



Wildfire and drought spatial and temporal risk modelling over the East Mediterranean

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Prolonged spring and summer seasons with high temperatures make the soil drier, with an increased likelihood of longer periods of droughts. Due to the unusual hot and dry conditions, wildfires will most likely become more frequent and more severe in the Balkan-Med region. We use high-resolution meteorological forecasts to model the drought and fire risk over the daily to monthly and seasonal range at an unprecedented resolution down to 2km over Cyprus, an order of magnitude improvement over current operational systems. Drought and wildland fire risk assessment indices are derived with the use of ground and satellite data. We adapt regionally algorithms to estimate fire/drought vulnerability indices, for the first time specifically targeting the Balkan-Med region. The estimations make use of WRF-ARW model forecasts in a nested configuration to allow downscaling with a focus over the area of interest, while the long-term estimations calculate seasonal predictions based on the operational Climate Forecast System (CFS). To quantitatively evaluate the fire risk in the Balkan-Med region, Fire Weather Indices comprising numeric ratings of potential development of fires and of fire intensity are used. Fire Weather Indices are composites that integrate different weather factors influencing the likelihood of a vegetation fire starting and spreading and they require input data from weather short-term forecasts and seasonal projections. An ensemble of ten different indices are calculated and analysed over the East Mediterranean. A qualitative validation of the system's products will ensure the efficient estimation of the fire and drought vulnerability, the timely identification of new fires and the fire spread simulations. As an extension of this approach, the assessment of the future drought and wildland fire risk, based on the analysis of climate change scenarios is investigated.