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Lectures	Plant-soil relationships: leaf litter decomposition, a key process for ecosystem functioning
Key words	Functional ecology, biodiversity-functioning relationships, Mediterranean terrestrial ecosystems, litter decomposition, microorganisms, mesofauna, global change
Learning objectives	The objective is to understand that the soil is "alive" and really important for plant-soil relationships, which is approached through a key process of ecosystem functioning: leaf litter decomposition. This process is mainly a biological process and the objective is also to realize that it involves many soil organisms with a biodiversity not properly known. Moreover, litter decomposition can be a good candidate to evaluate the effect of global change (land use, climate) on ecosystem functioning. A focus on Mediterranean terrestrial ecosystems is done, with a lot of constraints (summer drought periods really stressful for organisms, really long anthropogenic pressure, but a hotspot of biodiversity) and these ecosystems are particularly sensitive to climate change.
Main subjects	- Functional ecology particularly for Mediterranean terrestrial ecosystems - Leaf litter decomposition - Decomposers: microorganisms, mesofauna - Specific, genetic and functional diversity - Link between plant diversity and decomposers diversity - Leaf chemistry, especially plant secondary metabolites - Environmental conditions, particularly soil water availability - Land use change - Climate change

Relevance to EduSaPMan	The lecture concerns the relationships between plant and soil through litter decomposition. This process is really important for soil functioning, and then fit perfectly into the network. Moreover, the study of different perturbation, including climate change, highlights the importance of water availability in Mediterranean ecosystem. So the lecture is relevant for the key topics of the network: plant-soil-water.
Recommended literature	Soil Ecology and ecosystem services, first edition. Edited by Wall D.H. et al. Oxford University Press. Chomel M., Fernandez C., Bousquet-Mélou A., Gers C., Monnier Y., Santonja M., Gauquelin T., Gros R., Lecareux C., Baldy V. 2014. Secondary metabolites of Pinus halepensis alter decomposer organisms and litter decomposition during afforestation of abandoned agricultural zones. Journal of ecology 102: 411-424. Santonja M., Baldy V., Fernandez C., Balesdent J., Gauquelin T., Baldy V. 2015. Potential shift in plant communities with climate change: outcome on litter decomposition and nutrient release in a Mediterranean oak forest. Ecosystems 18: 1253-1268. Santonja M., Fernandez C., Gauquelin T., Baldy V. 2015. Climate change effects on litter decomposition: intensive drought leads to a strong decrease of litter mixture interactions. Plant & Soil 393(1-2): 69-82 (doi 10.1007/s11104-015-2471-z)