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## Interactions between under- and over-storeys

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**Interactions between under- and over-storeys, consequences to design silvicultures adapted to climate change.** Balandier, P. (*Cemagref/INRA Clermont-Ferrand, France; [philippe.balandier@cemagref.fr](mailto:philippe.balandier@cemagref.fr)*), Ginisty, C. (*Cemagref Nogent-sur-Vernisson, France; [christian.ginisty@cemagref.fr](mailto:christian.ginisty@cemagref.fr)*)

Forests comprise several interacting strata of vegetation; overstorey trees are most obvious but sub-canopy strata, collectively termed understorey or undergrowth, are typically present including herbaceous plants, shrubs, seedlings and saplings, and suppressed under- and midstorey trees. For decades only adult trees have been considered in forests and most often, only crop trees. However the understorey also plays a fundamental role in ecosystem functioning and health. Various silvicultural systems are currently designed or experimented in relation with climate changes, and in particular a reduction of soil water availability together with an increase of scorching temperatures in many regions of the temperate area. Modifying tree species composition and density of the forest ecosystem will have consequences on the understorey composition and functioning, which in turn will interact with the overstorey. These interactions will modify the whole ecosystem functioning in terms of biodiversity, tree regeneration, wild fauna habitats, pest and diseases, etc. Therefore it is compulsory to account for the interplays between the different strata in forest to better design silvicultural operations relative to climate changes. Examples of such interactions will be given and consequences for designing experimental systems and new silvicultures will be discussed.