

Project Newsletter

Spring 2025

Project updates and activities
Meet more partners



Welcome to the 5th newsletter!

This newsletter contains **XXXXX**.

Date for the diary:

The 16th [CEM International Conference and Exhibition](#) on Emissions & Air Quality Monitoring will be held in **Ljubljana, Slovenia** from the **24th-26th September** and will be held alongside the 4th [IMMC International Conference on Methane Measurement](#)

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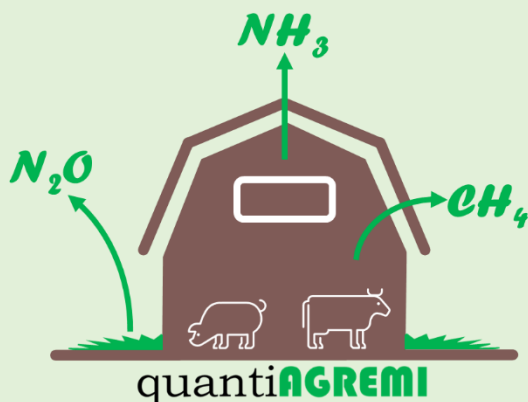
**EUROPEAN
PARTNERSHIP**



Co-funded by
the European Union

The project has received funding from the European Partnership on Metrology, co-financed from the European Union's Horizon Europe Research and Innovation Programme and by the Participating States.

**METROLOGY
PARTNERSHIP**

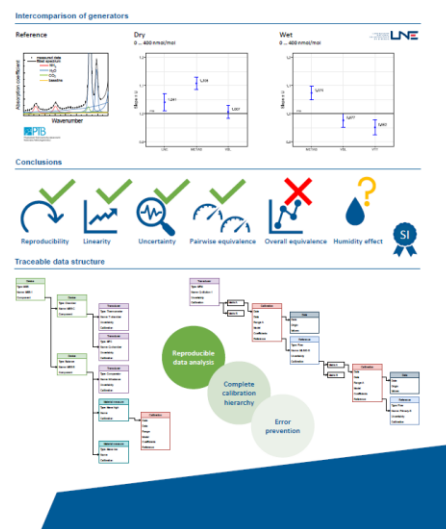
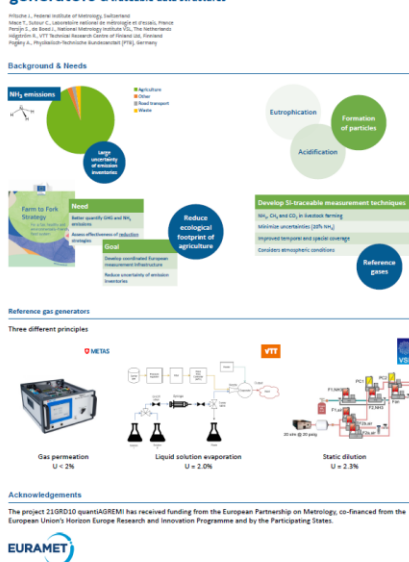


Project updates and activities

Abstract submitted and accepted for the BIPM 150th Anniversary Celebration

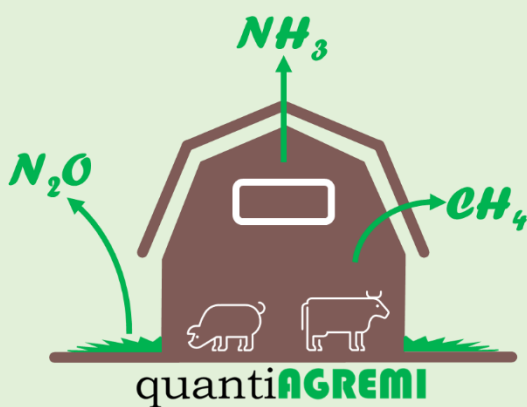
A poster reporting results from WP1 of the **quantiAGREMI** project was successfully submitted to the International Bureau of Weights and Measures (BIPM) [150th Anniversary Celebration meeting](#). This meeting is divided into nine topics, including “The Environment and Climate Change” where the abstract can be found together with a brief talk through of the important findings by lead author Johannes Fritsche (METAS).

Intercomparison of ammonia reference gas generators & traceable data structures



The poster concerns the development and intercomparison of three wet ammonia gas generators, each based on a different principle. The mobile generator designed by METAS applies the permeation method using a temperature-controlled oven and a combination of two dilution steps to produce the final gas mixture. An evaporator is connected downstream to humidify the generated gas. VSL uses a bottled reference gas mixture and a 2-step dilution system to generate the gas mixture. A bubbler is mounted in the 2nd step to humidify the gas. The instrument of VTT evaporates a precise liquid flow of an aqueous standard solution of ammonia and dilutes the generated vapor with dry carrier gas. Opposed to the other two methods, VTT's device can only produce wet reference gases. The combined uncertainties of the generated amount fractions of each instrument are $\leq 3\%$ ($k = 2$).

In an intercomparison study at LNE in 2024, these generators were compared to an optical ammonia standard from PTB at amount fractions of 1 to 400 nmol/mol using both dry and wet air matrices. The data of this study are currently analyzed and the results will be published in due time. The comparison has resulted in a proposed structured data scheme to ensure relevant metadata on calibration, uncertainty and instrumental settings can be recorded effectively.



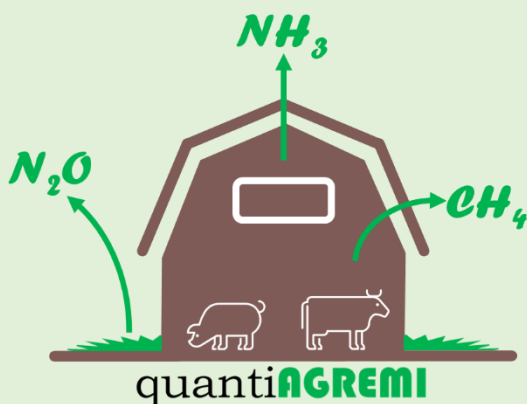
Livestock housing emissions monitoring campaigns

The winter measurement campaign linked to activity A2.3.4 in WP2 of the **quantiAGREMI** project has been underway. This was performed at LUKE's research barn in Finland and involved the monitoring of CH₄, CO₂, N₂O, NH₃, humidity and temperature at the same time as animal management practices. The sensors developed by Senseair, Gasera, Vaisala and IMTelecom within the project have been tested for their performance and applicability in the field. A brief video tour of the barn during the measurement campaign can be found on the **quantiAGREMI** website.



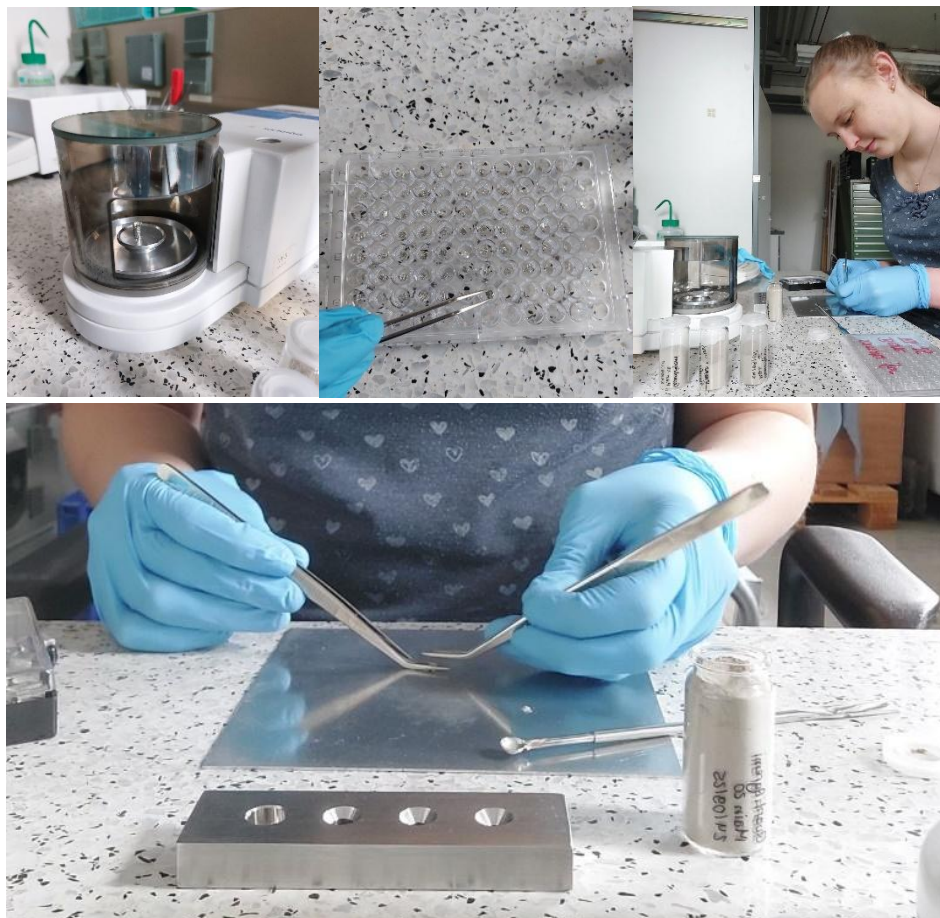
INRAE in Rennes, France, operates experimental farmhouses and controlled test chambers to investigate emissions from livestock farming. As part of WP 1, a researcher of METAS, Switzerland, visited INRAE to study measurement interferences between trace gases that are commonly emitted from farmhouses. The researchers of METAS and INRAE added controlled volumes of CH₄, CO₂, N₂O-enriched N₂ gas from cylinders as well as H₂O from a humidifier to a N₂ gas stream containing 5 µmol/mol NH₃. Different gas combinations were then fed to a Picarro CRDS analyzer and the detected NH₃ signals recorded. First measurement results indicate that water vapor at 9 g/m³ and CO₂ at 500 µmol/mol do interfere with NH₃ detection at the given amount fraction, while CH₄ and N₂O do not seem to have an effect. Although the magnitude of the interferences are unlikely to be of concern they need to be followed up in the coming measurement campaigns to properly account for their effect.





Soil sample preparation and analysis by EA-IRMS

Within WP3 of the **quantiAGREMI** project, KIT have been busy preparing soil samples taken during an ammonia release experiment field campaign for stable nitrogen isotope ratio analysis. This has involved freeze-drying the soils, grinding and homogenizing them and then the painstaking task of weighing out a few milligrams precisely into tin capsules in preparation for isotopic analysis.



The prepared soil samples were then transferred to LGC where they are being measured by EA-IRMS.