



Interests of introducing biological parameters into models of N₂O emission by soils

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The production of the greenhouse gas N₂O by soils primarily occurs through the two biological processes of nitrification and denitrification. Soils' biological capacities to nitrify, denitrify, and emit N₂O during these processes are highly variable across soils. We have defined some biological site-specific parameters dealing with soils' capacities to denitrify (Hénault et Germon, 2000), to reduce N₂O to N₂ (Hénault *et al.*, 2001), and to emit N₂O during nitrification (Garrido *et al.* 2002). These parameters are embedded within NOE, a new algorithm for assessing N₂O emission on the field scale (Hénault *et al.*, 2005). The relevance of NOE was tested by comparing measured and simulated N₂O fluxes using some data from the US TRAGNET worldwide database (<http://www.nrel.colostate.edu/projects/tragnet>).

A database including N₂O fluxes measured at the field scale as well as corresponding environmental and biological parameters was collected from different agricultural soils in France. Three N₂O models were applied to this database: NGAS (Parton *et al.*, 1996), the relationships proposed by Conen *et al.*, 2000, and NOE. We will present how the introduction of biological site-specific parameters can improve the relationship between simulated and measured N₂O fluxes, and is susceptible to change the estimation of the relative contributions of nitrification and denitrification in the N₂O emissions.

Références

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