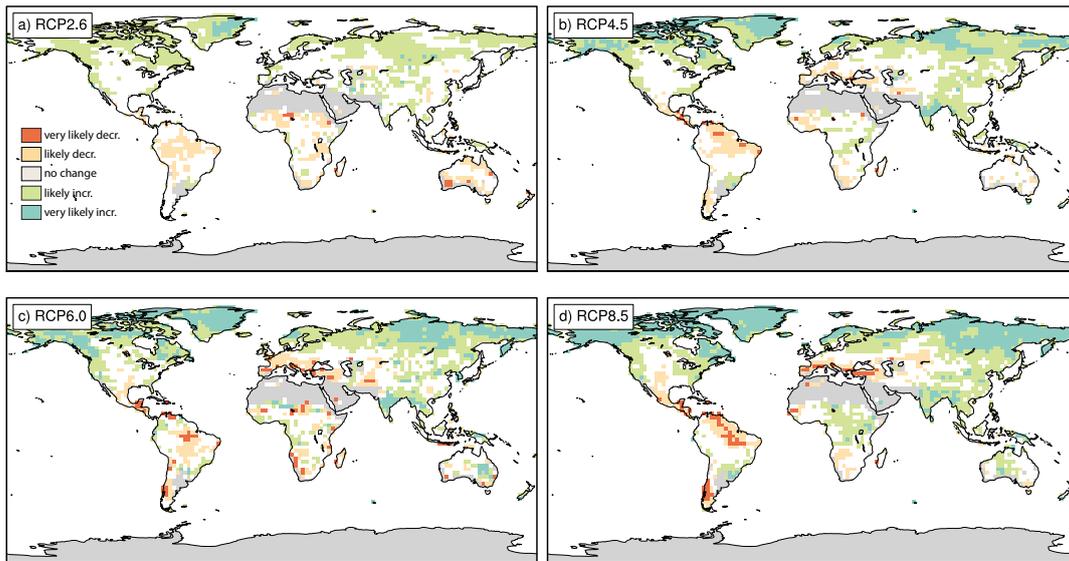


Figure S8. Conceptual summary of the probability that the slope of $P - E$ is negatively/positively different from zero considering all models, except for MIROC5, IPSL-CM5A-MR and FGOALS-g2, and a) the RCP2.6, b) the RCP4.5, c) RCP6.0 and d) RCP8.5 emission scenario only.