



Improvements to the Aircraft Mass Balance Method for Determination of Urban-Scale Greenhouse Gas Fluxes

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As part of the Indianapolis Flux Experiment (INFLUX) and related work, we have been developing and improving the mass balance method for determination of urban area-wide fluxes of greenhouse gases, focusing on CO₂ and CH₄. Using one aircraft, a light twin, we have found that the uncertainty for urban scale fluxes (for a city the size of Indianapolis) is on the order of +/- 40%. A major limitation is uncertainty in the background concentrations for these gases flowing into the city. In this talk we will discuss methods to improve determination of the background concentrations, how that is impacted by changes in the boundary layer height, and recent results from INFLUX for both CO₂ and CH₄. We will conclude with recommendations for future improvements in this method.