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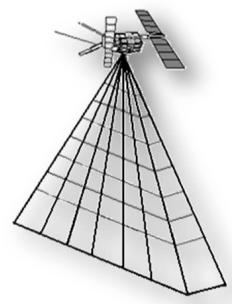
# CHEOPS-5p: Validation of Copernicus HEight-resolved Ozone data Products from Sentinel-5p TROPOMI using global sonde and lidar networks



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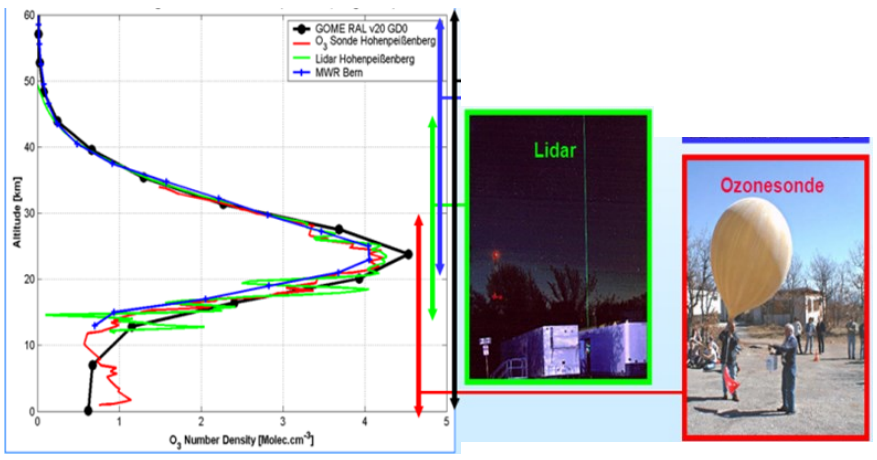
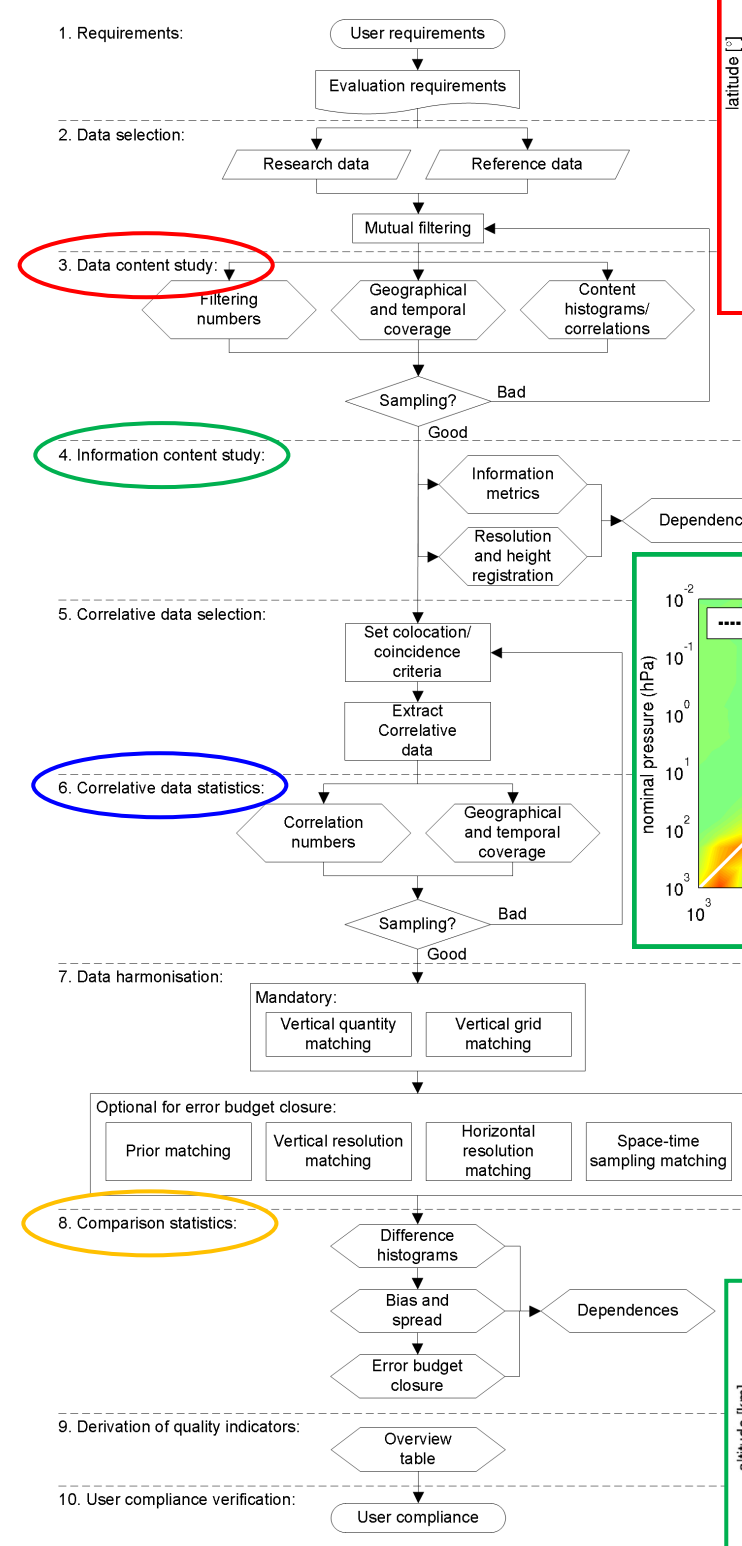
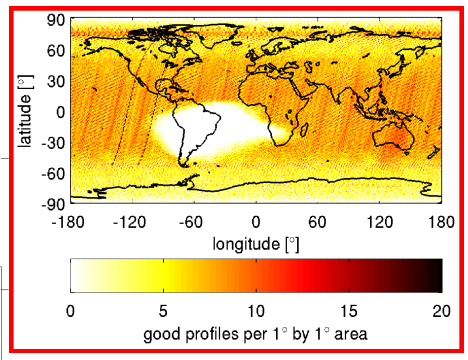
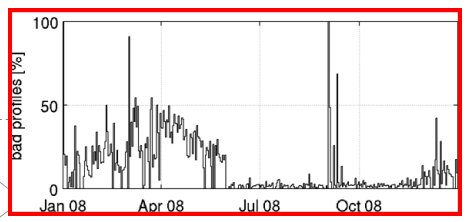
## AT A GLANCE

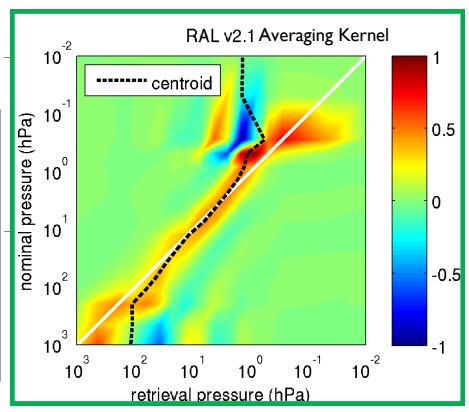
- Independent and traceable quality assessment of TROPOMI height-resolved L2 data products on atmospheric ozone
- Verification of data compliance with mission data requirements
- Validation data sources: WMO GAW contributing networks
  - Ozonesonde and lidar data: operationally mirrored and QC
  - Additional tropospheric ozone lidars
  - Available not later than one year after acquisition
  - Established case-by-case faster deliveries
- Methods: Multi-TASTE, GEOmon, CCI-Ozone, CEOS, QA4ECV
- Implementation: Versatile end-to-end QA/Validation system
- Operationalisation for Copernicus Sentinel-4/5(p)

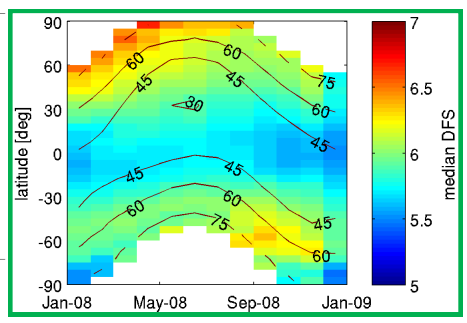


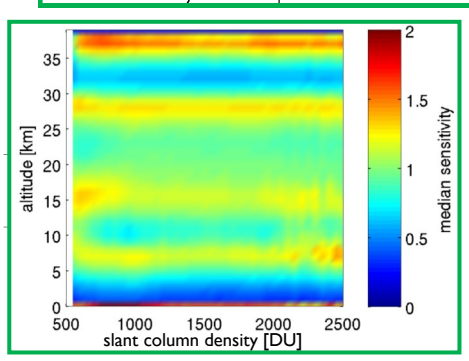



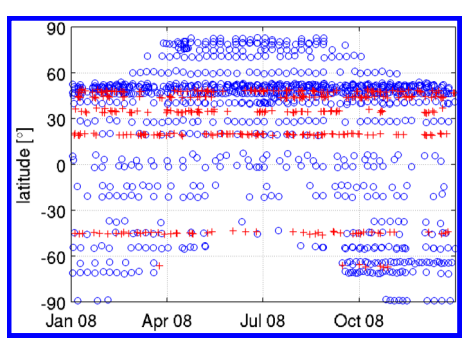



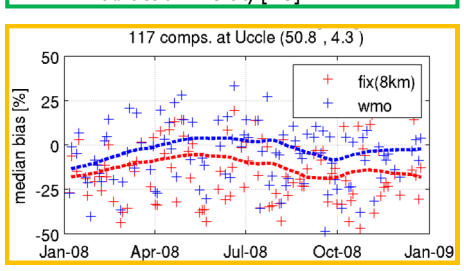



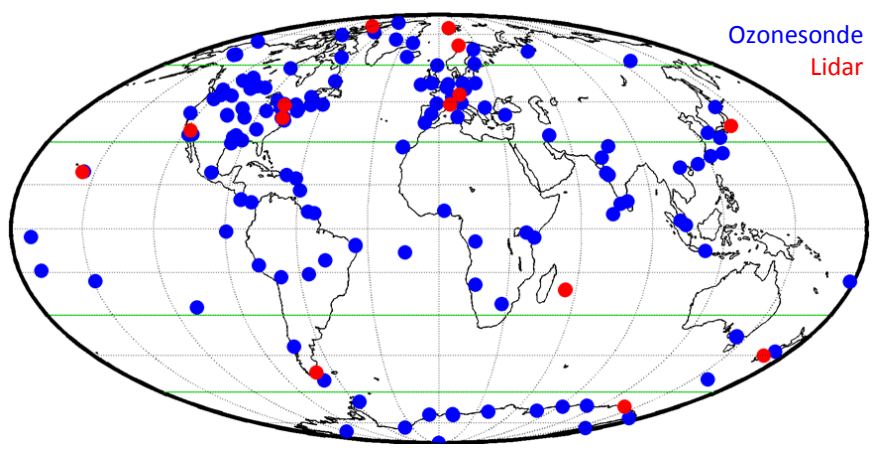




## VALIDATION CHALLENGES

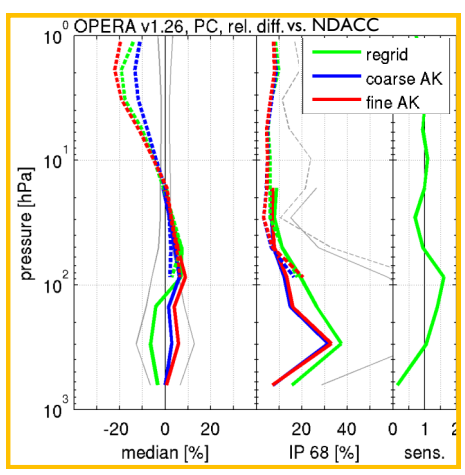
1. Nadir ozone profile validation is not straightforward, due to the complexity and variety of retrieval approaches, wide and tortuous vertical smoothing, large natural variability of ozone, etc.
2. Several Quality Indicators (QI) needed by users cannot be accessed by classical comparisons with reference measurements.

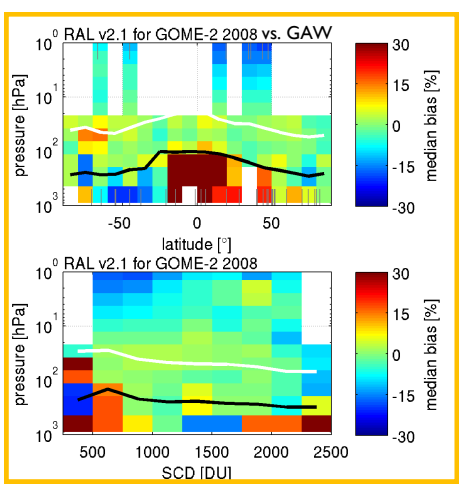
## QA/VALIDATION SYSTEM

- Full traceability of data products, data manipulations, and associated uncertainties, cf. QA4EO framework and EU FP7 QA4ECV implementation
- Unbroken QA / Validation chain yielding Quality Indicators enabling users to assess fitness-for-purpose of the data, as developed in ESA Multi-TASTE and CCI Ozone [Keppens et al., AMT, 2015]
- Operationalisation of QA system to approach data and mission requirements of Copernicus Sentinel-4/5(p) [Keppens et al., ATMOS 2015]

## TEAM

- QA/Validation scientists at BIRA-IASB
- Linkage with S5P MPC Validation Data Analysis Facility (VDAF)
- Reference measurement networks representatives
- Linkage with other GAW-based consortia and O3M-SAF

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