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Tall tower eddy covariance as a tool for evaluating climate change mitigation in Vienna, Austria

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The need for climate action in cities is becoming more and more critical. As such, systems that quantify local greenhouse gas (GHG) emissions to evaluate mitigation measures are growing in importance and are set to undergo increasing levels of scrutiny. Within the CarboWien project, the University of Natural Resources and Life Sciences, Vienna, the Environment Agency Austria and the telecommunications company A1 Telekom Austria AG are currently collaborating to investigate the potential of a tall tower eddy covariance station to support carbon dioxide (CO₂) emissions monitoring in Vienna. Due to the tall tower approach (144 m measurement height) the measured turbulent fluxes are representative of net emissions from much of the city area. If maintained in the near- to medium-term, this facility could provide an additional, independent instrument with which local climate change action can be continuously evaluated.

This conference contribution will present results from the measurement campaign so far (2018-2019). In addition to discussing the early-indicator function of these data and the scope for improving emissions inventories, the presentation will demonstrate how these measurements can be directly used to evaluate local mitigation measures. In particular, analyses of the 30-minute fluxes against local activity/proxy data will show how the performance of measures seeking to reduce CO₂ emissions from road traffic and space heating can be inferred.