



Wildfire sensitivity on climate drivers in the eastern Mediterranean

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We assess the sensitivity of burned area in the Eastern Med (EM) region, on four affecting climate variables (temperature, relative humidity, wind speed at noon, as well as daily rainfall) and a composite wildfire danger index, the Canadian Fire Weather Index (FWI). We use meteorological reanalysis data and the MODIS observed burned area for the 2001-2015 period.

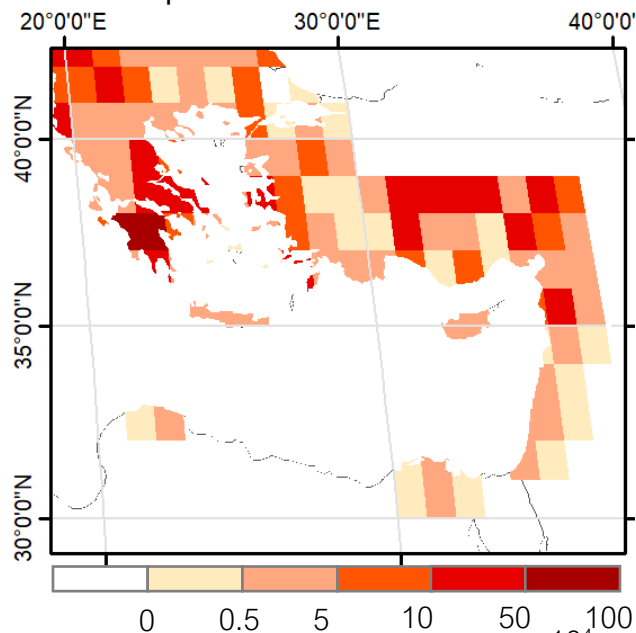


Figure 1: Total burned area [hectares] between 2001 - 2016

Mediterranean wildfires affect most of the EM region (Fig.1). These fires mostly concern non-forest land uses (80%) and 89% of the gridcell-months on MODIS data (Fig. 2).

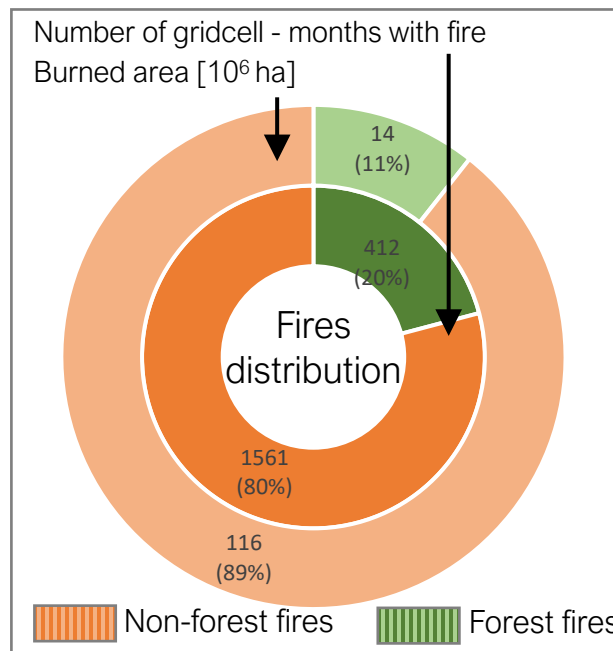


Figure 2: Fires by land use in the EM region

We use Pearson's correlation to estimate how the climate parameters and FWI can explain the BA for the EM region. Starting with individual climate parameters, BA mostly correlates with temperature and relative humidity (Fig. 3)

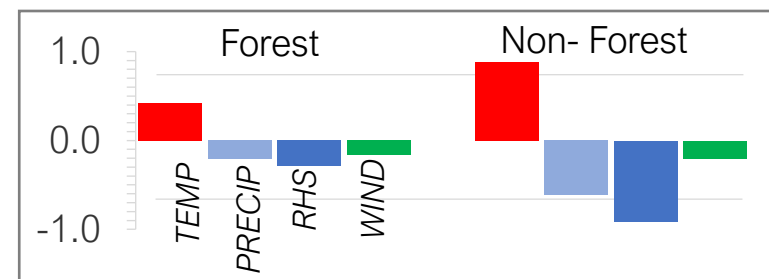


Figure 3: Pearson's correlation coefficient between burned area (log) and each climate parameter (or FWI)

The FWI is found to exhibit a strong correlation in the case of non-forest BA (Pearson's $r = 0.86$), while in the case of Forest BA, the correlation was found to be weaker ($r = 0.35$) (Fig. 4).

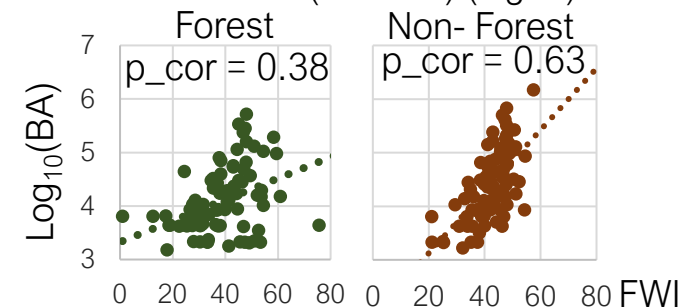


Figure 4: Regression between the FWI and the BA of forest and non-forest fires in EM

Our findings support the better understanding of the climatic control on wildfires and hence aim towards a more proactive wildfire management in the climate change sensitive region of East Mediterranean.