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S4. Poster

Assessing the impact of groundwater lowering in coastal forest's functional groups: ecophysiological responses under Mesomediterranean and Mediterranean climate.

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Groundwater alterations and the impact of drought will affect ecosystems sensitive to water limitation, with consequent uncertainties about how vegetation will respond over the short and long term. This is particularly important in Mediterranean sites, where water availability is predicted to be reduced. Sand dune plant communities encompass a diverse number of species that differ widely in tolerance to drought and capacity to shift among water sources. We will try to answer some questions as: Do dune plants with different strategies show the same responses to groundwater changes? Do similar functional groups present the same response under different precipitation availability? We aim to evaluate the responses of coastal plant functional groups to changing groundwater availability. This study, developed in Portugal (Osso da Baleia) and Spain (Doñana), experiencing groundwater lowering, can provide an excellent insight of plant community functioning in natural ecosystems. Because an isotopic approach can show important seasonal and local changes in utilization of different water sources by vegetation, we used leaf d13C, d15N and xylem+water sources d18O as a tool to assess physiological performance and water strategies integrated with spatio-temporal water dynamics. Groundwater modeling was developed to assess the availability of groundwater in our study areas. Furthermore, an isotopic spatial approach provided the possibility to find general patterns of responses and predict effects of water availability changes. We analyzed two hygrophyte/phreatophyte species (*Erica scoparia* and *Salix repens*) and two *Pinus* species (*Pinus pinea* and *P. pinaster*) and they showed different water utilization and responded differently to groundwater availability.