The emission and photochemistry of a large industrial facilities near megacities - a case study in South Korea

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In this presentation, we will discuss the top down emission estimates of $\text{SO}_2$ and volatile organic compounds using mass spectrometers integrated on a research aircraft with a fast-meteorological sensor. The study area is four coal power plants, one steel mill, and one petrochemical industrial facility, located in the Tae-ahn Peninsular in South Korea 50 km away from the southern tip of the Seoul Metropolitan Area. We conducted 20 research flights to closely monitor emissions from each facility. We will present detailed analysis of instantaneous emission rates to verify emission inventories to proceed their impacts to regional air quality, particularly towards the Seoul Metropolitan Area with a population of 25 millions, using a semi-Lagrangian photochemical box model.