

Vertical Distributions and Seasonal Variations of Atmospheric CO₂ observed by using Commercial Airlines

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The second phase of the atmospheric observation project using commercial airliner operated by Japan Airlines (Comprehensive Observation Network for TRace gases by AirLiner: CONTRAIL) was started in November, 2005. A new Automatic air Sampling Equipment (ASE) for flask sampling and a new Continuous CO₂ Measuring Equipment (CME) for in-situ CO₂ measurements were installed on Boeing 747-400 and Boeing 777-200ER. CME enables to obtain not only horizontal distribution of CO₂ in the upper troposphere but also vertical CO₂ profiles during ascent and descent. After the period of test flight in one year, we started regular observation using five aircraft. More than 3,000 of vertical profiles are already obtained until end of 2007.

In this study, vertical distributions and seasonal variations of CO₂ observed by CME are presented and their latitudinal/longitudinal differences are discussed.