S.08-19-Poster

May the vegetation structure explain the differences in forest mortality induced by extreme drought observed in four similar Mediterranean pine forest and shrublands?

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The frequency and magnitude of climate extremes are expected to increase in the future according to climate change forecasts. Forest mortality is, among others, a consequence of extreme drought events caused by of the increase of temperature and the decrease of precipitation. In the last years, forest mortality induced by events of extreme drought was observed in pine forests and shrublands in four sites in Mediterranean forests of Alicante province. However, under the closely same drought conditions the mortality rates observed in the different sites were distinct. In this work we intend to explore the role of vegetation structure in the observed differences in forest mortality rates in these four sites. A structural characterization of the different vegetation communities has been carried out by measuring tree density, specific composition, canopy cover and LAI.

S.08-20-Oral

Disparity in the climatic sensitivity across altitudinal and latitudinal gradients imply differential forecasted growth through Scots pine distribution range

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Ongoing changes in global climate are altering ecological conditions for many species. The consequences of such changes are typically most evident at distribution edges, where differences in growth or population dynamics may result in range expansions or contractions. Understanding population responses to different climatic drivers along wide geographical gradients is necessary in order to gain a better understanding on the plant responses to the ongoing changes in climate. We selected Scots pine (Pinus sylvestris) to explore growth responses to climatic variability over the last Century through dendrochronological methods, and performed predictive models to forecast growth trends up to year 2100 using climatic projections. Populations were located at the treeline across a latitudinal gradient covering the northernmost, central and southernmost populations and across an altitudinal gradient at the rear edge of the distribution (higher, central and lowermost elevations). Predictive models forecast a general increase in Scots pine growth at treeline across the latitudinal distribution, with southern populations increasing growth up to year 2050, when it stabilises, highest responsiveness at central latitude, reaching similar values to the southern populations by 2100, and moderate growth increase at the northernmost limit. Contrastingly, growth decline is expected at lowland-southern populations, suggesting an upslope range displacement on the coming decades. The results give us a better resolution about the geographical responses of tree species to climate change and demonstrate the importance of incorporating this variability into predictive models for an accurate prediction of species dynamics under a global change scenario.