InGOS International Conference
Non–CO_2 Greenhouse Gases
21 – 24 September 2015
Utrecht, The Netherlands

Experimental assessment of storage variability for different GHGs: implications for eddy covariance measurements

Giacomo Nicolini, Simone Sabbatini, Hella van Asperen, Dario Papale

Abstract

The measurement of storage flux is currently a standard in any eddy covariance applications. Especially over tall canopy ecosystems, its quantification is crucial, e.g., for the analysis of fluxes' functional relationships and in the reduction of the night time correction. Similarly than for CO_2, the storage flux has to be quantified for any other trace gas, like CH_4 and N_2O, for which a net ecosystem exchange is expected. However, because of the complexity of the measurement itself, an accurate storage flux determination is often contrasted by the limitation of technical resources.

In this work we tried to answer to the following questions: (1) are the storages of different gases related? (2) which is the impact of horizontal and vertical gas concentration variability? (3) where are the main sources of uncertainty? (4) is there an optimal set-up to limit the use of resources without losing reliability? To this aim we adopted an integrated approach, analysing storage data from different ad-hoc experiments made on different ecosystems and evaluating the performance of a novel instrumental set-up.