



03 : QA/QC & Data consistency

Romain Blot (QA/QC manager O3/CO)

Philippe Nedelec (Technical coordinator, PI for Ozone and CO measurements)

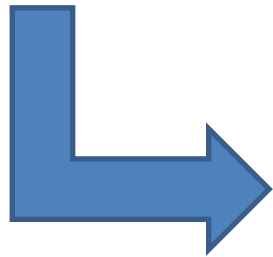
Damien Boulanger (Database and web services)

Valérie Thouret (Coordination)

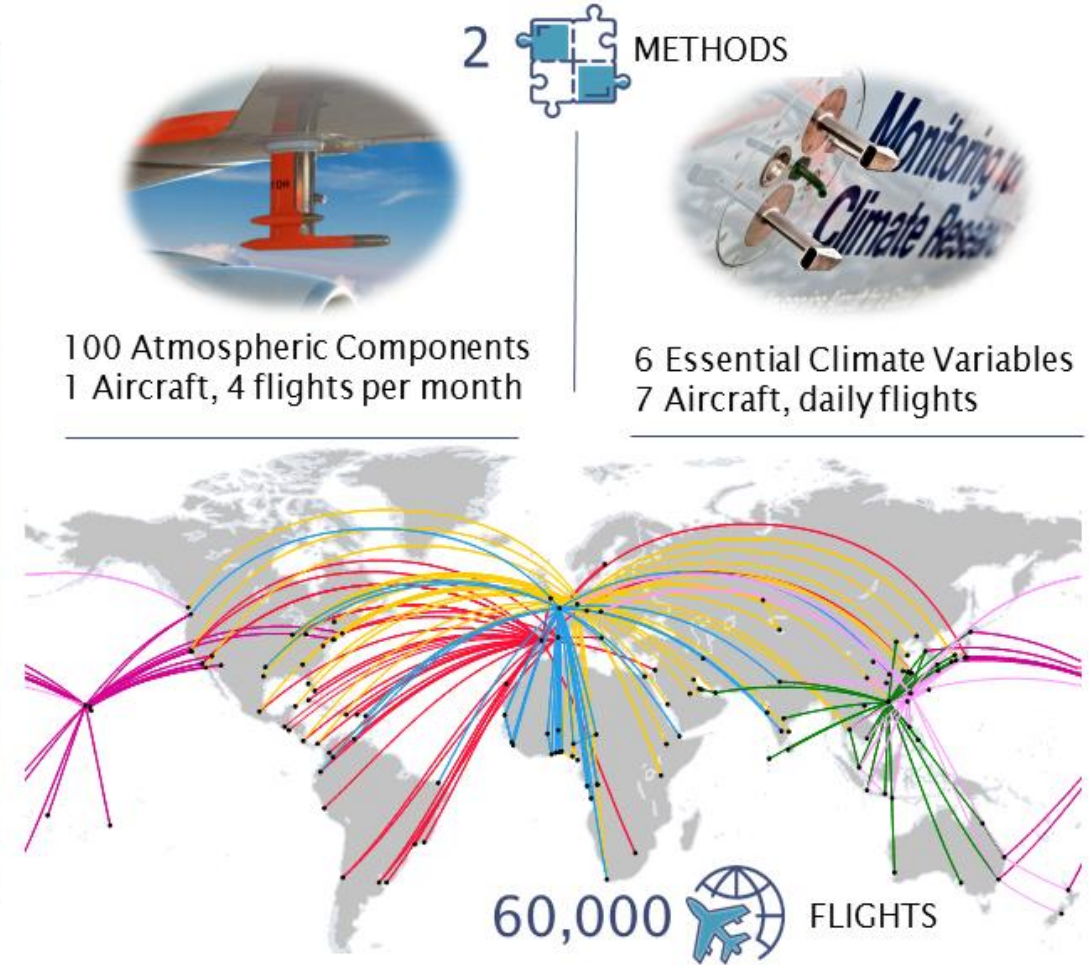
and IAGOS Team

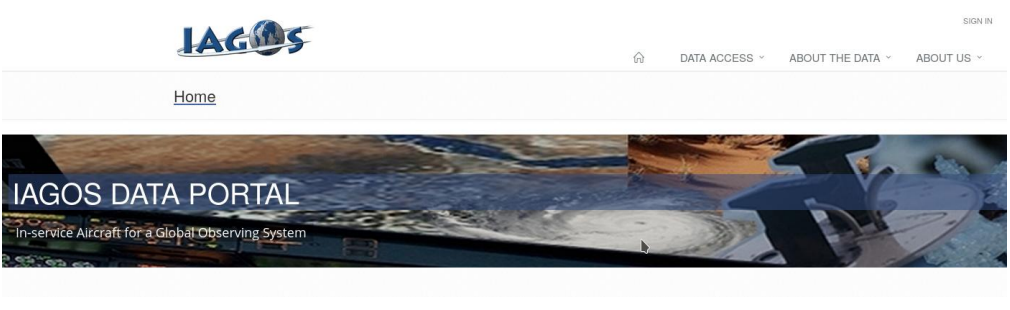


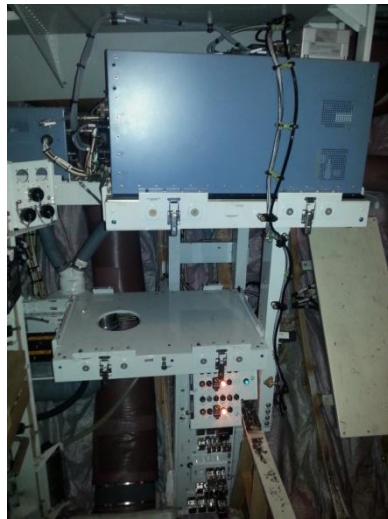
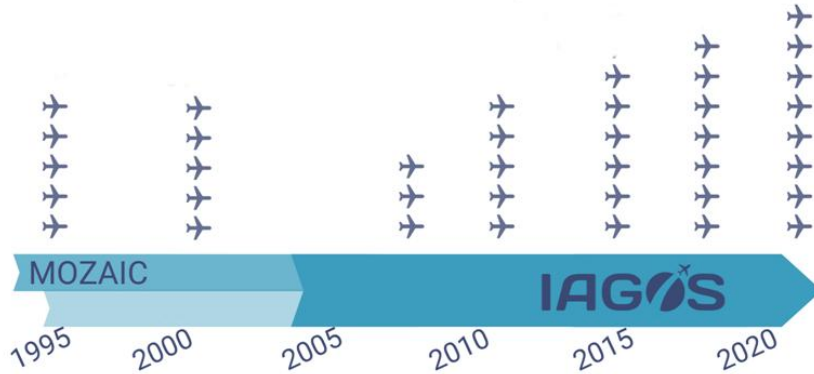
Monitoring climate and air quality using commercial aircraft



- 6 AIRLINES
- 8 AIRCRAFT
Airbus A330/A340
- 8 RESEARCH INSTITUTES
- 26 YEARS of data since 1994
- 330 VISITED AIRPORTS
- 400 PEER REVIEWED PUBLICATIONS



<p style="writing-mode: vertical-rl; transform: rotate(180deg);">DATA ACCESS</p>	<ul style="list-style-type: none"> • Via : http://www.iagos.org/ then click “Data Portal” • Registration is mandatory (data usage traceability) • Data policy acceptance is mandatory • Download via a web Gui or via rest services • Dataset DOIs available 	
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">DATA FILES FORMAT</p>	<ul style="list-style-type: none"> • NASA ames and NETCDF format (netcdf recommended) • Homemade metadata compatible with the ISO 19115 standard • Climate and Forecast (CF) metadata convention: https://cfconventions.org/ • Attribute Convention for Data Discovery (ACDD) convention : Chttps://wiki.esipfed.org/Attribute_Convention_for_Data_Discovery_1-3 • Not yet : WMO Integrated Global Observing System (WIGOS) standards (platform,instrument,etc...) 	
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">DATA REPORTING</p>	<ul style="list-style-type: none"> • 1 flag per O3 observations • <u>Internally (PIs)</u> : 3 flag types (0,1,2) for the processing state and 8 (0 to 7) flags for the quality status • <u>For the external user</u> : only the good O3 observations (flag 0) at the final processing state (flag 2) are provided. The erroneous or the doubtful data are replaced by a fill value. • The maximum error(systematic+random) is calculated and provided for each observation 	



A change in the instrumentation design for IAGOS (2011) but still the same O₃ measurement technique based on a Thermo scientific UV photometer model 49 (Nedelec et al., 2015)

- From 1994 to 2014, 6 bloc units deployed for MOZAIC
- From 2011 to now, 14 « package 1 » operated for IAGOS

- Every instrument is inspected, tested and calibrated at the Laboratoire d'Aérodologie, Toulouse.
- Lab comparison with a reference UV instrument
- Calibrators (Thermo 49CPS/IPS) are sent yearly to the LNE for comparison with traceable reference NIST instruments.

- QA/QC documents produced for every units (not public yet)
- SOP document available : <https://www.iagos.org/iagos-core-instruments/package1>
- **Data Management Document (DMP)** available in 2021/2022 (Platform, instruments, data flow, data processings, etc ...)

Internal consistency checked through inter-comparison of co-located aircraft (dt<1 hour)

<https://amt.copernicus.org/preprints/amt-2020-462/>

Internal consistency of the IAGOS ozone and carbon monoxide measurements for the last 25 years.

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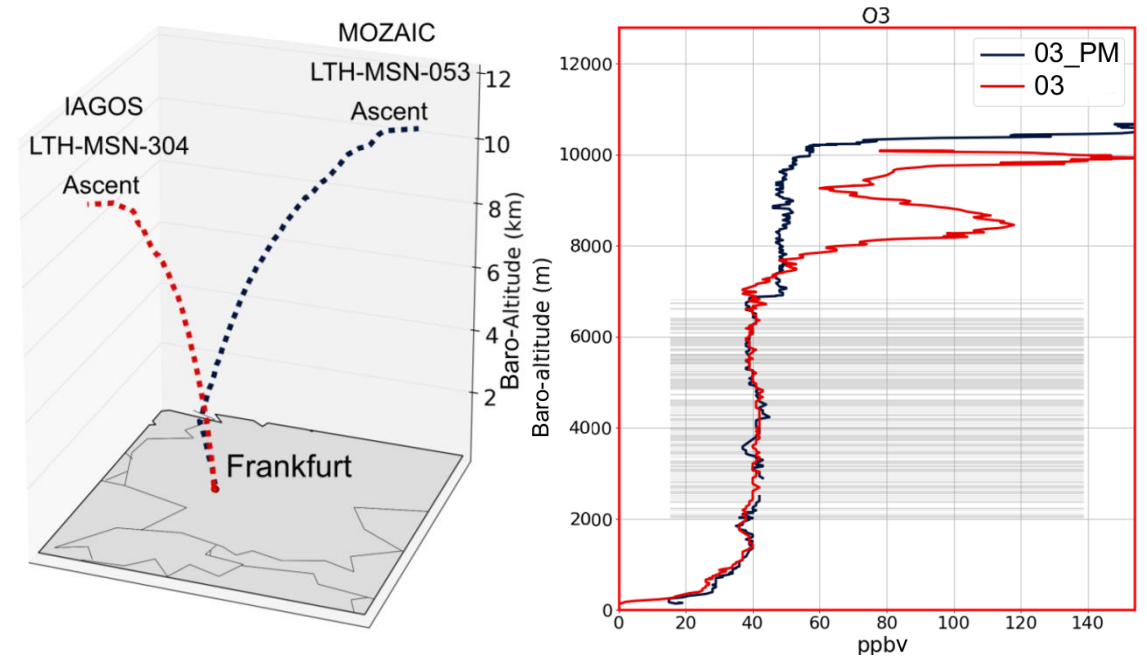
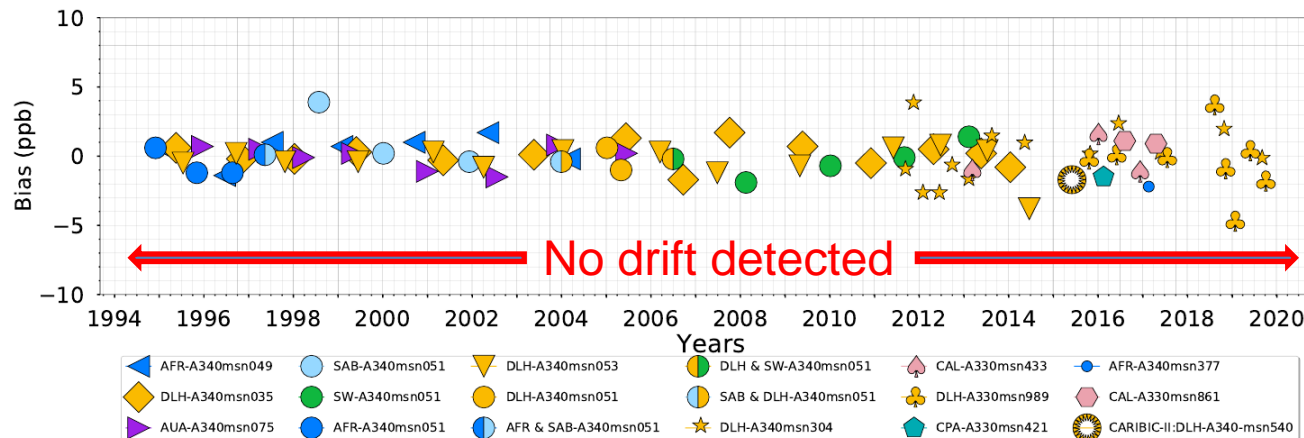
³Karlsruhe Institute of Technology (KIT), Institute for Meteorology and Climate Research (IMK), Karlsruhe, Germany

⁴Max-Planck-Institut für Chemie (MPI), Air Chemistry Division, Hahn-Meitner-Weg, 55128 Mainz, Germany

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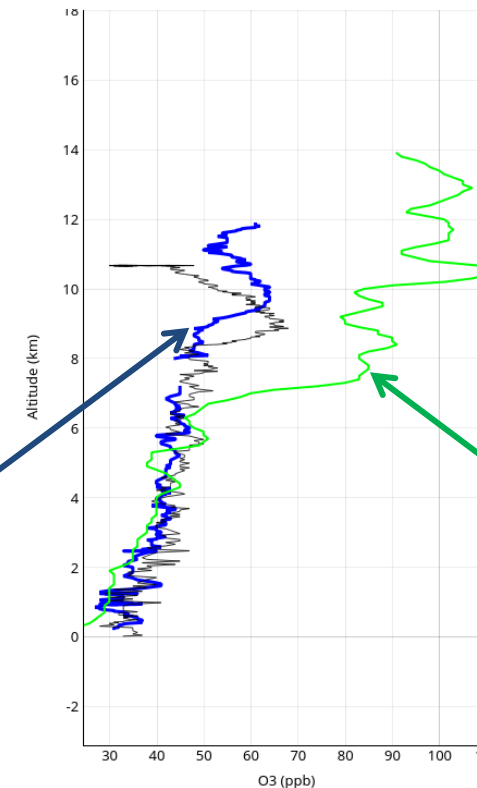
- O3 measurements are compared if the observed air masses present similarities.
 - Constraints on dt, dT, dWindDir, dPV
- ➔ statistical robustness & long-term stability

I) Inter-comparison of IAGOS-Core UV-photometer against WCCOS-Photometer at Simulation Facility at Jülich :

- Monitor the performance of the IAGOS O3 photometer under quasi-flight conditions of pressure, temperature and O3 level : P1000hPa : T = 30°C, P500hPa : T = 0°C, P250hPa : T = -40°C, P125hPa : T = -60°C (extreme conditions)
- Monitor the instrument response during different ascent, descent conditions.

II) Perform systematic inter-comparisons of the IAGOS O3 profiles and the O3 sondes when they are available at nearby location and with the use of the back trajectories (via Lagrangian model FLEXPART)

IAGOS, HONOLULU, HI
2018/01/29 – 18 UTC



OzoneSonde,
HILO, HI
2018/01/29-
18h UTC



Get in touch

 www.iagos.org

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