

地表ガス成分濃度の急減少 ～3次元走査型コヒーレントドップラーライダーによる風観測と地上ガス成分観測～

Stepwise decrease in atmospheric trace gases near the ground associated with rapid vertical mixing observed by 3-D coherent Doppler lidar and in-situ gas measurements

*高島 久洋¹、原 圭一郎¹、大平 湧貴¹、高見 昭憲²、吉野 彩子²、藤吉 康志³

*Hisahiro Takashima¹, Keiichiro Hara¹, Yuki Ohira¹, Akinori Takami², Ayako Yoshino², Yasushi Fujiyoshi³

1. 福岡大学理学部、2. 国立環境研究所、3. 北海道大学

1. Fukuoka University, 2. National Institute for Environmental Studies, 3. Hokaido University

Stepwise decreases, which occur over several minutes, in nitrogen oxides (NO_x) and carbon monoxide (CO) concentrations, in which the main source of these gases is supposed to be near the surface, are sometimes observed in Fukuoka, urban site in Japan, during the summer-winter seasons. In the most cases, ozone (O₃) content, which could be higher at higher altitudes, increases. Wind observations by 3-D coherent Doppler lidar suggest there is a thin surface layer (up to ~50-300 m thickness) near the ground before the stepwise change, and then rapid vertical mixing associated with the local meteorological system occurs. The surface thin layer plays a role as a cover of pollutants near the ground, and the vertical mixing within the boundary layer rapidly dilutes/reduces the pollutant contents near the ground.