

## Modelling nitrous oxide emissions in a wheat-maize system of North China Plain

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Concentrations of atmospheric nitrous oxide (N<sub>2</sub>O), a potent greenhouse gas, has been continuously increasing and cropland soils are one of the largest sources of N<sub>2</sub>O. Variations in environmental and anthropogenic alterations have great impacts on both the frequency and magnitude of N<sub>2</sub>O emissions. Based on the measurements from a wheat-maize system of North China Plain, we parameterized the APSIM model which was initially developed in Australia, for simulating nitrous oxide emissions under different agricultural management practices. After calibrating one of the key parameters, i.e., fraction of N<sub>2</sub>O lost in nitrification ( $k_2$ ), the results showed that the model can well capture the daily nitrous oxide fluxes under different nitrogen fertilization treatments, but underestimated some large peak fluxes. By pooling all data together, the calibrated APSIM model also showed a good performance in representing the cumulative N<sub>2</sub>O emissions with various treatments at both annual and finer (monthly and daily) time scales.