**The InGOS Project: Setup and First Results**

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InGOS is a European Union funded Integrating Activity project targeted at improving and extending the European observation capacity for non-$CO_2$ greenhouse gases. The project will run from October 2011 to September 2015. InGOS is coordinated by ECN and involves 34 partners from 15 countries.

New (optical) measurements techniques have become available for non-$CO_2$ flux observations. During an intensive field campaign in June 2012 at Cabauw, Netherlands (Fig 1) we tested 8 different sensors and found that all sensors allowed to measure the mean accumulated flux of $CH_4$ over the 2-week test period within 10%. In the 2nd phase of the campaign the instruments measured within the footprint of Cabauw tall tower and the variability of the measured fluxes within this footprint proved to be a factor of 3, despite the homogeneity of the lansdcape over all 3 measurement sites. In the project we also work on improving the existing and future datasets of non-$CO_2$ mixing ratio observations in the European network, which have been based up to now on Gas Chromatography techniques. We target at providing with every measurement, also estimates of precision and accuracy using a uniform method, despite the differences in measurement approaches. First results will be shown for the historic measurements (period 2000-2012) of mixing ratios at 14 stations for $CH_4$ and $N_2O$. These mixing ratio measurements series results will be used for regional inversions in the integrating modelling section of the project using at least 5 independent model systems. Model validation will be performed using $^{222}Rn$ observations and a new prior high resolution flux field of time-varying $^{222}Rn$ emissions (Fig 2).

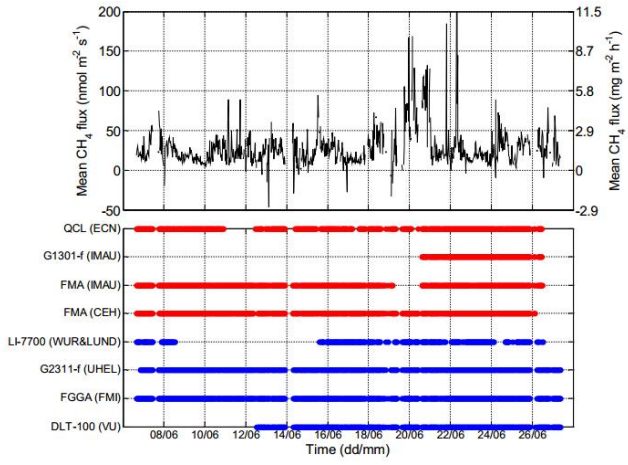


**Figure 1.** Upper panel: Mean $CH_4$ emission flux measured with the eddy-covariance technique during the 2012 measurement campaign at Cabauw, using 8 different optical sensors. Lower panel: Availibility of data for all sensors during the field campaign.

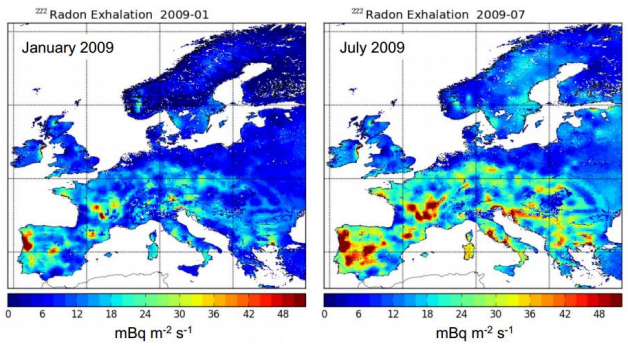


**Figure 2.** Left panel: $^{222}Rn$ emission rates for January 2009 from the high resolution emission model. Right panel: $^{222}Rn$ emission rates for June 2009 from the high resolution emission model.