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Update on IAGOS greenhouse gas observations from commercial airliners

Christoph Gerbig¹, Uwe Schultz¹, Thomas Seifert¹, Harald Franke², Ralf Stosius², and Philippe Nedelec³

¹Max Planck Institute for Biogeochemistry, Biogeochemical systems, Jena, Germany (cgerbig@bgc-jena.mpg.de)

²enviscope GmbH, Frankfurt, Germany

³Laboratoire d'Aérodynamique - CNRS, Observatoire Midi-Pyrénées, Toulouse, France

Within European Research Infrastructure IAGOS (In-service Aircraft for a Global Observing System) regular observations of atmospheric greenhouse gases have started in 2018 onboard a Lufthansa Airbus A330. The aircraft is based in Frankfurt with service to destinations in central Africa, the Middle East, and North America. During the initial deployment periods, each lasting from several months to more than a year, various lessons have been learned related to the robustness and resilience of the autonomous operation of the IAGOS-core system, its maintenance in the laboratory, as well as the data transmission and regular automated processing of near-real-time (NRT) data with provision to users through the IAGOS data centre. Equipped with a two-standard in-flight calibration system, trace gas measurements could be made fully traceable to WMO calibration scales. The Covid-19 Pandemic had a significant impact on aviation, and thus on the IAGOS operation, but the aircraft carrying the IAGOS GHG equipment was flying throughout, with services to China and South Korea for medical supplies during the initial phase of the pandemic, allowing for frequent profile observations in the Far East. We present an overview of the observations collected so far, and an outlook on the future expansion of the IAGOS-core GHG measurements