



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

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In terms of Non-CO<sub>2</sub> Greenhouse Gases (GHG), forests are usually considered to be near neutral CO<sub>2</sub> equivalent emitters, emitting low amounts of N<sub>2</sub>O and taking up considerable amounts of CH<sub>4</sub>. Typically more CO<sub>2</sub> is assimilated than returned to the atmosphere by forests. Consequently, forests are regarded as sinks for atmospheric CO<sub>2</sub> equivalents. This perspective inherently goes along with the perception that forests are dryland sites, because as wetlands they would have to be considered as CH<sub>4</sub> 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 CH<sub>4</sub>, when forests and wetlands are considered to be strict opposites in the CH<sub>4</sub> 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 CH<sub>4</sub>-C instead of 2,8 Tg CH<sub>4</sub>-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 N<sub>2</sub>O was additionally adding to these unbalanced GHG budgets.