



Hydromorphic soils easily unbalance GHG balances from forests: A focus on Europe

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In terms of Non-CO₂ Greenhouse Gases (GHG), forests are usually considered to be near neutral CO₂ equivalent emitters, emitting low amounts of N₂O and taking up considerable amounts of CH₄. Typically more CO₂ is assimilated than returned to the atmosphere by forests. Consequently, forests are regarded as sinks for atmospheric CO₂ equivalents. This perspective inherently goes along with the perception that forests are dryland sites, because as wetlands they would have to be considered as CH₄ sources too. It is well known that forests can include wetlands. In this presentation, we present the potential bias range for European bottom-up inventories of CH₄, when forests and wetlands are considered to be strict opposites in the CH₄ cycle. For selected scenarios with different proportions of wet forests on the land surface, we observed that net methane budgets that include methane sinks and sources, approximately double (~4.6 to 6.7 Tg CH₄-C instead of 2.8 Tg CH₄-C) when wet forests are included. The highest uncertainty appears to be associated with the determination of the area of methane emitting land surfaces. Furthermore, we present similar observations at the landscape scale and N₂O was additionally adding to these unbalanced GHG budgets.