



On the emission of amines from terrestrial vegetation in the context of atmospheric new particle formation

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Airborne amines, specifically methylamines (MAs), play a key role in atmospheric new particle formation (NPF) by stabilising small molecule clusters. Agricultural emissions are assumed to constitute the most important MA source, but given the short atmospheric residence time of MAs, they can hardly have a direct impact on NPF events observed in remote regions.

High MA contents as well as emissions by plants have already been described in the 19th century. Strong MA emissions predominantly occur during flowering as part of a pollination strategy. The behaviour is species specific, but examples of such species are common and widespread. In addition, vegetative plant tissue exhibiting high amounts of MAs might potentially lead to significant emissions, and the decomposition of organic material could constitute another source for airborne MAs. These mechanisms would provide sources, which could be crucial for the amine's role in NPF, especially in remote regions. Knowledge about vegetation-related amine emissions is, however, very limited and thus it is also an open question how Global Change and the intensified cycling of reactive nitrogen over the last 200 years have altered amine emissions from vegetation with a corresponding effect on NPF.