

6.053 In-service Aircraft for Global Monitoring : 20 Years of MOZAIC-IAGOS measurements.

Presenting Author:

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Abstract:

Climate change, air quality, and the oxidizing capacity of the atmosphere are major issues that require detailed, long-term observations of ozone and other atmospheric chemical compounds on a global scale. For already 22 years MOZAIC and its successor IAGOS have successfully harnessed the potential of in-service aircraft to respond to these needs. IAGOS is now a European Research Infrastructure established in 2014 (<http://www.iagos.org>) from two previous research projects, MOZAIC and CARIBIC, with the goal of establishing and operating a sustainable observing system for monitoring of atmospheric trace gases, aerosols and cloud particles from commercial aircraft at a global scale.

The presentation will give the ultimate goals of IAGOS, the current status of the technical implementation, and the planned developments. A strong focus will be made on the ozone, CO and water vapor measurements particularly in the upper troposphere and lowermost stratosphere (UTLS) at mid and high latitudes, along with the procedures applied to ensure high quality standards and consistency of the entire data set. The data quality control procedures have remained unchanged. Using overlapping years of MOZAIC/IAGOS, it has been shown that IAGOS can be considered as the continuation of MOZAIC with the same data quality.

A selection of scientific results from the past measurements will be presented in order to highlight the value of 20 years of regular airborne data from commercial aircraft for a better understanding of atmospheric composition along with its interannual variability and trends. IAGOS data are also widely used by the Copernicus Atmosphere Monitoring Service (CAMS) to evaluate forecast model runs in near real time as well as reanalysis. Examples of such process-oriented validation will be given. A collection of recent scientific achievements of the MOZAIC-IAGOS Programme was published as Special Issue of Tellus B; see <http://www.tellusb.net/index.php/tellusb>.