Iagos Core Basic Aerosol Package on CARIBIC

- **Basic Aerosol Package (P2c)**

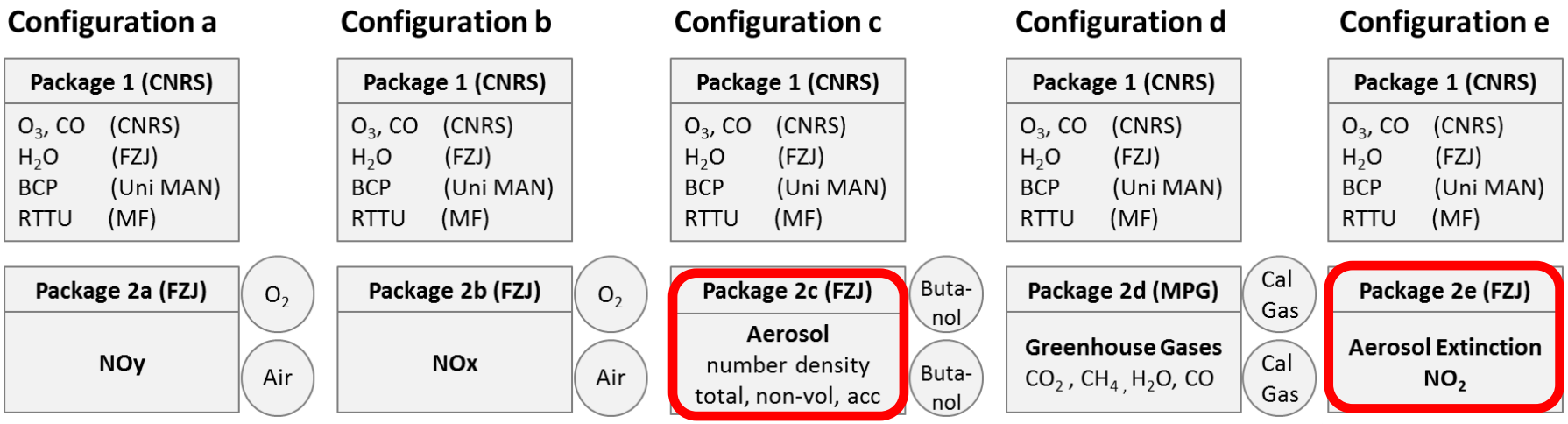
JÜLICH FORSCHUNGSZENTRUM

KIT Karlsruher Institut für Technologie

Meßtechnik für Umweltforschung enviscope GmbH

IAGOS

IAGOS Core Instrumentation



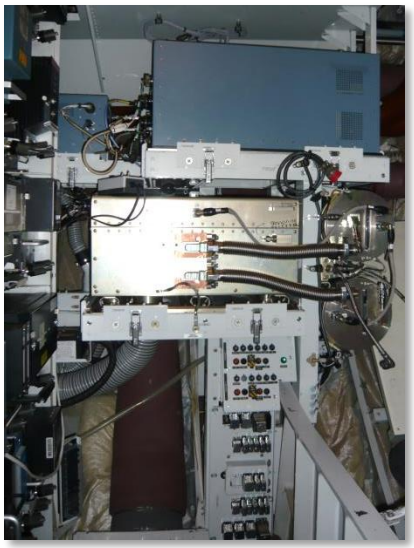
P2e (Air Quality)

- CAPS-Pm_{Ex} (Aerodyne)
- CAPS-NO_2 (Aerodyne)
- Sky OPC (GRIMM type 1.129)

P2c (Basic Aerosol)

- CPC 5.411 (Grimm)
- CPC 5.411 +TD (250°C)
- Sky OPC 1.129

Iagos P2c Aerosol package



IAGOS PIIc installed on board of A340-300

IAGOS Package P2c

Aerosol properties

- particle size distribution (> 250 nm)
- integral number of particles (> 13 nm)
- non-volatile particle cores (> 13 nm)

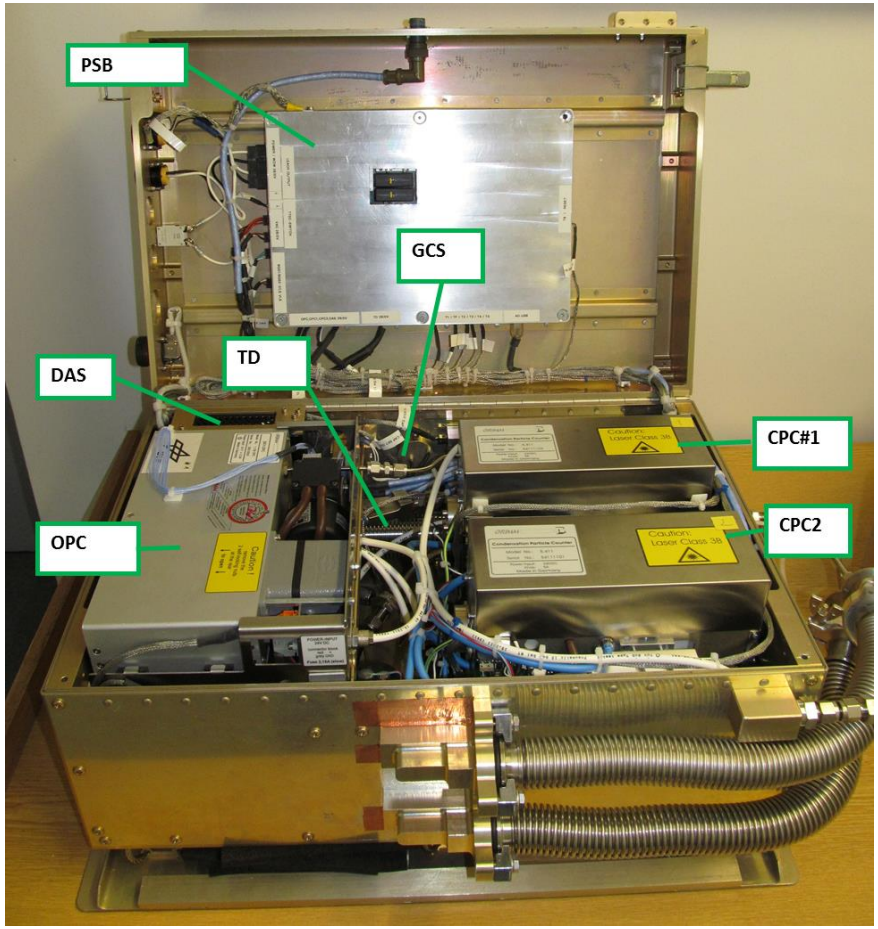
Instrumentation

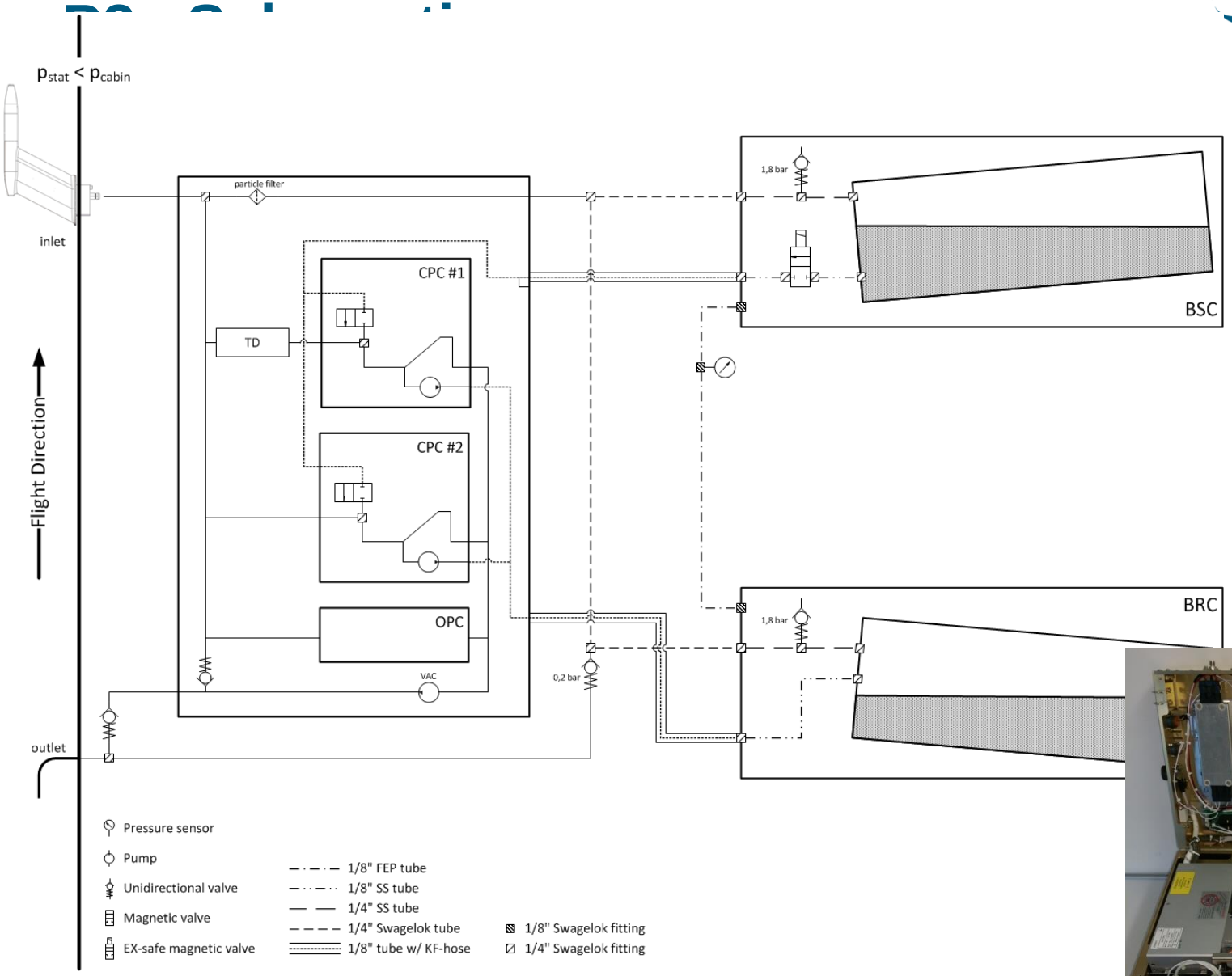
OPC (> 250 nm)

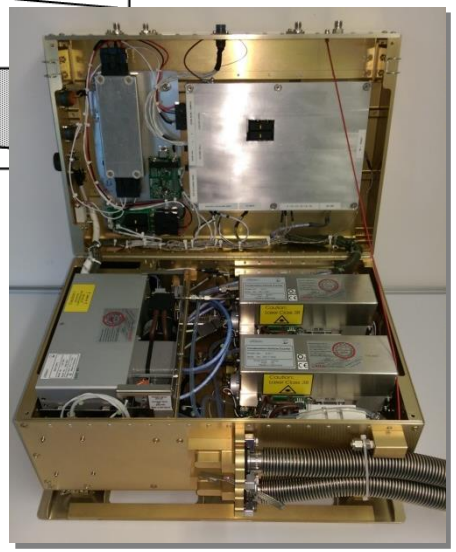
- particles available for the formation of water and ice clouds
- volcanic ash & mineral dust particles

Two CPC + Thermodenuder

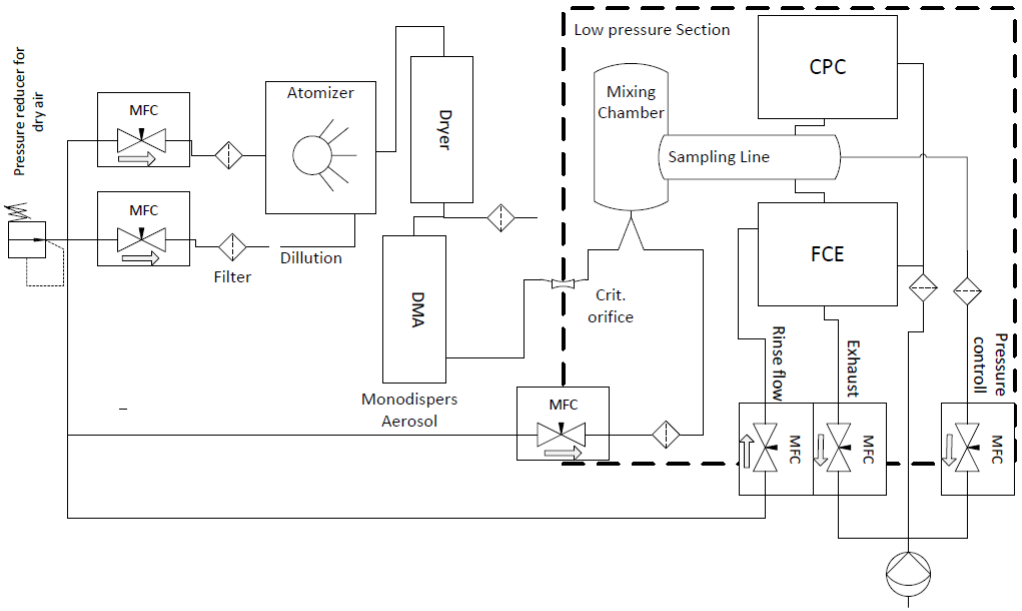
- non-volatile particles, e.g.:
  soot particles emitted by ship
  biomass burning products
- gas-to-particle conversion
  and particle nucleation

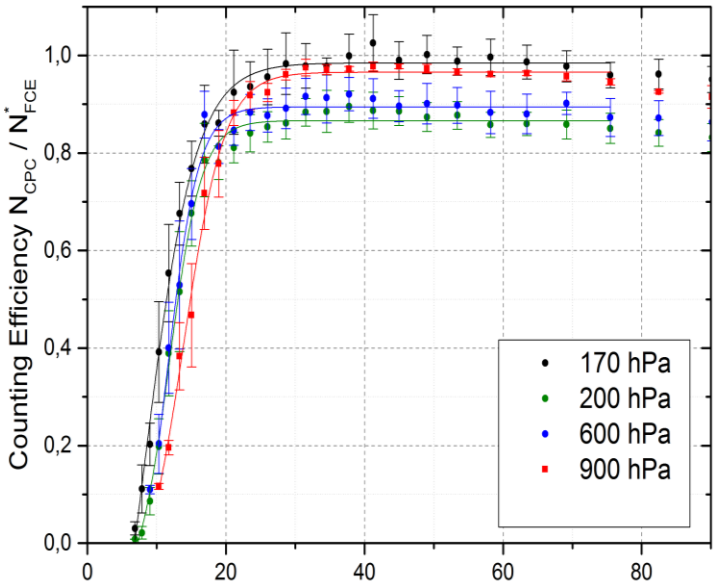






P2C Characterization and SOPs

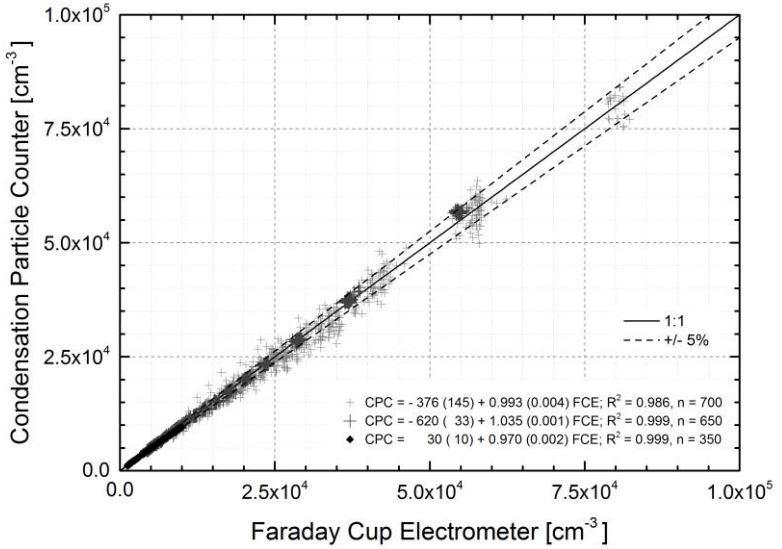


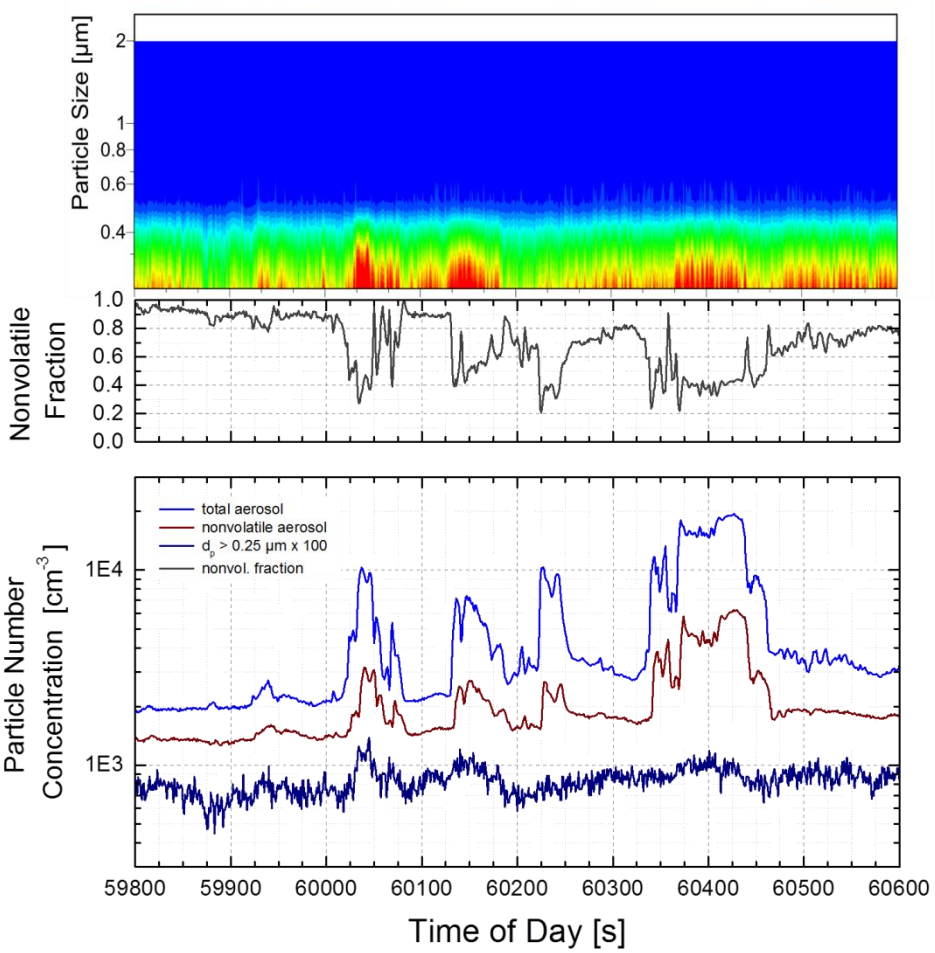


Tellus MOZAIC Special issue 2016)

The IAGOS-CORE aerosol package: Instrument design, operation and performance for continuous measurement aborad in-service aircraft

By U . B u n d k e[1], M. Berg[1], N.Houben[1], A. Ibrahim[2], M. Fiebig[3], F. Tettich[4],C. Klaus[5], H. Franke[5], and A. Petzold[1]





Time series of aerosol properties during crossings of the MS Thetis ship plume.

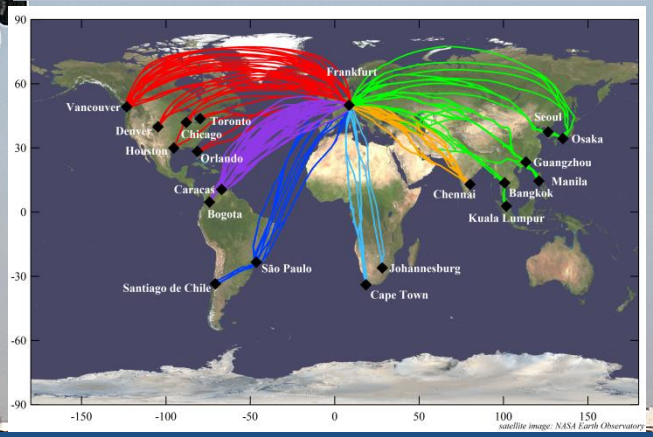
Measurements

IAGOS CARIBIC

Lufthansa Airbus A340-600

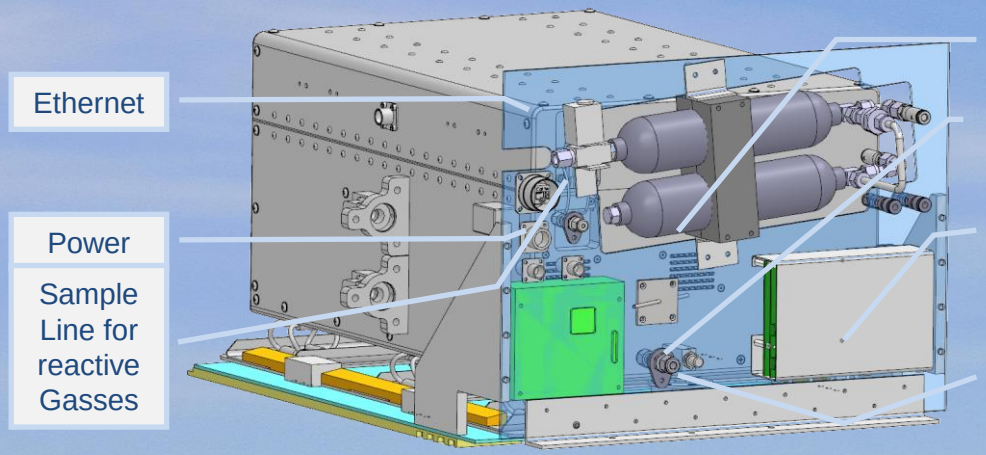
- Container 1.6 t
- 19 Instruments, ~100 trace substances (VOC, CFC , H_2 isotopes, GHG) and Aerosol-parameters, Aerosol chemical composition
- 4 flights per Month
- Operational since 1997 – 2002

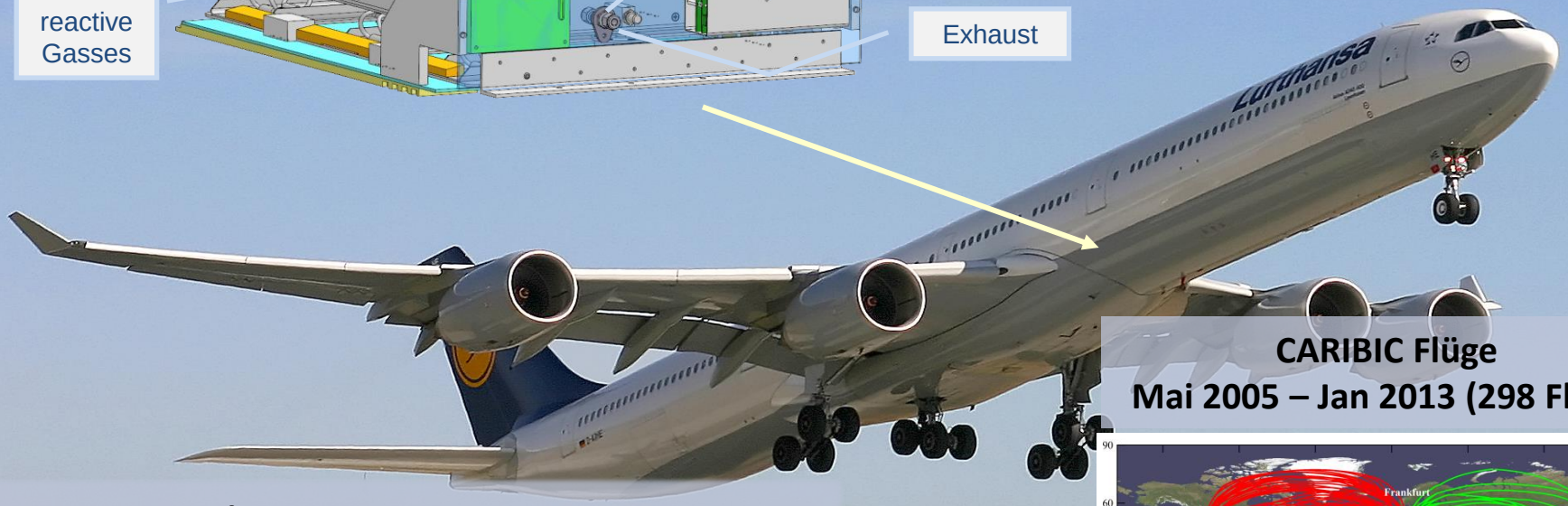
CARIBIC Flights
May 2005 – Jan 2013 (298 Flüge)



IAGOS CARIBIC

Core slot interface





CARIBIC Flüge
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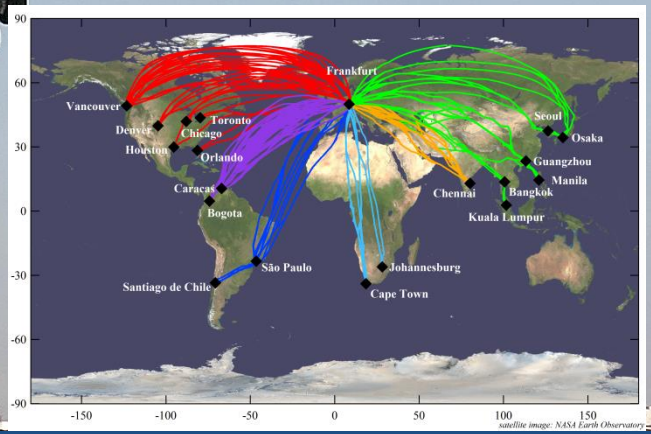
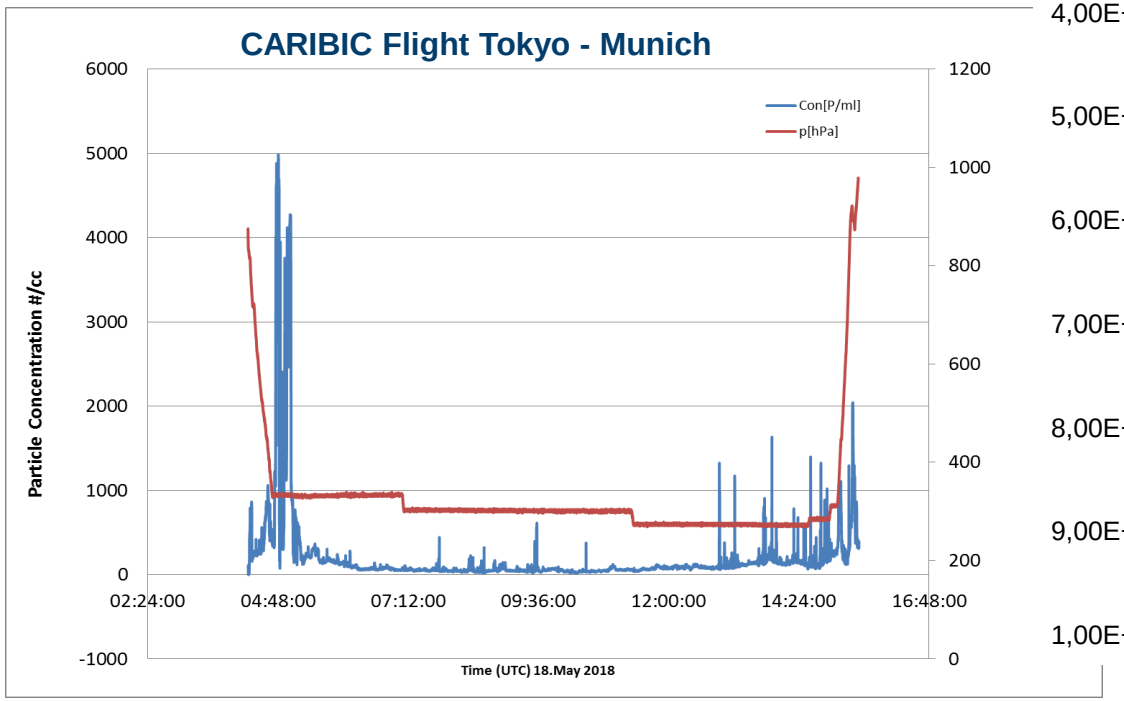
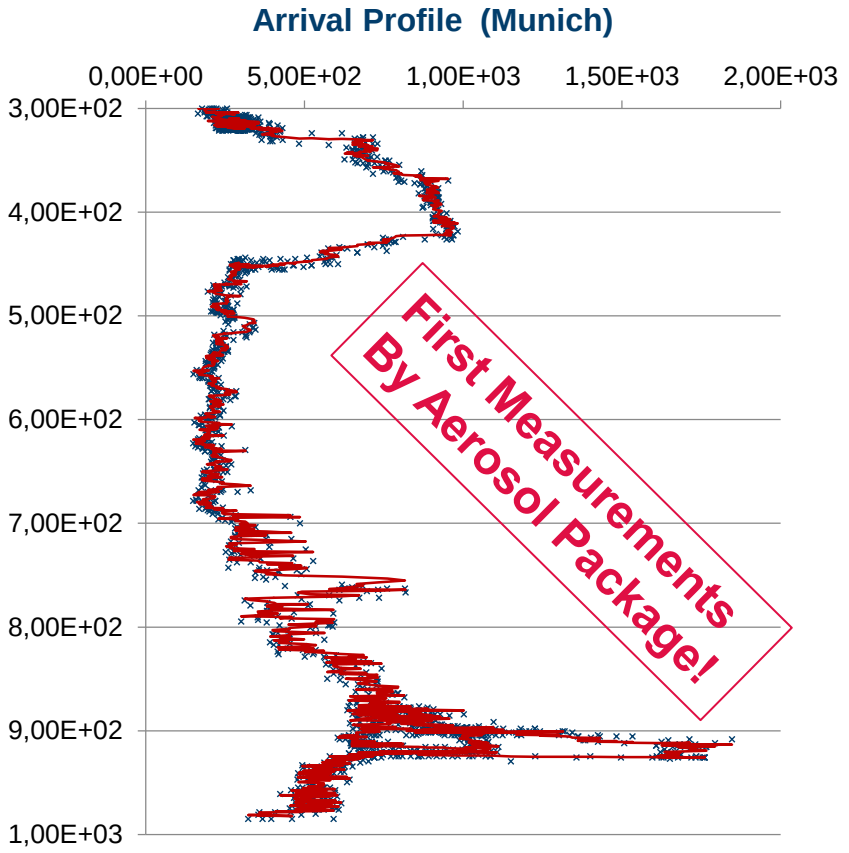


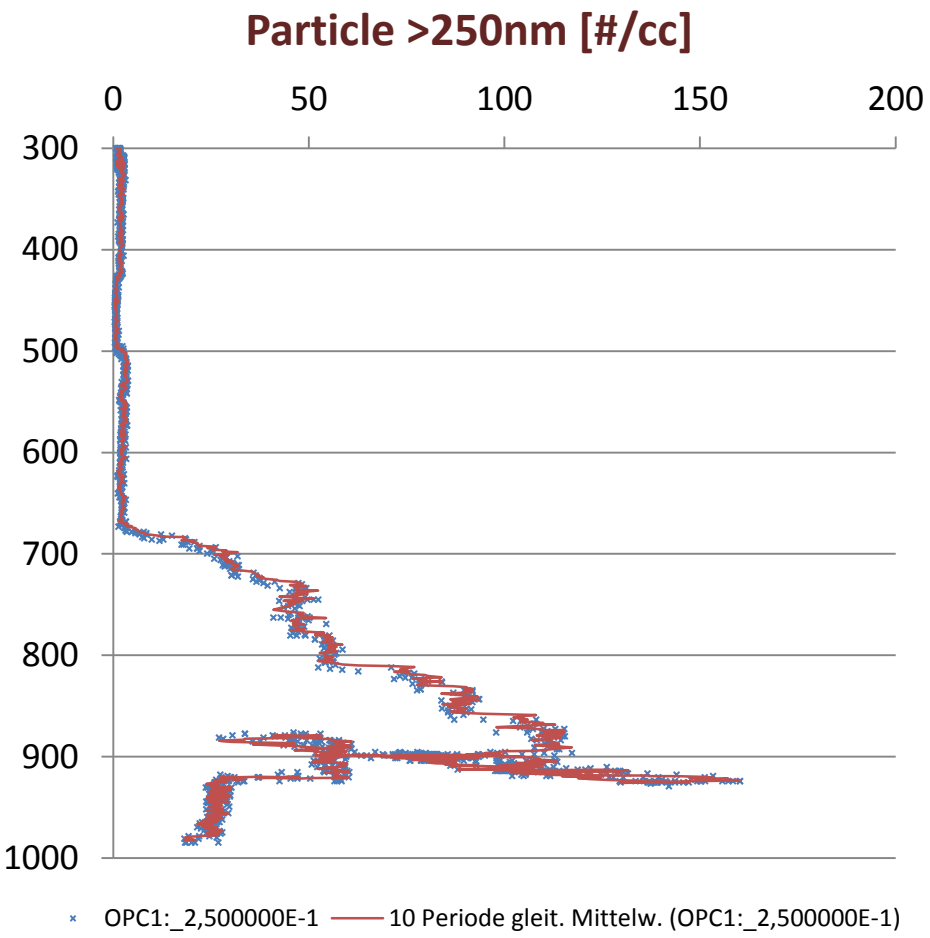
- **Closure, QA/QC studies.**
- **Test platform for new instrument revisions and future P2-instruments until they are certified under the much more restrictive rules for IAGOS CORE operation.**

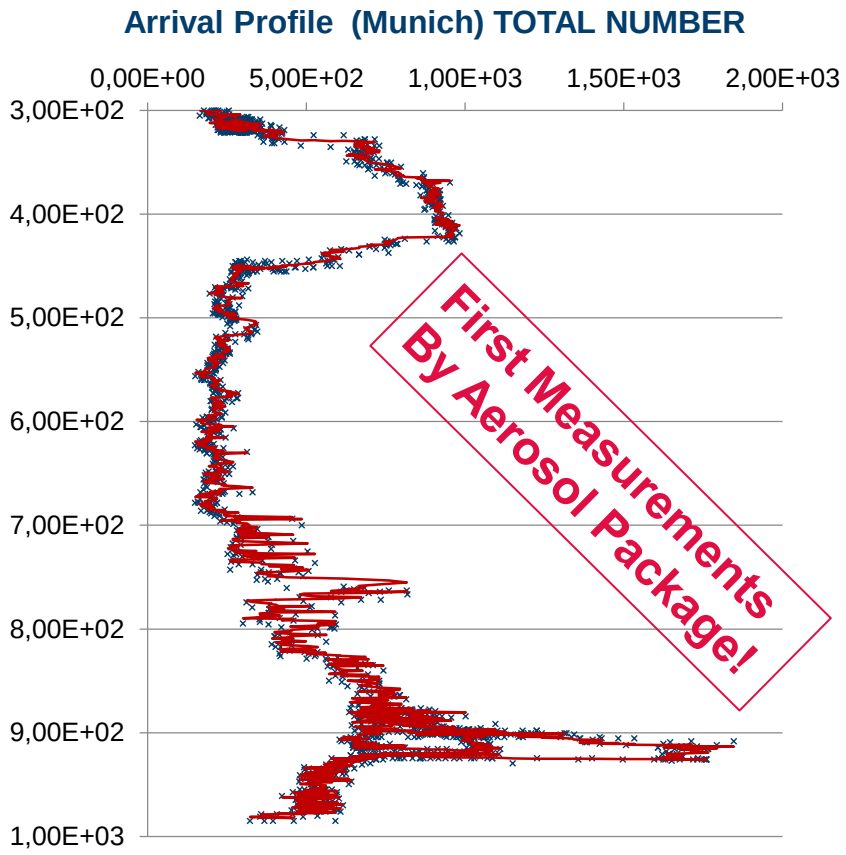
Monitoring Aerosol properties (P2c, P2e)





!! Preliminary Data !!





GOOD NEWS!

Caribic

- First „real“ data with interesting features
- P2c operates as expected
- We are still in the „implementation phase“
  - Optimize maintenance procedures
  - Optimize butanol consumption
- CARIBIC Core slot is operational

Certification status (coordinated by enviscope)

- Apsis works on SSA (No news up to now…)
- DDP will be adapted on SSA findings