

Observations of Atmospheric Greenhouse Gases using Commercial Aircraft by CONTRAIL project

*Toshinobu Machida¹, Hidekazu Matsueda², Yousuke Sawa², Yosuke Niwa², Taku Umezawa¹, Kazuhiro Tsuboi²

1. National Institute for Environmental Studies, 2. Meteorological Research Institute

To fill the gap of atmospheric CO₂ observation in upper atmosphere, we developed the Continuous CO₂ Measuring Equipment (CME) and the Automatic air Sampling Equipment (ASE) and installed them on commercial airliners operated by Japan Airlines (JAL) under the CONTRAIL project started in 2005. As of 2018, JAL prepared ten aircraft, eight of Boeing 777-200ER and two of Boeing 777-300ER, to be able to carry the CME. Five of 777-200ER can be equipped the ASE. When we need air samples on the routes where JAL does not operate 777-200ER, a Manual air Sampling Equipment (MSE) can be used instead of ASE. MSE consists of simply hand-operated pump and metal flasks.

To prepare the replacement of aircraft type in the next generation, we have been studying to modify Boeing 787 aircraft to install CME and ASE. We are planning to finish the design and to modify JAL's 787 in these 3-4 years.

The CONTRAIL data can be distributed on the request of any researcher for any scientific purpose. Recently CONTRAIL-CME data are openly available with doi number: doi:10.17595/20180208.001.

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