



# Vertical Harmonization of Satellite Ozone Data Records for the IGAC Tropospheric Ozone Assessment Report (TOAR-II)

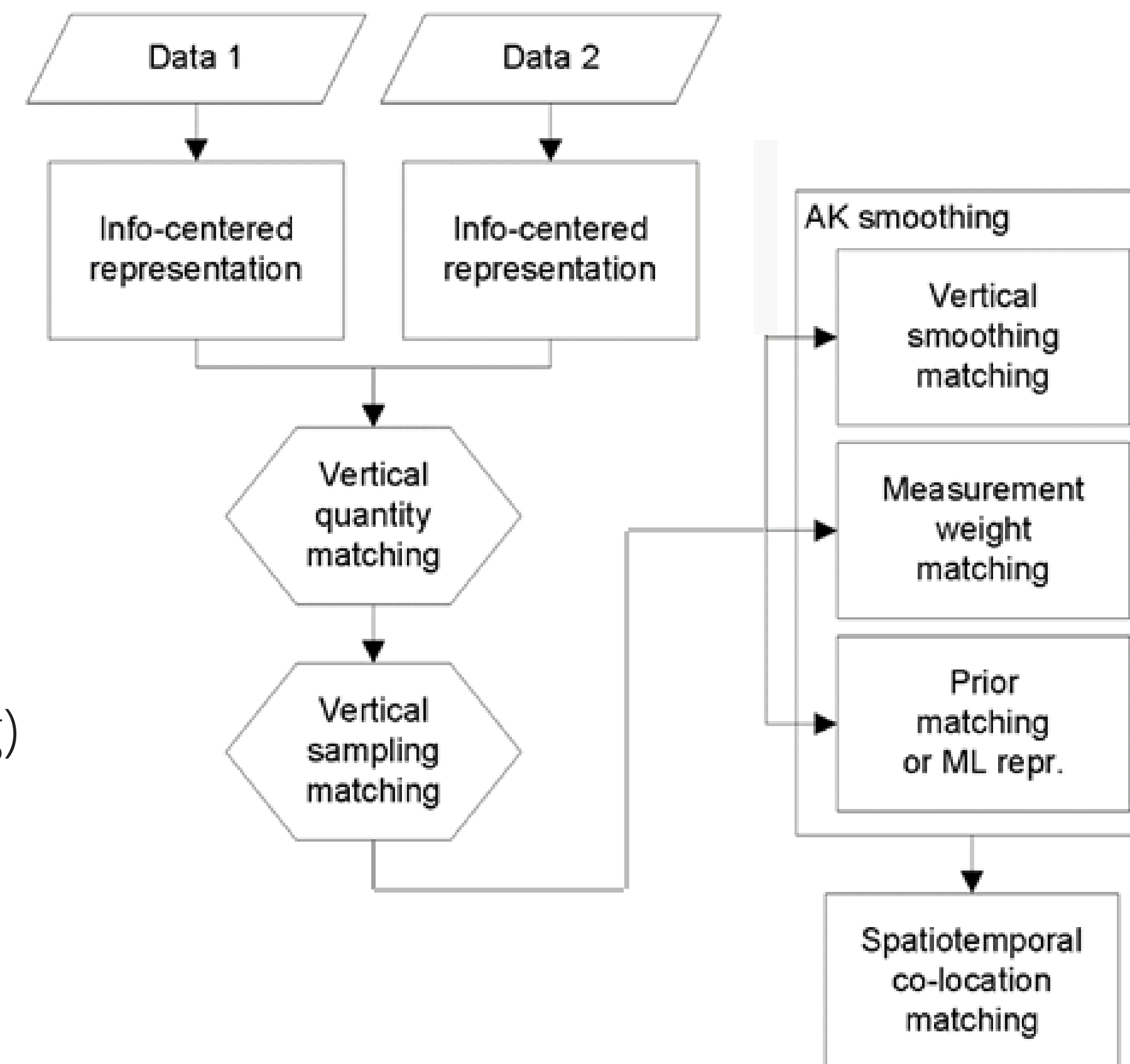
Arno Keppens (arno.keppens@aeronomie.be), Daan Hubert, Jean-Christopher Lambert (BIRA-IASB); Klaus-Peter Heue, Diego Loyola (DLR); Pierre-François Coheur, Catherine Wespes (ULB); Roeland Van Malderen (KMI-IRM)

## Rationale:

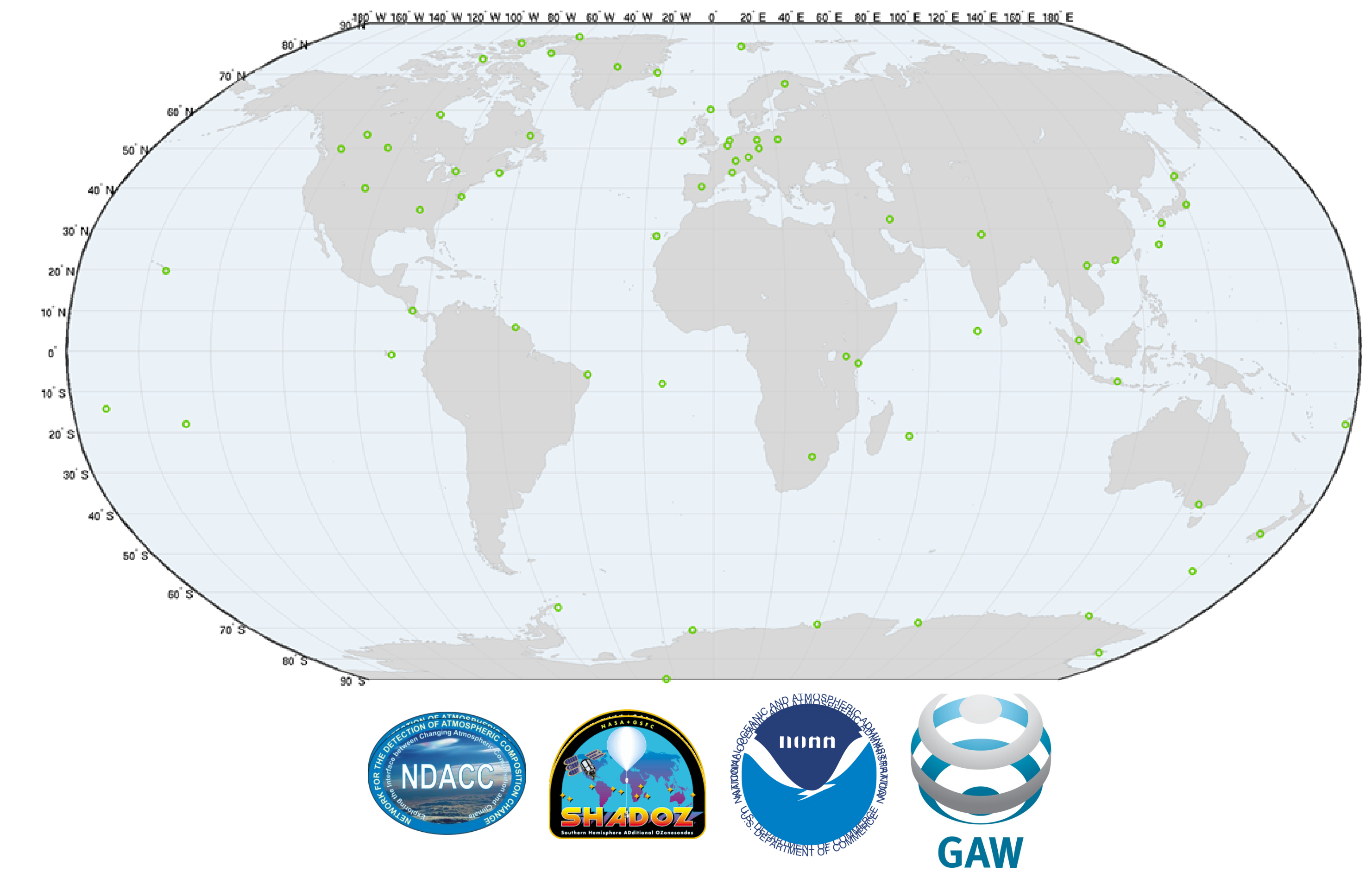
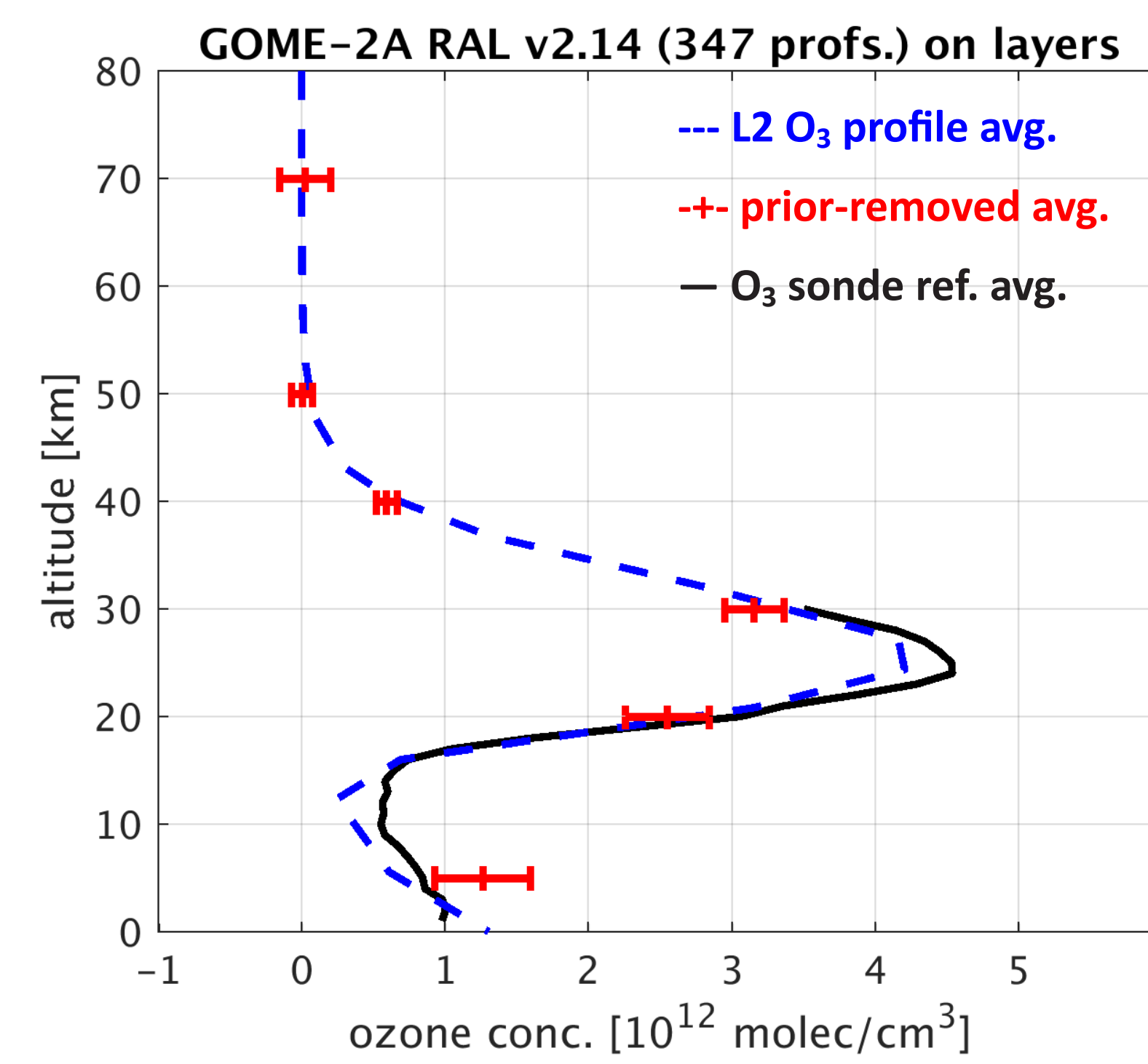
CEOS activity VC-20-01 "Tropospheric ozone dataset validation and harmonization" in response to TOAR-II needs, thus addressing

- wide variety of tropospheric ozone levels and trends reported by satellites,
  - differences in vertical sensitivity and sampling, incl. tropopause definition,
  - changes in bias over time
- by application of
- satellite data harmonization tools (smoothing, sampling)
  - prior info replacement / removal, see [approach](#)
  - common validation methodology to quantify remaining discrepancies, see [first results](#)

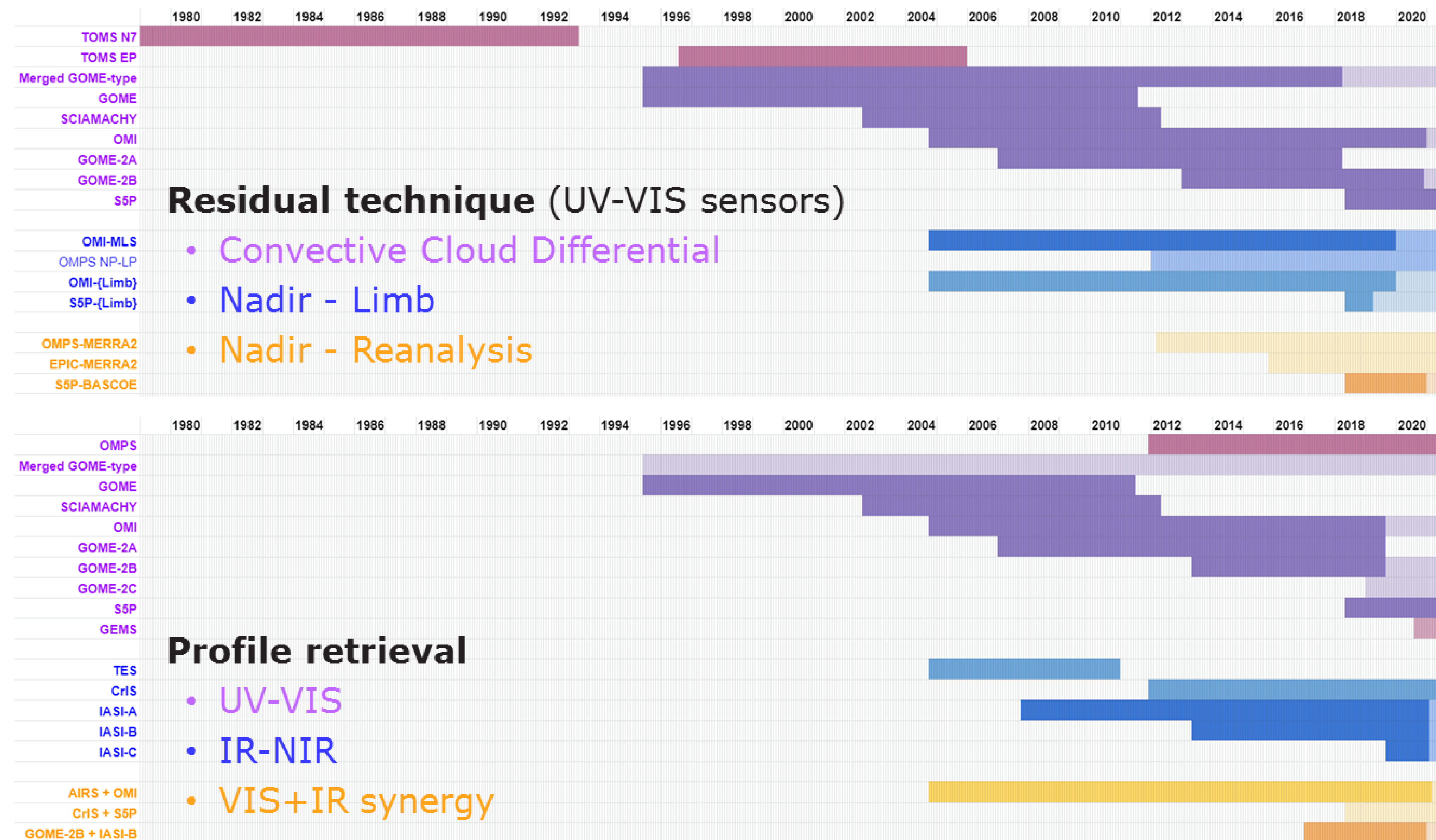
## Harmonization approach:



## Ozonesonde sites:

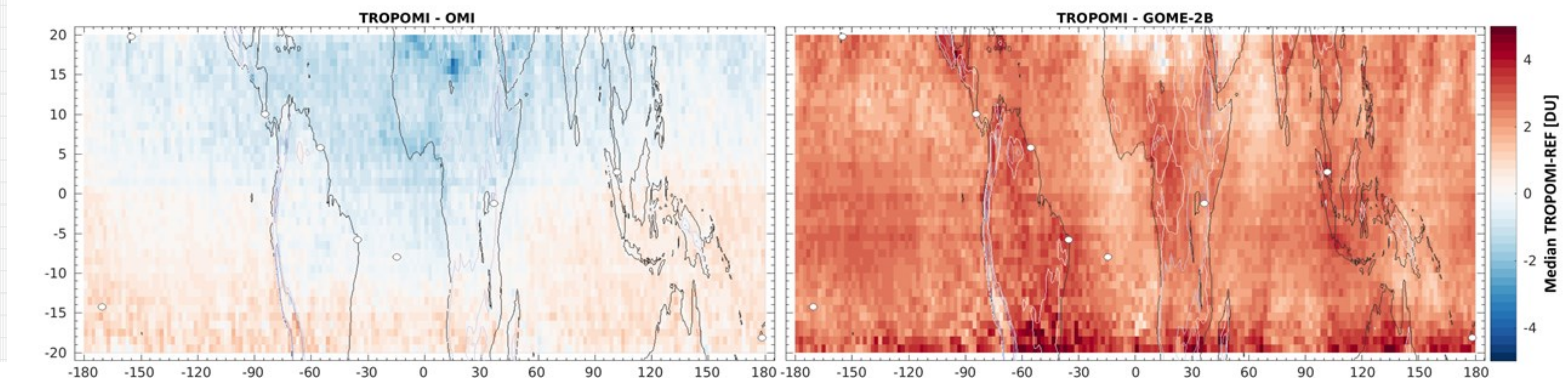


## Satellite data under consideration:

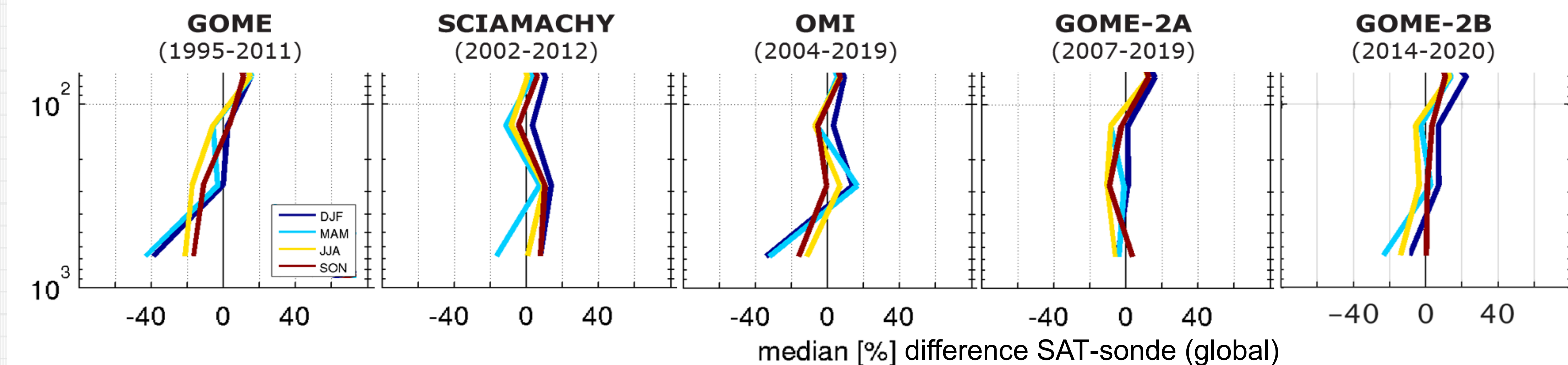


## First results:

### Residual technique (UV-VIS sensors)



### Profile retrieval



## References:

Keppens, et al. Harmonization and comparison of vertically resolved atmospheric state observations: methods, effects, and uncertainty budget, AMT, 2019.  
 Hubert, et al. TROPOMI tropospheric ozone column data: Geophysical assessment and comparison to ozonesondes, GOME-2B and OMI, AMTD, 2020.

