

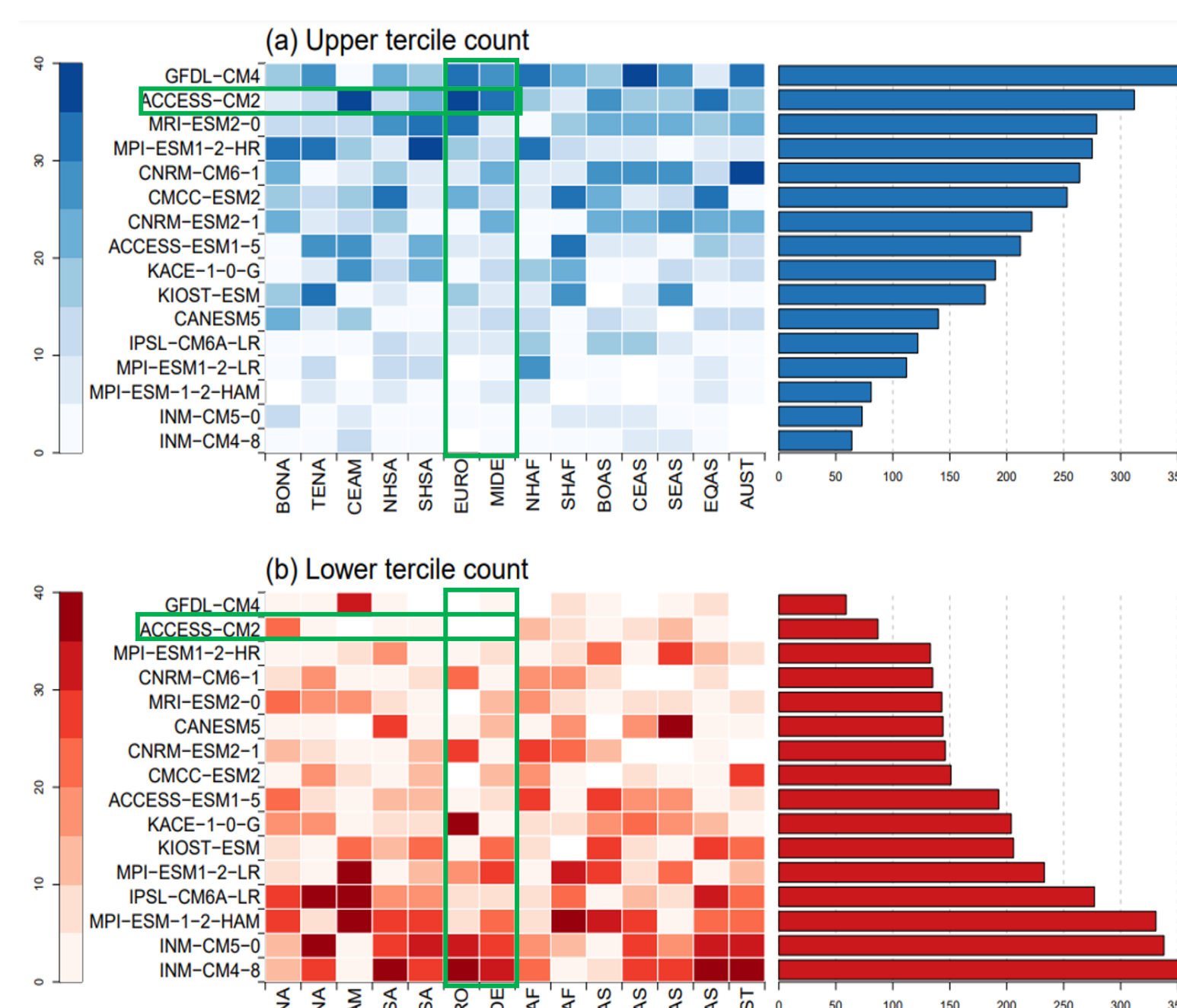


1. INTRODUCTION

- Weather and climate play an important role in shaping global fire regimes and geographical distributions of burnable areas. It is understood that the intensity and frequency of hot extremes are an expected consequence of a warmer world, and changes in mean precipitation will vary geographically, and future changes in fire weather will most likely represent an increase in wildfire danger in many regions of the world (Arias et al., 2021).
- In the Mediterranean region, big areas of land are burned every year (San-Miguel-Ayanz et al., 2023).
- Under global warming conditions, fire seasons are becoming longer, and intensity of wildfires is increasing (Ruffault et al., 2018; Rodrigues et al., 2023).
- Better understanding of future fire weather conditions is key to target areas of intervention and types of measures to be implemented.

2. MODEL SELECTION

- Model evaluation in representing fire weather indicators through different variables (standard deviation, root-mean-squared error and correlation) per GFED region
- Mediterranean region = EURO + MIDE regions
- Best performing model ACCESS-CM2

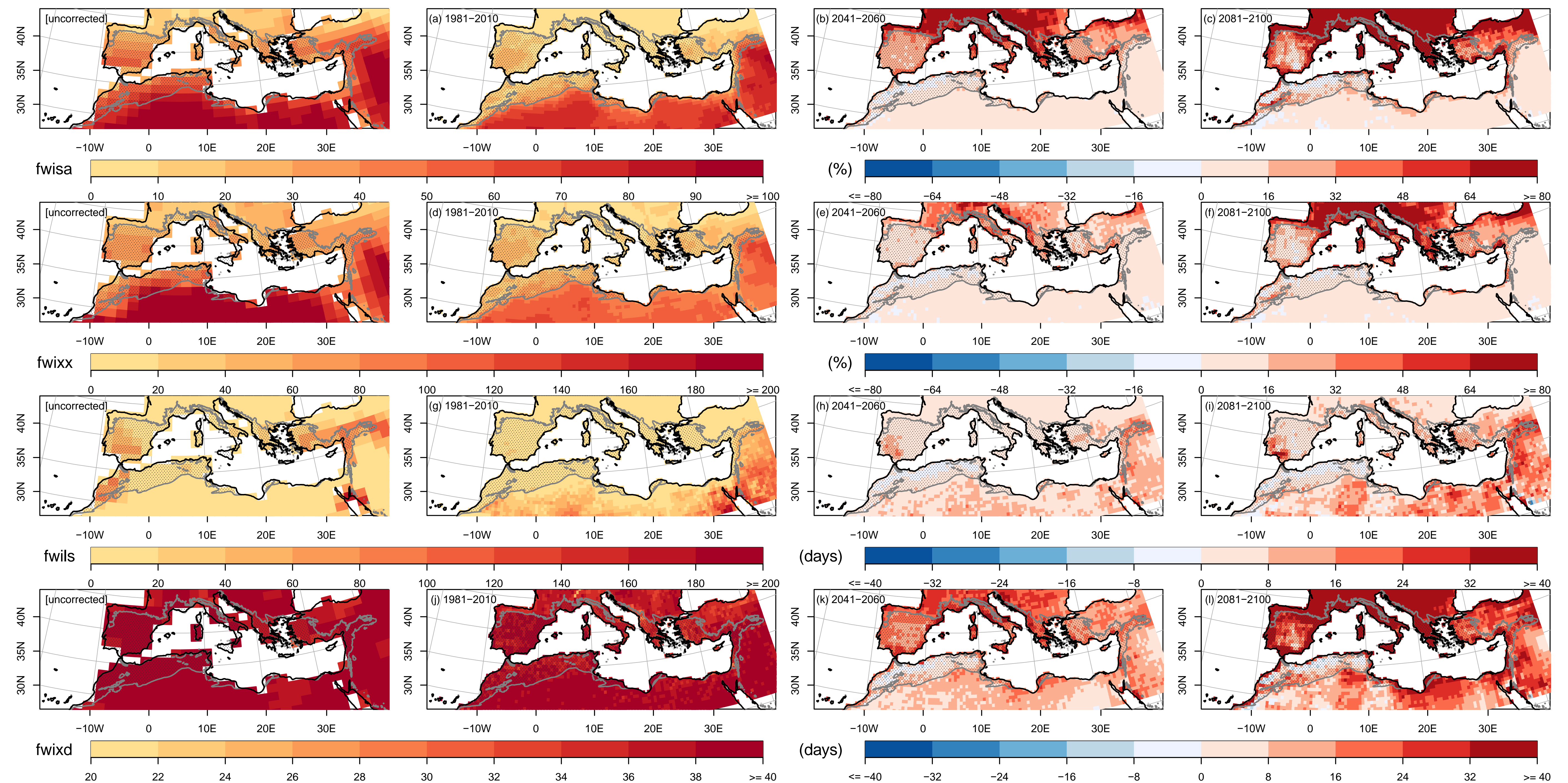


Source: Gallo et al. (2023)

3. BIAS CORRECTION

- Reference data → Reanalysis ERA5
- Multivariate bias correction (MBC) (Cannon, 2018) → hursmin, pr, sfcWind, tasmax
- Fire danger represented by the Canadian Fire Weather Index
- FWI calculated with bias-corrected climate variables for historical period (1850-2014) and projections (2040-2100), for FWI seasonal average (fwisa), FWI annual maximum (fwixx), length of fire season (fwils) and number of days with FWI values over 90th percentile (fwixd)

4. RESULTS



5. SUMMARY & CONCLUSIONS

- Evaluation of a subset of CMIP6 indicated how in the Mediterranean region **some models are performing better than others** when representing fire weather.
- Improvement in simulations** using MBC model results
- Projections show an **increase of fire weather** variables in Northern and Eastern Mediterranean. In North African countries, a slight decrease of all variables is projected.
- In terms of forest and fire management, results show the importance to identify **vulnerable areas** where fire prevention measures need to be carefully planned and foresee future restoration needs.
- Mediterranean countries already engaged in active post-fire restoration as a joint regional effort in the context of the UN Decade on Ecosystem Restoration (2021-2030). Restoration activities to recover key ecological processes will have to be planned taking into account these future fire weather scenarios, both in selection of **species and structure**, in order to build more **fire resilient landscapes**.

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