# InGOS – Integrated non-CO2 Observing System

Detailed workplan, appendix to the online application. Request for access to an infrastructure (TNA1-TNA2-TNA3). The plan must not exceed 6 pages in 12 pt single line spacing, applications exceeding this limit will not be evaluated. The following information should be included in order to be evaluated:

1. **Project name (acronym), name and contact information of the researcher(s), duration of the project (dates, number of working days), type and name of the infrastructure requested**

**Project Name:** Soil N2O chamber inter-comparison campaign 2014, Hyytiälä, Finland

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**Duration of the project:** June 16 to 20 2014 (5days)

**Infrastructure request:** Hyytiälä Forestry Field Station, Finland

1. **Background**
   1. Significance of the research

The campaign will allow comparing different types of chamber systems.

Comparison will be realized using calibration tank with known N2O flux under replicable conditions. The comparison will also include calculation of measurement uncertainty and systematic error of calculated fluxes.

* 1. Previous research relevant to the topic and how the proposed project links to this

The chamber comparison campaigns where organized previously in Hyytiälä Forestry Field Station in 2002 (Pumpanen et al. 2004) and in 2008 (Christiansen et al. 2011, Pihlatie et al. 2013) and they were related to chambers used for CO2 and CH4 fluxes estimation, respectively. The current study, related to calibration of chambers used for N2O fluxes measurements, is a continuation of the previous studies and is ver close linked to them. Beside the above, the campaign is very closed linked to similar inter-comparison campaign organized within the FP7 ICOS project in 2011. This campaign was focused on instrumentation for eddy covariance flux measurements of N2O and also follows INGOS NA5 N2O instrument inter-comparison campaign of fast-response N2O analysers currently available on the market.

* 1. Links with current research of the applicant

Poznan University of Life Sciences (Meteorology group) has conducted chamber measurements of CO2,CH4 and N2O on cropland and peatland sites by using different chambers (automatic and manual) and different measuring approaches (static and dynamic) fluxes. Participation in the present campaign will be necessary to better estimate the uncertainty of the estimated fluxes by using these chambers.

1. **Objectives**
   1. Hypothesis and research objectives

The inter-comparison campaign will allow assessing measurement accuracy and precision. Flux measurements will be associated with systematic and random uncertainties. Campaign will enable us to assess their performance in a right measuring of gasses emissions from different ecosystem sites

* 1. Connection with the InGOS objectives and the ‘fitness’ of the use of the requested infrastructure to the objectives

This project is part of NA5 activities in Annex I.

1. **Methods and materials (legal and ethical issues)**

Chambers will be tested individually or in several groups if their size allows it. Reference fluxes from the calibration tank will be calculated and measured independently to test the emission chambers. The final concentrations will be determined with using gas chromatography and continuous laser analyzers (LosGatos, Aerodine). Emission data will be analysed individually with own methodology and in parallel following a common protocol of the InGOS.

1. **Implementaton: timetable, budget, distribution of work**
   1. Timetable for the research including personnel efforts, favorably table wise

Radoslaw Juszczak will visit the Hyytiälä Forestry Field Station from 16th to 20th of June 2014 (the measuring campaing will take place between 17-19th) to test one chamber (circular).

* 1. Total budget for travel and logistical support as requested

For the campaign setup, the plan is to send equipments (chambers) two weeks before campaign starting. I will plan to flight to Helsinki on 16th June 2014 and flight back to Poland on 20th June 2014. The estimated costs of traveling in both direction to Finland and back to Poland (plain + train) are of the order of 500 Euro.

I will spent four nights in the Hyytiälä Forestry Field Station. In total (60 Euro per day =240 Euro). The budget requested for this project is: travel costs 500 Euro and subsistence for 5 days\* 50Euro= 250 Euro. Total budget is 750 Euro.

1. **Expected results and possible risks**
   1. Expected scientific impact of the research and applicability and feasibility of the research results

It is expected that the obtained results and experiences with different chambers will provide a reference and standards for N2O flux measurements using chamber techniques to the to the whole flux community.

* 1. Publication plan

To be decided.

* 1. Data access plan

Results of the comparisons will be submitted to the InGOS methodology approaches.