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## First look at the urban carbon flux inversion system for Megacity CO<sub>2</sub>-Seoul

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To verify the urban fossil fuel carbon dioxide (FFCO<sub>2</sub>) flux over the Seoul Capital Area (SCA), we initiated the “Megacity CO<sub>2</sub>-Seoul” project in the year 2018. For the project, our research group established CO<sub>2</sub> and XCO<sub>2</sub> ground measurement stations deploying Seoul National University CO<sub>2</sub> Measurement instruments (SNUCO<sub>2</sub>M) and EM27/SUN. We also produced 1x1km urban biospheric flux with the CARbon Simulator from Space (CASS) and 1x1km FFCO<sub>2</sub> carbon emission inventory by employing machine learning techniques. The project comprises inverse modeling system using WRF-STILT. Under the Bayesian inverse model framework, we assess FFCO<sub>2</sub> inventory of Seoul, which are generated by the bottom-up approach, by paring the ground CO<sub>2</sub> measurement constraints. This is the first look at the verification of self-developed FFCO<sub>2</sub> inventory of Seoul. We are currently working on the improvement of the WRF-STILT inverse modeling system. In this presentation, we report verification of FFCO<sub>2</sub> emissions in SCA on February 2018. Our estimate reflects that our prior FFCO<sub>2</sub> inventory was overestimated in the comparison with results of the inverse model. Detailed results will be presented at the webinar. This work was supported by the National Research Foundation of Korea(NRF) grant funded by the Korean government (MSIT) (No. NRF-2019R1A2C3002868).