Lanna agricultural ecosystem

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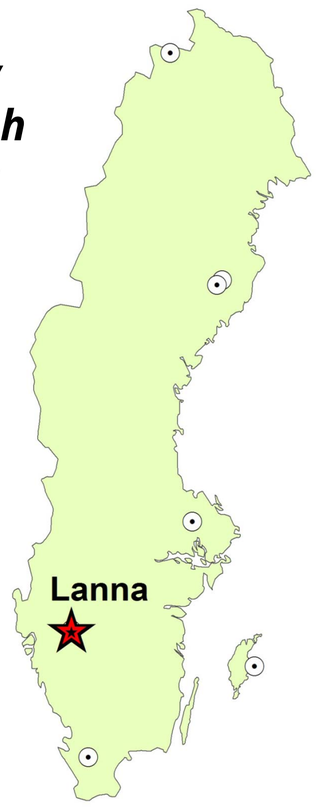
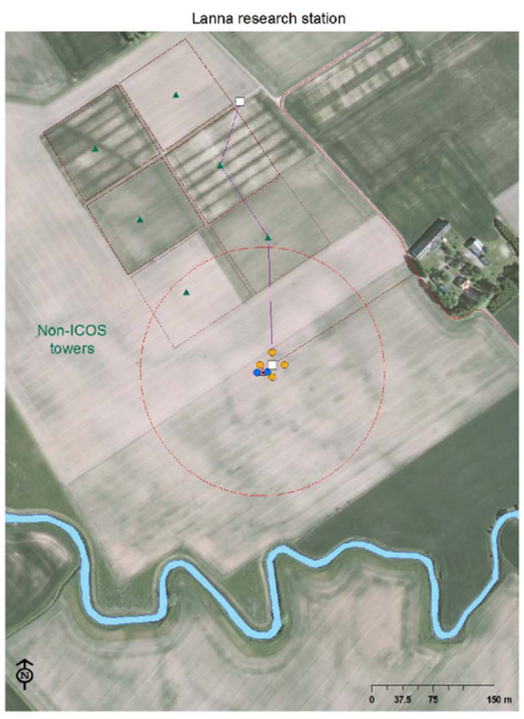
Lanna (58° 20' N, 13° 06' E) is an ICOS ecosystem station, operated by University of Gothenburg in cooperation with Swedish University of Agriculture (SLU). Lanna is a SLU station since1929 that has 7 leaching infrastructures and 60 different ongoing field trials.

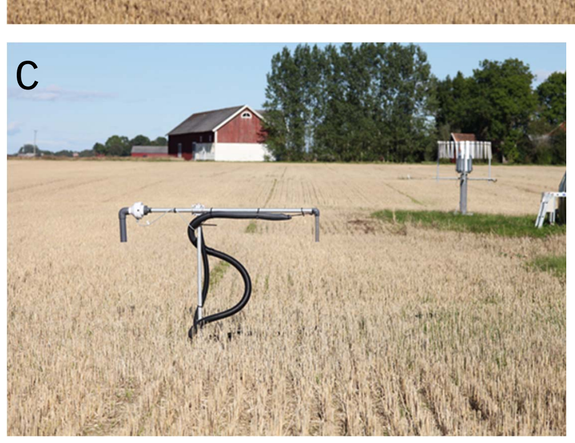


The site is flat and homogeneous, making it close to ideal for micrometeorological studies

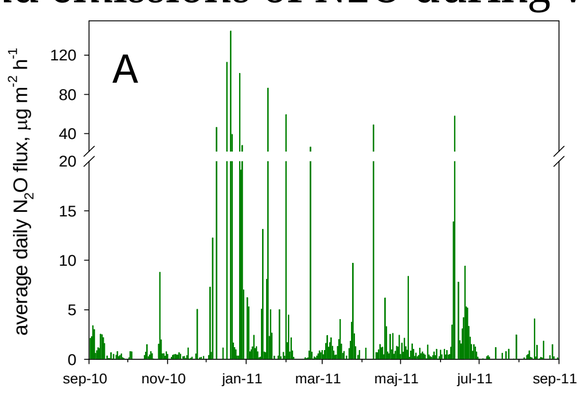


Left Overview over ICOS field (circle)with the 4 soil stations (orange dots), with all installations dug down. Also shown the 6 gradient flux plots (1 ha each; squares).

Below (A) overview of the main installation, (B) EC flux of CO_2, H_2O, N_2O at the tower and profile system for storage term , with the two low intakes (C) . (D) shows a view of the equipment in the "Igloo" also shown above.



The ICOS Lanna station has a strong focus on elucidating the control mechanisms for production and emissions of N2O during winter periods.



The N_2O fluxes from the field is dominated by winter emissions (A), hard to measure due to soil frost and snow without use of micrometeorological techniques. Soil probes were installed 2014 at the site to study the production/consumption as well as transport of N_2O in the soil profile during winter periods.

The ICOS field was under drained in 2013. The water from the central parts around the tower is collected and the flow and nutrients measured.

ICOS main field is conventionally managed according to regional practice. However, it is possible to test other management options by using the 6 *gradient flux* plots that exist next to ICOS. Currently fluxes from pig slurry and liquid biogas residue fertilizers are studied. Of those plots 2 will always have the same treatment as the main field, and thus the two techniques can be evaluated and compared.

The gradient plots (A) with all the tubing and cables (dug down below plow layer) to the cabin (B) with fiber optic internet connection. The quantum cascade laser and the valve system for the gradient system (C) and one of the 6 gradient flux towers (D).

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