Special Issue

Forest Soils and Their Potential for Climate Change Mitigation: Pools, Functioning and Processes

Message from the Guest Editor

Forest ecosystems are a natural sink of atmospheric CO2 and soils contain about two thirds of the stored carbon. The sink capacity of forest soils is, therefore, a big chance to mitigate climate change effects, but it depends on natural variability (latitudinal and altitudinal gradients, parent material), forest management and land use changes. Moreover, organic matter transformations include several processes that are key for nutrients cycling and overall soil functioning. Soil carbon may be stored in pools having different residence time, due to intrinsic chemical characteristics, physical protection mechanisms and biochemical stability, thus affecting the potential for carbon sequestration in the long term.

On the other side, forest soils exchange CO2 and other green-house gases (CH4 and N2O, which have a much higher warming potential) with the atmosphere through processes related to carbon and nitrogen cycling. Acquiring more information on these processes and resulted fluxes is essential in order to increase forest soils potential for climate change mitigation.

Guest Editor

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Deadline for manuscript submissions

closed (30 September 2018)

Forests

an Open Access Journal by MDPI

Impact Factor 2.5
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