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Wood stakes as an index of soil organic matter decomposition in a climatic gradient along the Spanish Mediterranean Coast

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Organic matter (OM) decomposition is a critical factor in assessing the possible impacts of future climate change and management on soil carbon cycling and sequestration. Soil OM decomposition is a function of abiotic (e.g. moisture, temperature, nutrient content, pH), and biotic (microbial biomass, functional diversity) conditions, which makes this soil process ideally suited to study across a range of soil and climatic conditions. We used wood stakes of four tree species (Populus alba, Populus tremuloides, Pinus halenensis, Pinus taeda) as standard indices of OM decomposition rates on the soil surface and in the mineral soil of three sites along the Spanish Mediterranean Coast with different soils, land use and climatic conditions: 1) Quercus suber forest – 700 mm rainfall /year, 2) Quercus coccifera and Pinus halepenis forest – 300 mm rainfall/year, and 3) tussock grasses – 150 mm rainfall /year. Our results show significant differences in wood stake decomposition as a function of climatic conditions, land use management, and wood stake species.