

## SUPPLEMENTAL MATERIALS

*ASCE Journal of Hydrologic Engineering*

# Large-Scale Hydrological and Sediment Modeling in Nested Domains under Current and Changing Climate

Alena Bartosova, Berit Arheimer, Alban de Lavenne, René Capell,  
and Johan Strömqvist

**DOI:** 10.1061/(ASCE)HE.1943-5584.0002078

© ASCE 2021

[www.ascelibrary.org](http://www.ascelibrary.org)

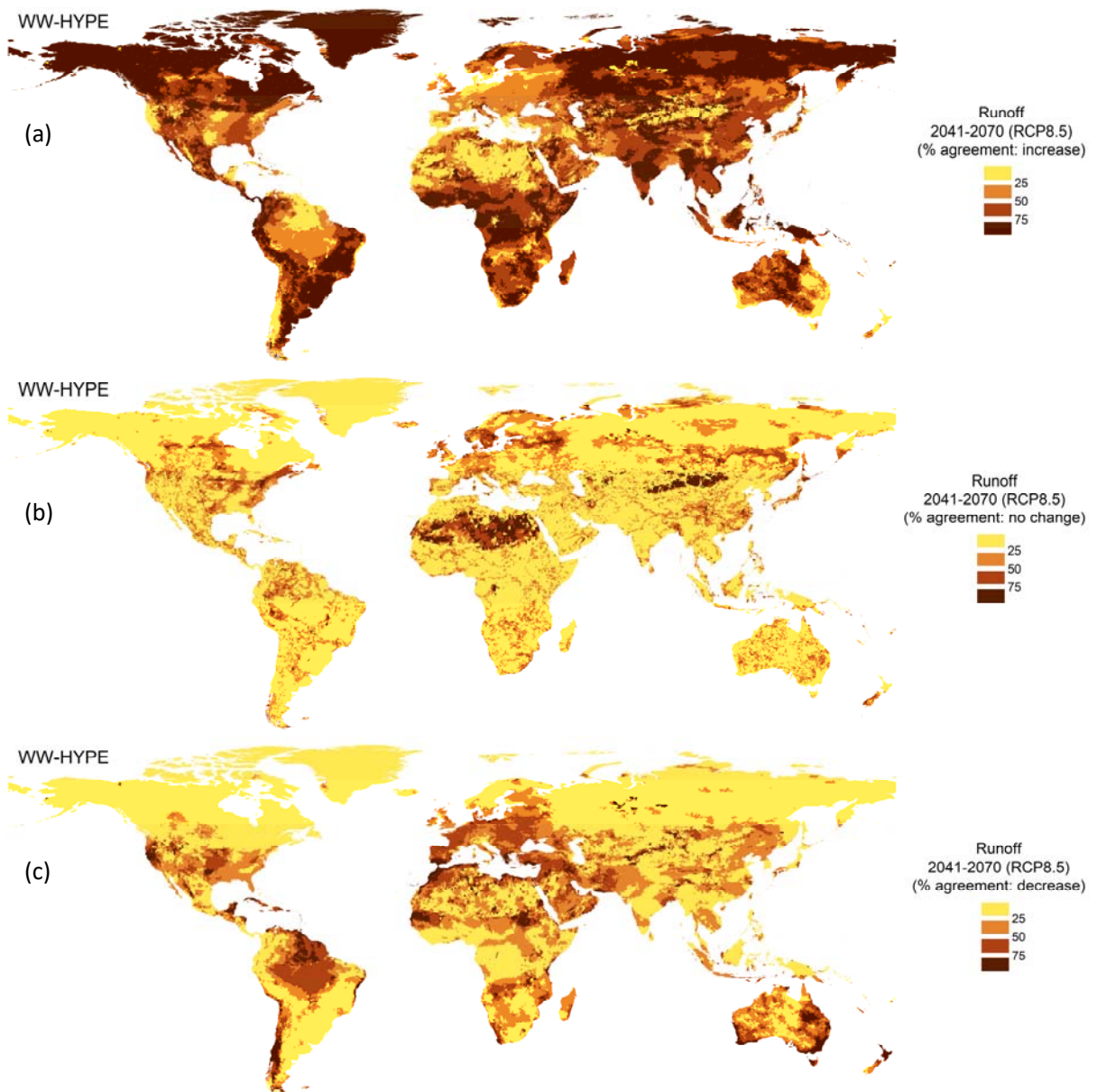


Fig. S1. Confidence in the direction of the change in runoff projected by WW-HYPE for RCP8.5 during 2041-2070. (a) Percent of GCMs agreeing on projecting an increase over 5%, (b) a change within 5%, and (c) a decrease over 5%.

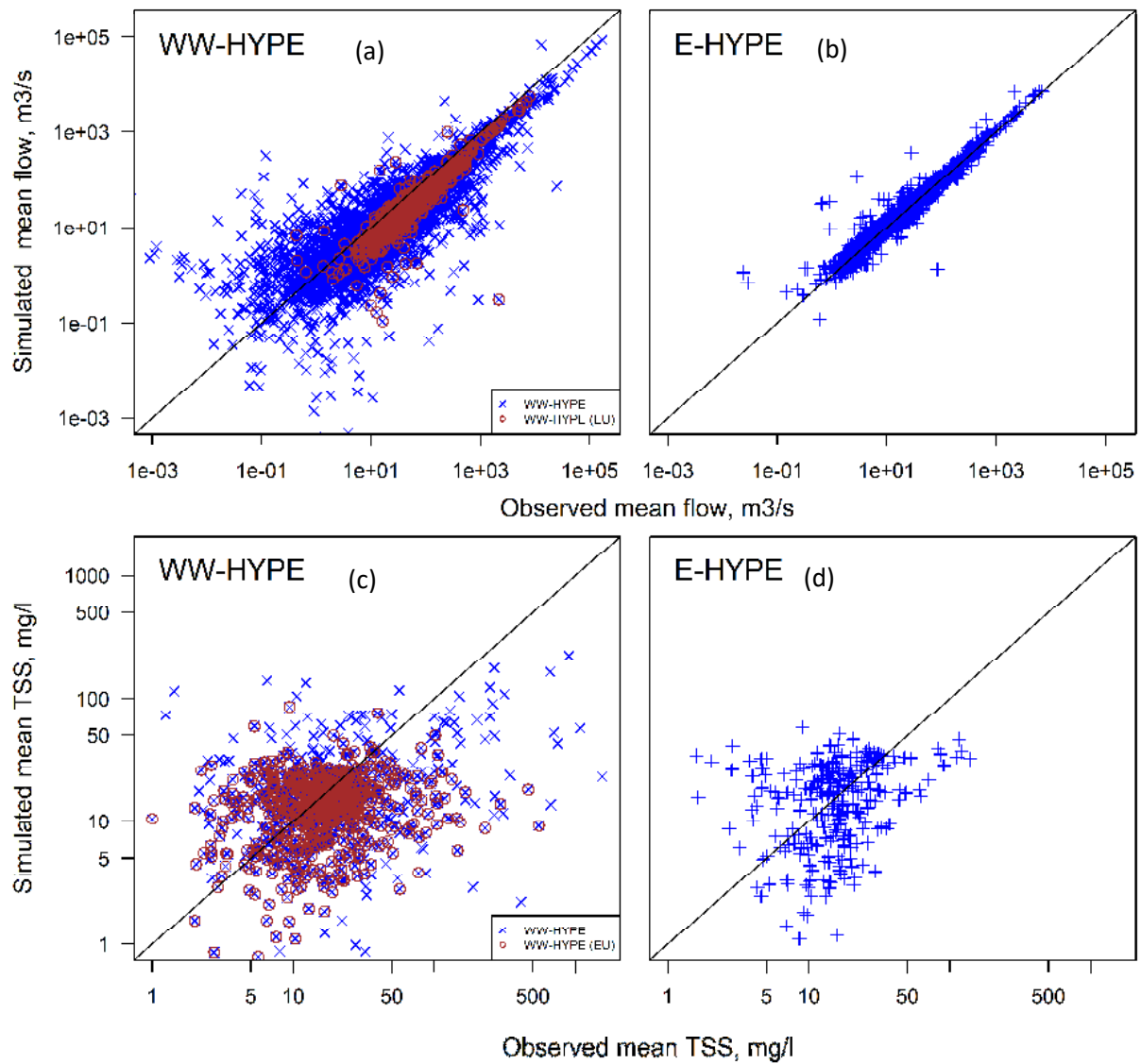


Fig. S2. Relationship between simulated and observed means for streamflow (a, b) and sediment concentrations (c, d) simulated by WW-HYPE (a, c) and E-HYPE (b, d) during 2001-2010. WW-HYPE observations for stations within the European domain are highlighted.

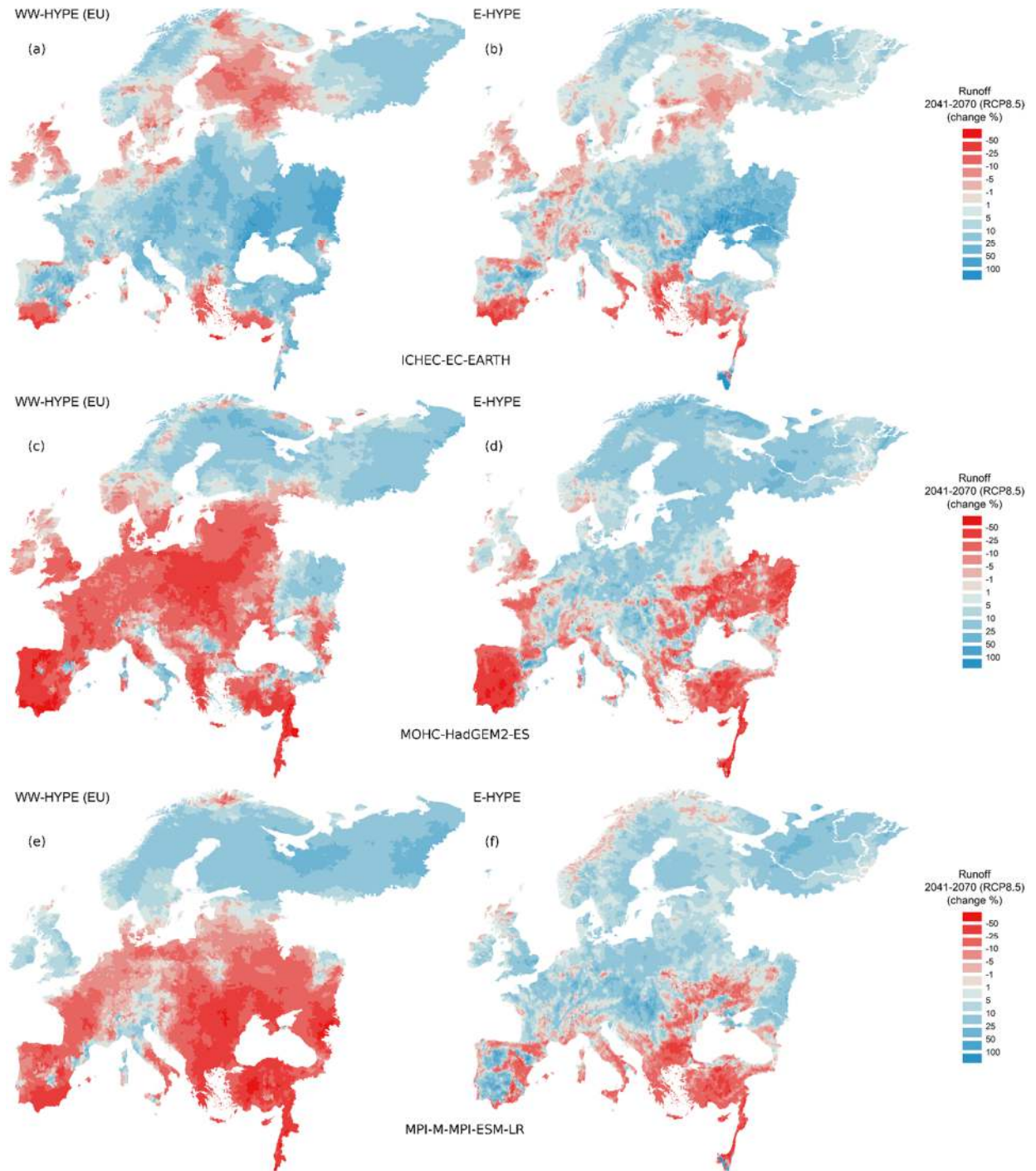


Fig. S3. Projected changes for individual GCMs for RCP8.5 during 2041-2070: (a, b) ICHEC-EC-EARTH, (c, d) MOHC-HadGEM2-ES , and (e, f) MPI-M-MPI-ESM-LR for WW-HYPE (a, c, e) and E-HYPE (b, d, f).

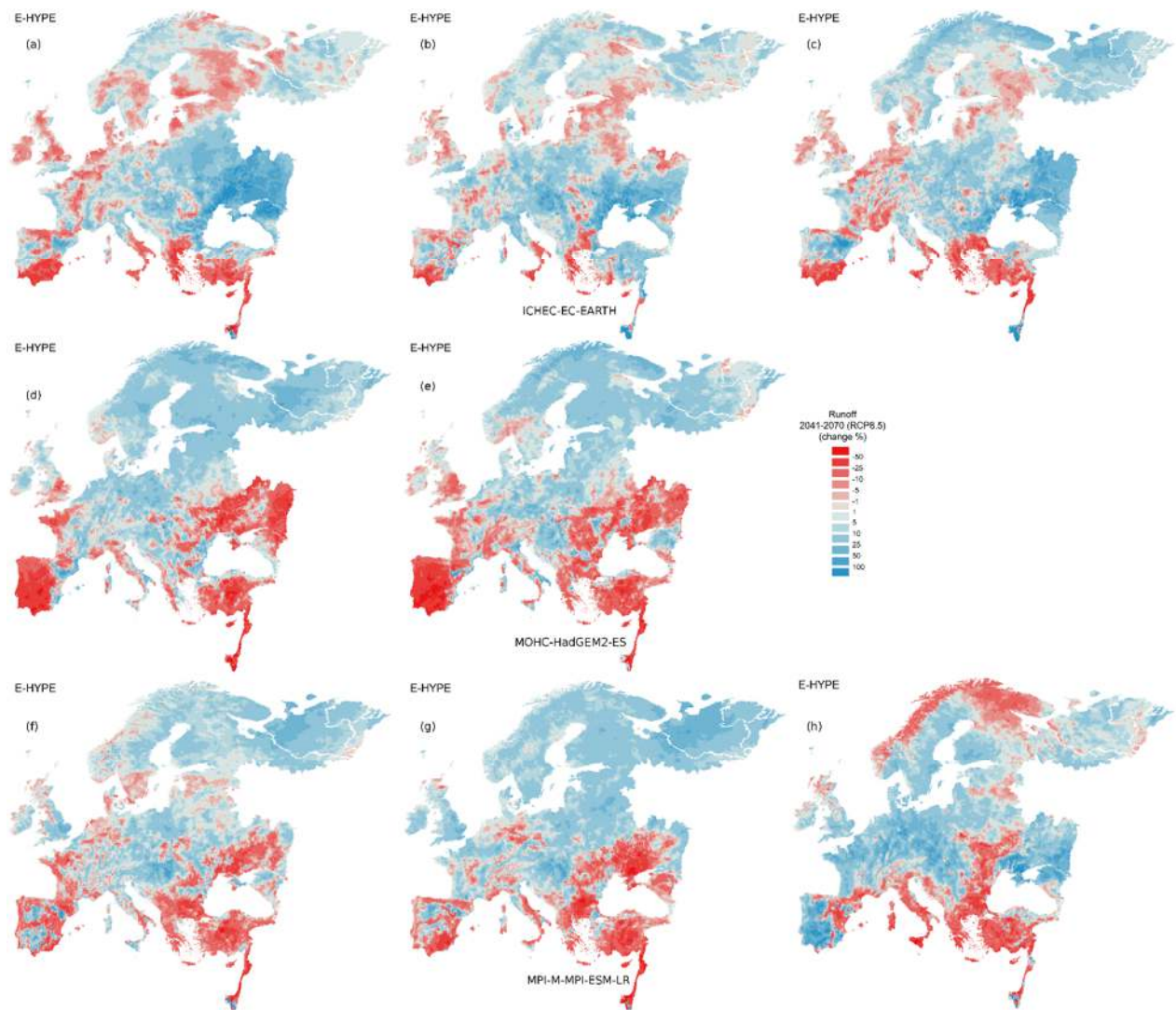


Fig. S4. Projected changes using E-HYPE for individual GCMs/RCMs for RCP8.5 during 2041-2070: (a) ICHEC-EC-EARTH /CLMcom-CCLM4-8-17-v1, (b) ICHEC-EC-EARTH /KNMI-RACMO22E-v1, (c) ICHEC-EC-EARTH /SMHI-RCA4-v1, (d) MOHC-HadGEM2-ES/ KNMI-RACMO22E-v2, (e) MOHC-HadGEM2-ES/ SMHI-RCA4-v1, (f) MPI-M-MPI-ESM-LR/ MPI-CSC-REMO2009-v1 (r1), (g) MPI-M-MPI-ESM-LR/ SMHI-RCA4-v1a, (h) MPI-M-MPI-ESM-LR/ MPI-CSC-REMO2009-v1 (r2)

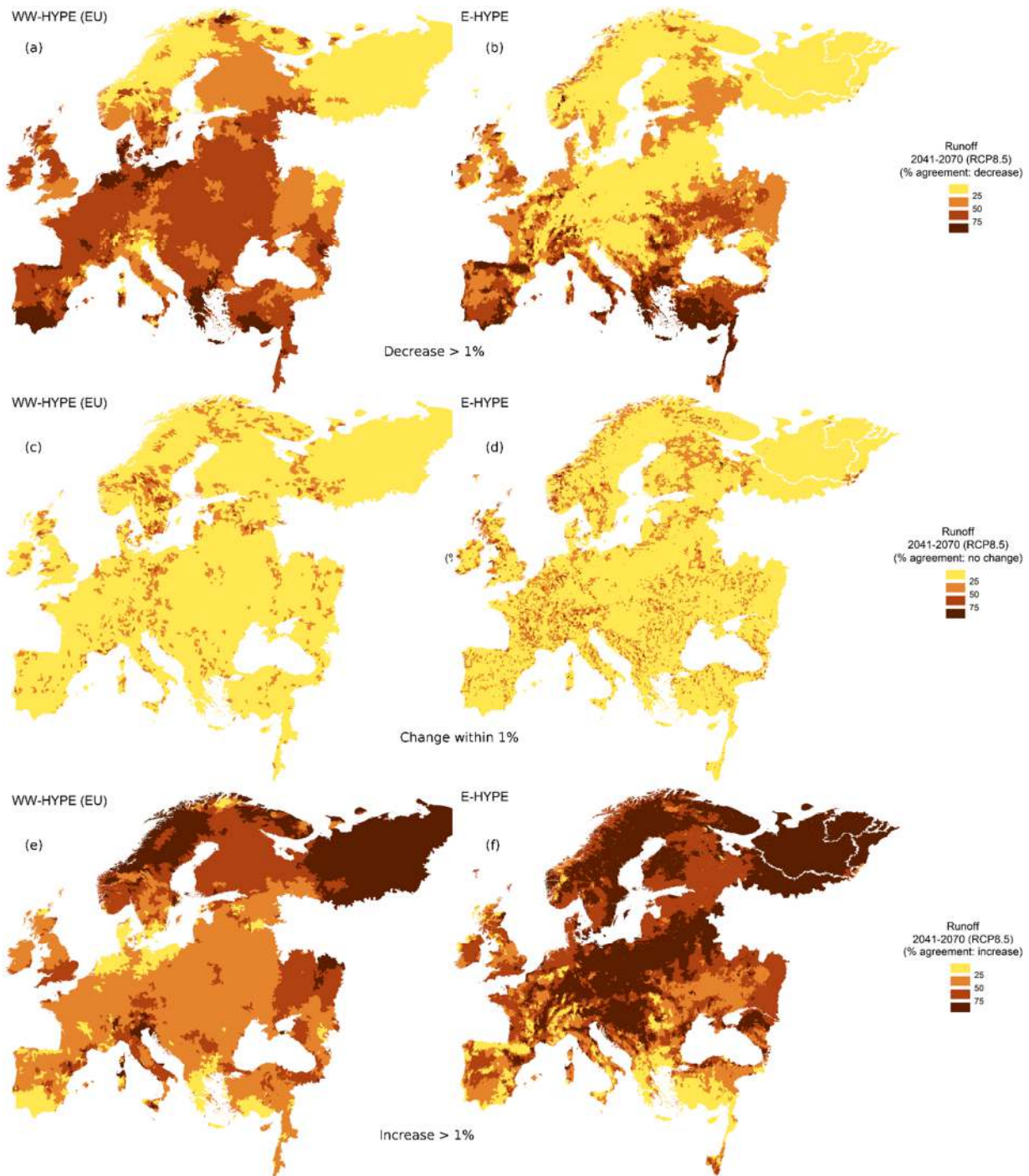


Fig. S5. Confidence in the direction of the change in runoff projected by WW-HYPE (a, c, e) and E-HYPE (b, d, f) for RCP8.5 over European domain during 2041-2070. Percent of GCMs agreeing on projecting an increase over the threshold (a, b), a change within the threshold (c, d) and a decrease over the threshold (e, f). Threshold specified at 1%.

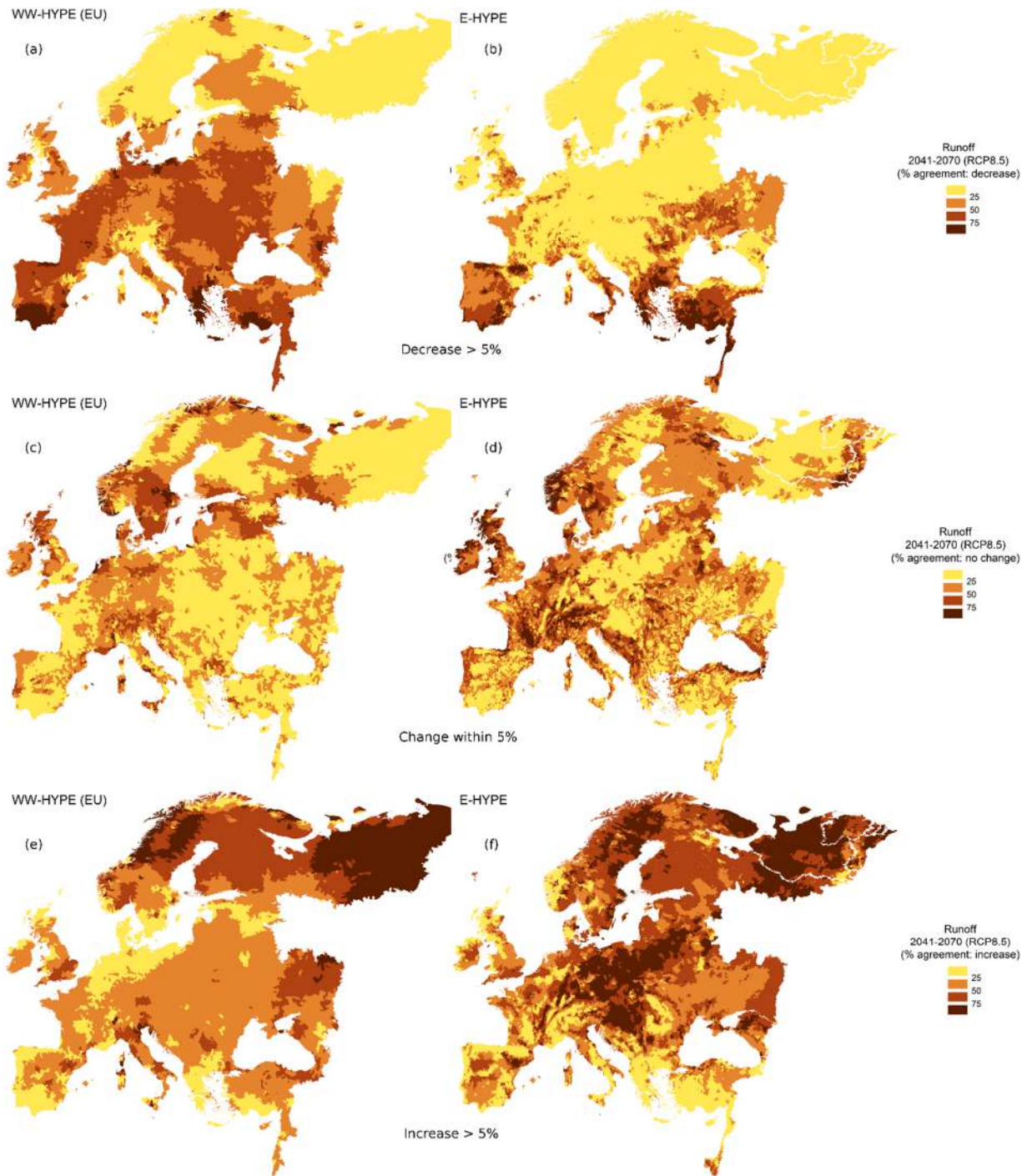


Fig. S6. Confidence in the direction of the change in runoff projected by WW-HYPE (a, c, e) and E-HYPE (b, d, f) for RCP8.5 over European domain during 2041-2070. Percent of GCMs agreeing on projecting an increase over the threshold (a, b), a change within the threshold (c, d) and a decrease over the threshold (e, f). Threshold specified at 5%.

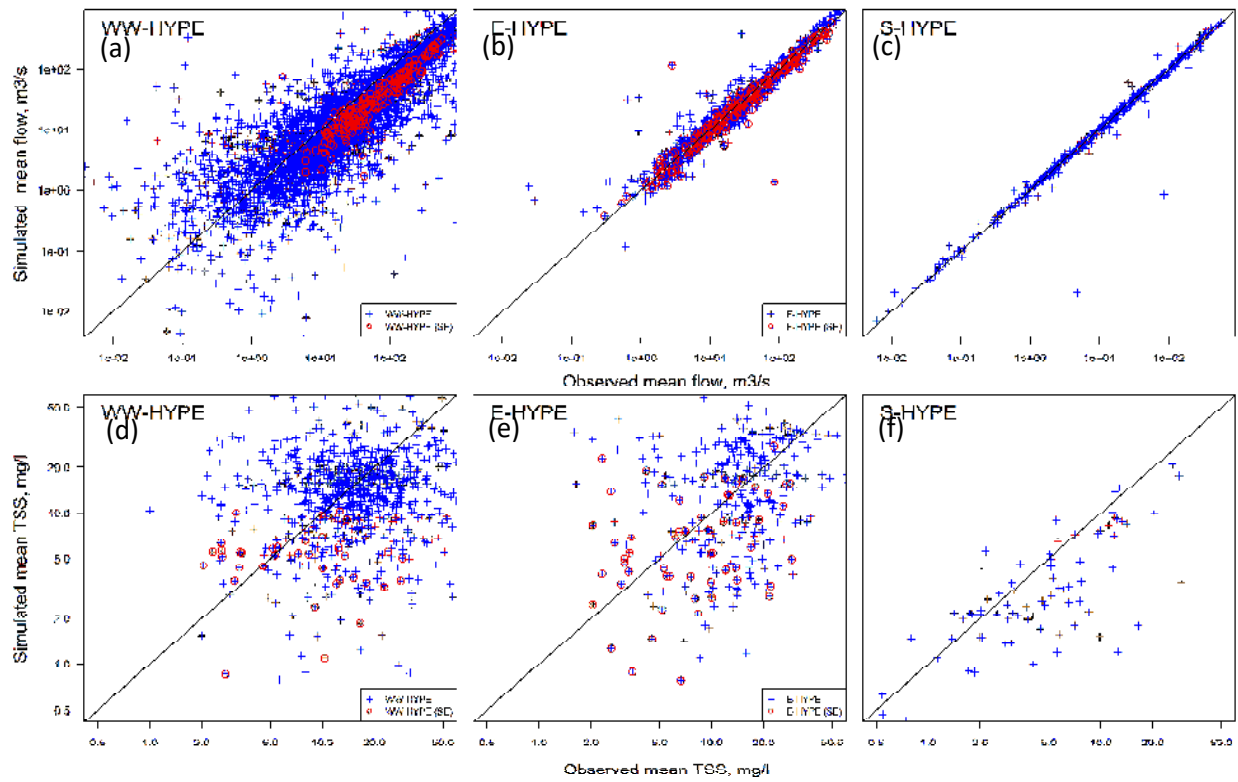


Fig. S7. Relationship between simulated and observed means for streamflow (a, b, c) and sediment concentrations (d, e, f) simulated by WW-HYPE (a, d), E-HYPE (b, e), and S-HYPE (c, f) during 2001-2010. WW-HYPE and E-HYPE observations for stations within the Swedish domain are highlighted.