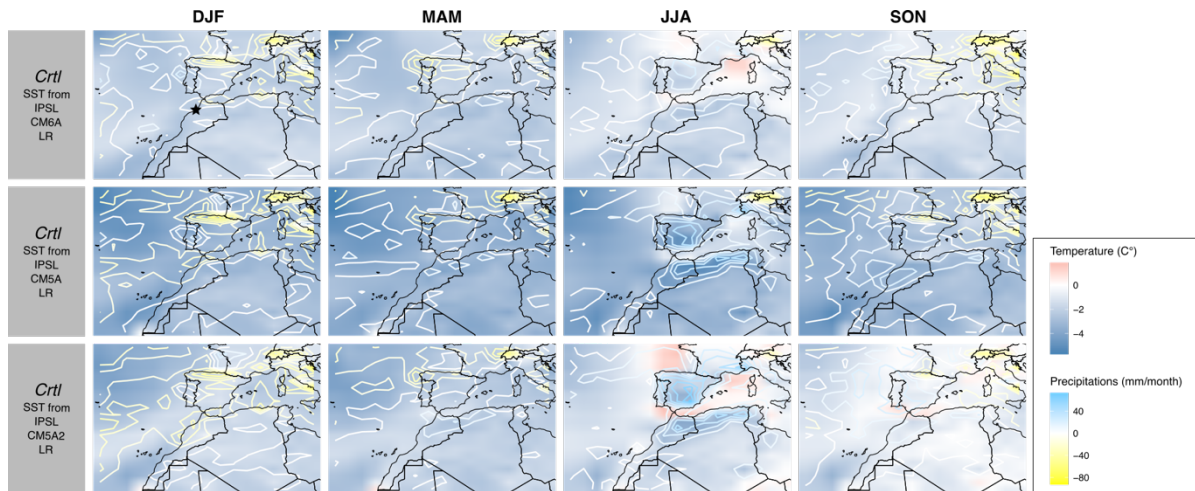
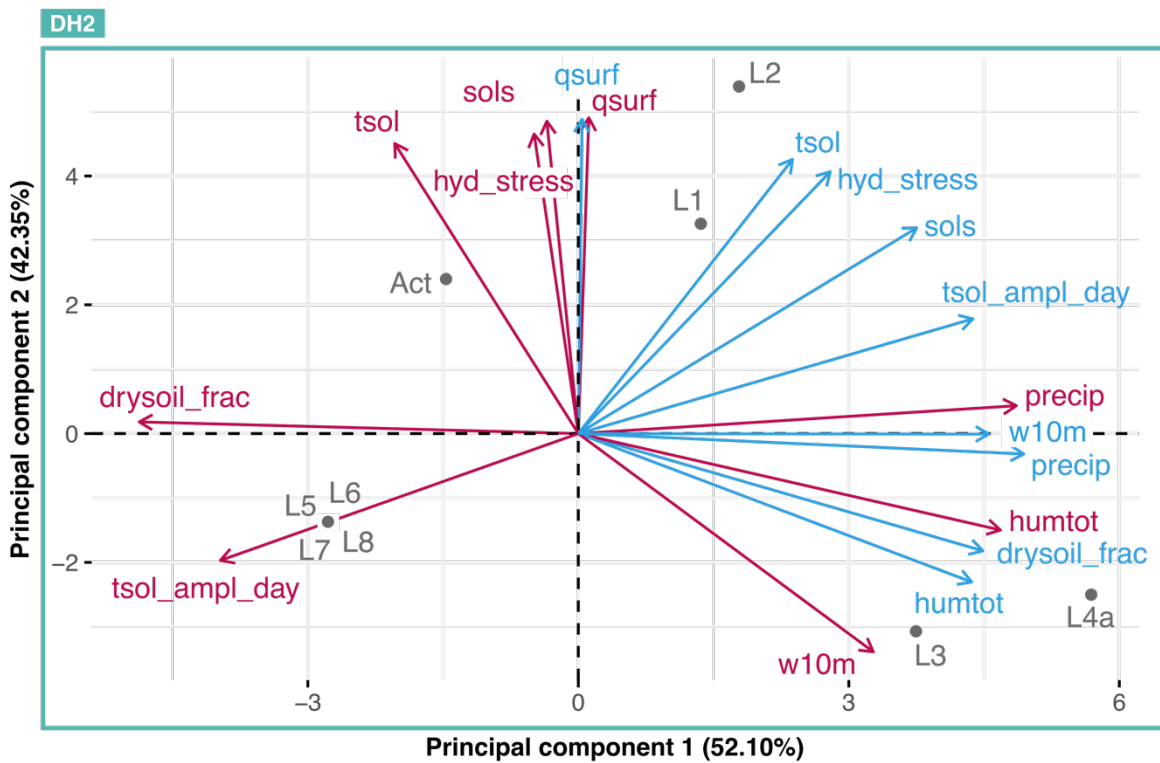
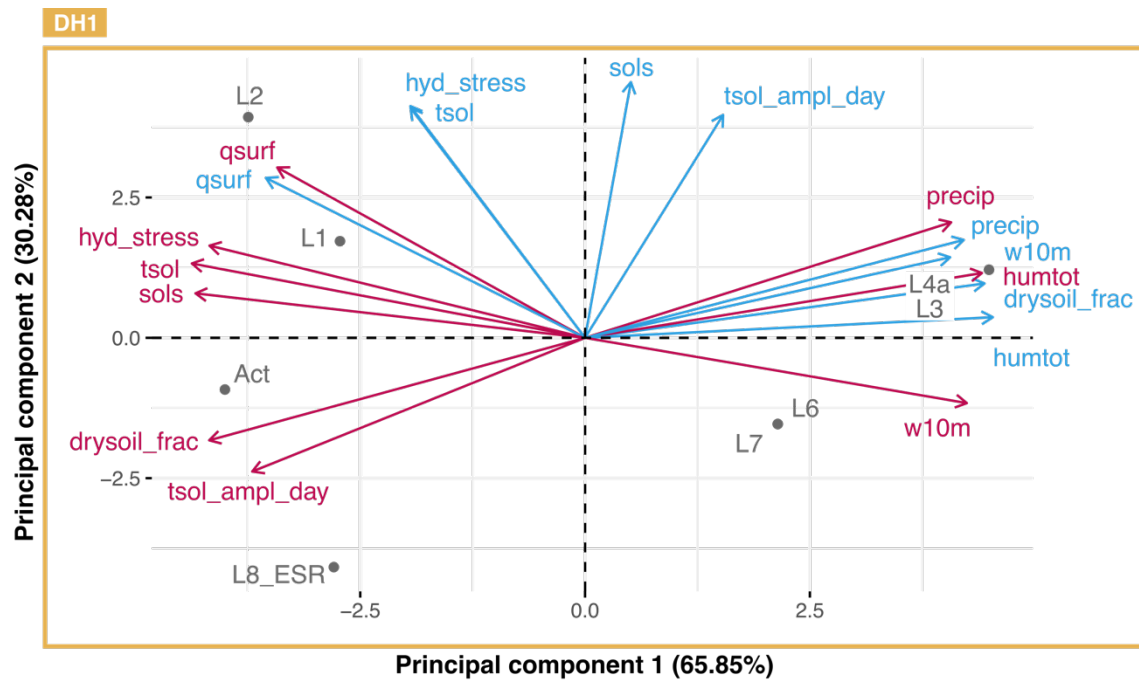


## Supplementary material



**SM Fig. 1.** Maps of EH2 region showing the impact of SST biases on the simulated current climate.

- 5 Mean temperature (unit: °C) and precipitation (unit: mm/month) per season simulated with *Ctrl* prescribed with the simulated SSTs from the *historical* simulations of IPSL-CM5A-LR, IPSL-CM5A2-LR and IPSL-CM6-LR models are presented in contrast with those of *Ctrl* prescribed with AMIP SSTs. The differences are estimated from the last 30 years of each simulation. EH2 cave location is represented by the star in the upper left panel. DJF: December, January, February (winter); MAM: March, April,
- 10 May (spring); JJA: June, July, August (summer); SON: September, October, November (autumn).



■ mean  
■ standard deviation

15 **SM Fig. 2.** Biplots of El Harhoura 2 layers and climate variables according to DH1 (Dating Hypothesis 1; upper panel) and DH2 (Dating Hypothesis 2; lower panel).