



## Nitrous oxide emissions from tropical rainforest soils

In view of global climate change the accurate determination of the sources and sinks of greenhouse gases like CO<sub>2</sub>, N<sub>2</sub>O and CH<sub>4</sub> for natural, agricultural and forest ecosystems is one of the crucial tasks in environmental science.

Though tropical rainforest soils are one of the major sources for N<sub>2</sub>O, contributing 14-23% to the global atmospheric N<sub>2</sub>O budget, their source-strength is still poorly constrained.



To contribute towards a higher accuracy of estimates of the N<sub>2</sub>O source-strength of tropical rainforest ecosystems more measurements of N<sub>2</sub>O-emissions at various sites are required, fulfilling both representativeness and long-term coverage in order to understand seasonal and spatial variability and to identify environmental drivers which control the magnitude of trace gas emission/deposition.



Based on the results a process orientated biogeochemical model (PnET-N-DNDC model), which allows the simulation of N<sub>2</sub>O-emission from tropical rainforest based on the processes involved in production, consumption and emission, was further developed and validated.

This model was finally linked to a GIS database in order to calculate a regional inventory of N<sub>2</sub>O-emission for rainforest soils of the Wet Tropics of Australia (9000 km<sup>2</sup>).

---

**CSIRO Tropical Forest Research Centre.**

**Post** Maunds Road Atherton Queensland 4883

**Phone** +61 (0)7 4091 8800 **Fax** +61 (0)7 4091 8888

**Email** [tfrc-enquiries@csiro.au](mailto:tfrc-enquiries@csiro.au)

**Web** [www.tfrc.csiro.au](http://www.tfrc.csiro.au)