→ ATMOS 2015
Advances in Atmospheric Science and Applications

TROPOMI's CO retrieval code for the Sentinel 5 Precursor mission tested on 10 years of SCIAMACHY's 2.3 µm measurements

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Netherlands Institute for Space Research (SRON)

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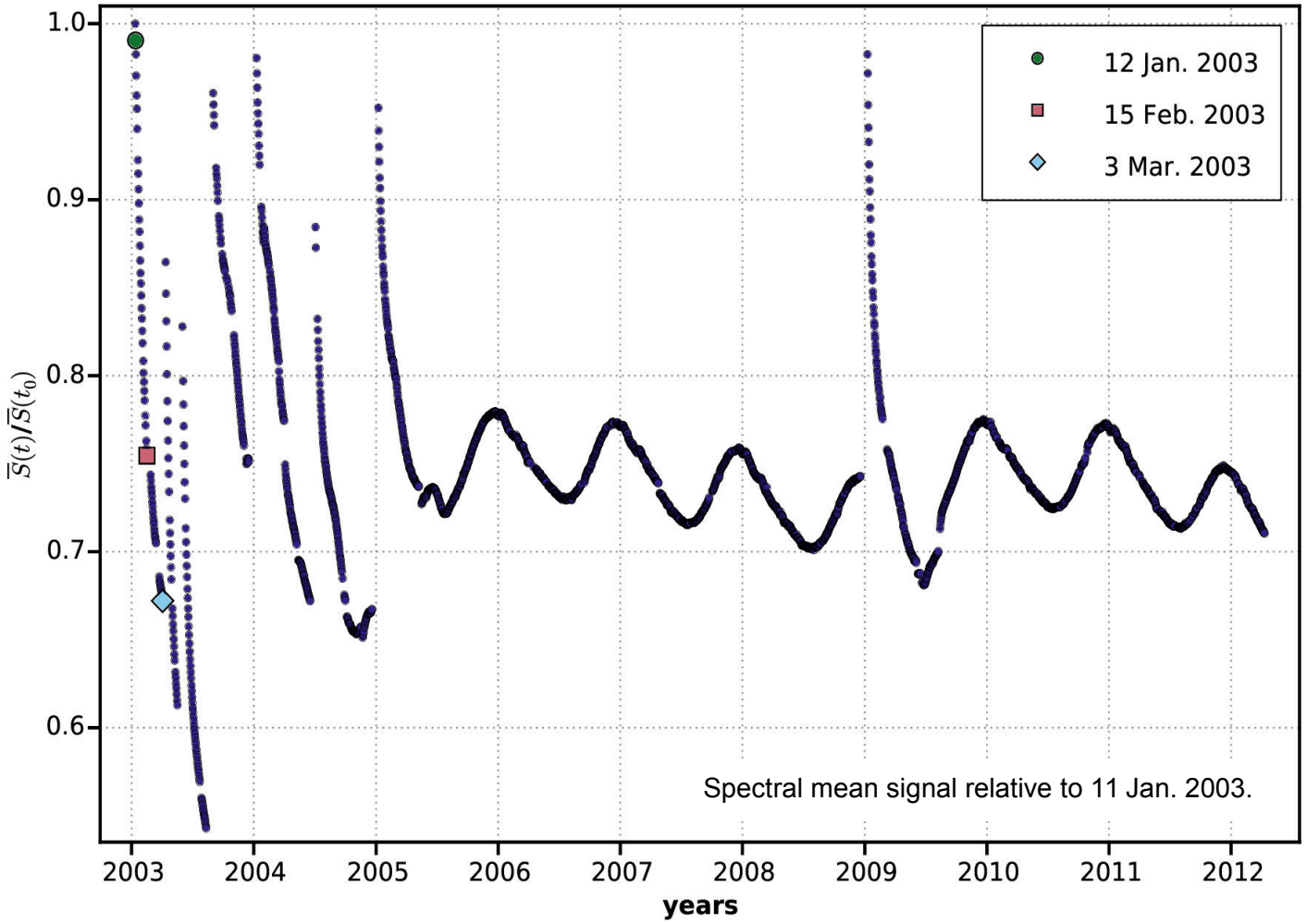
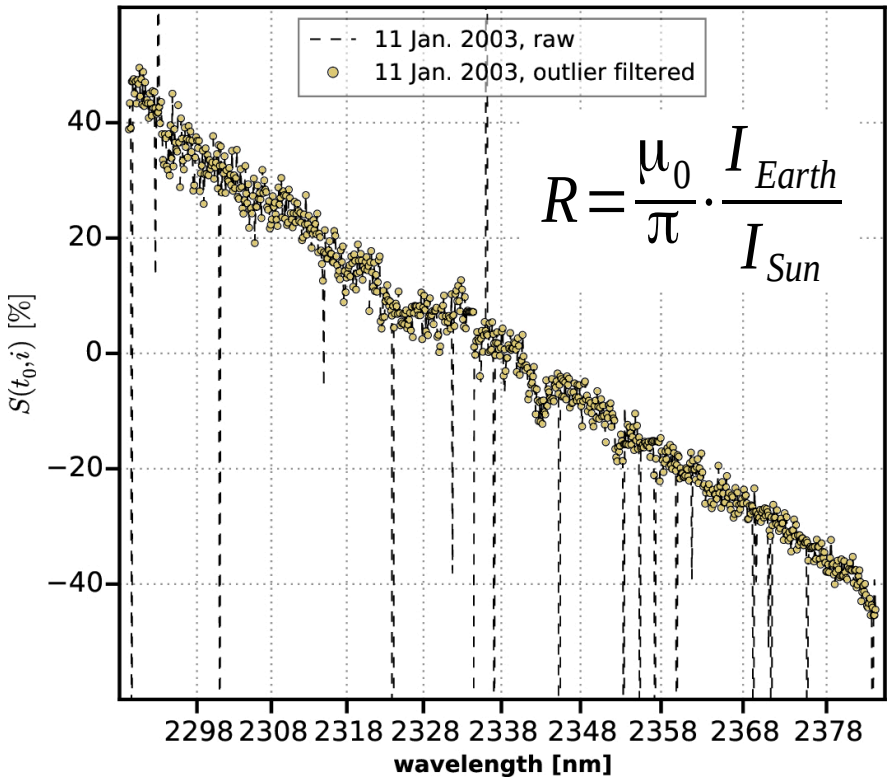
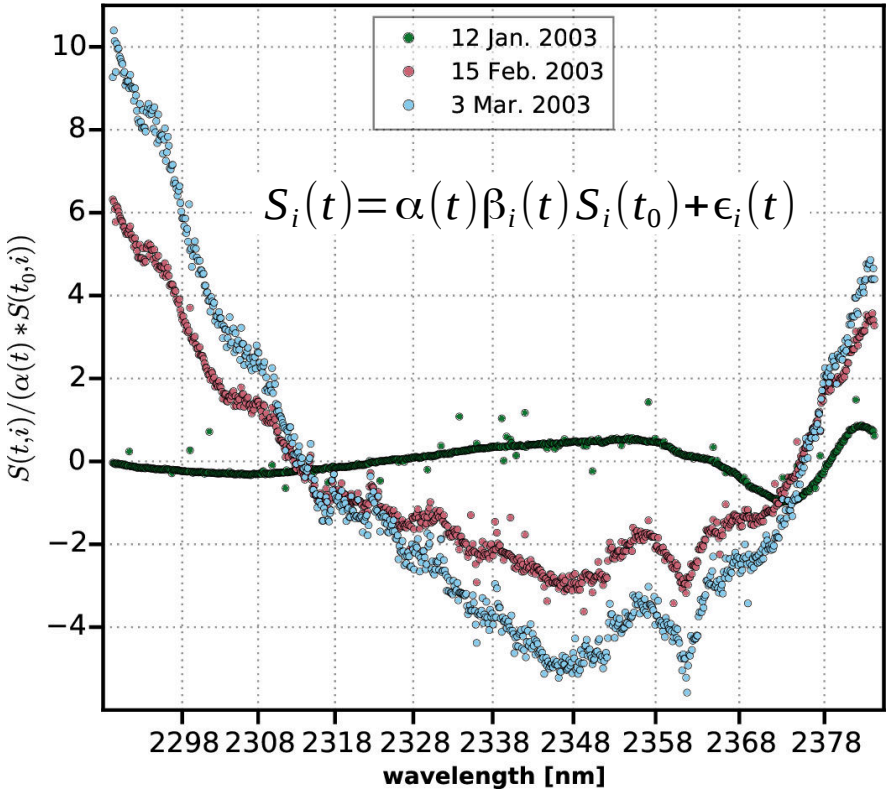
European Space Agency

SCIAMACHY's daily sun measurements

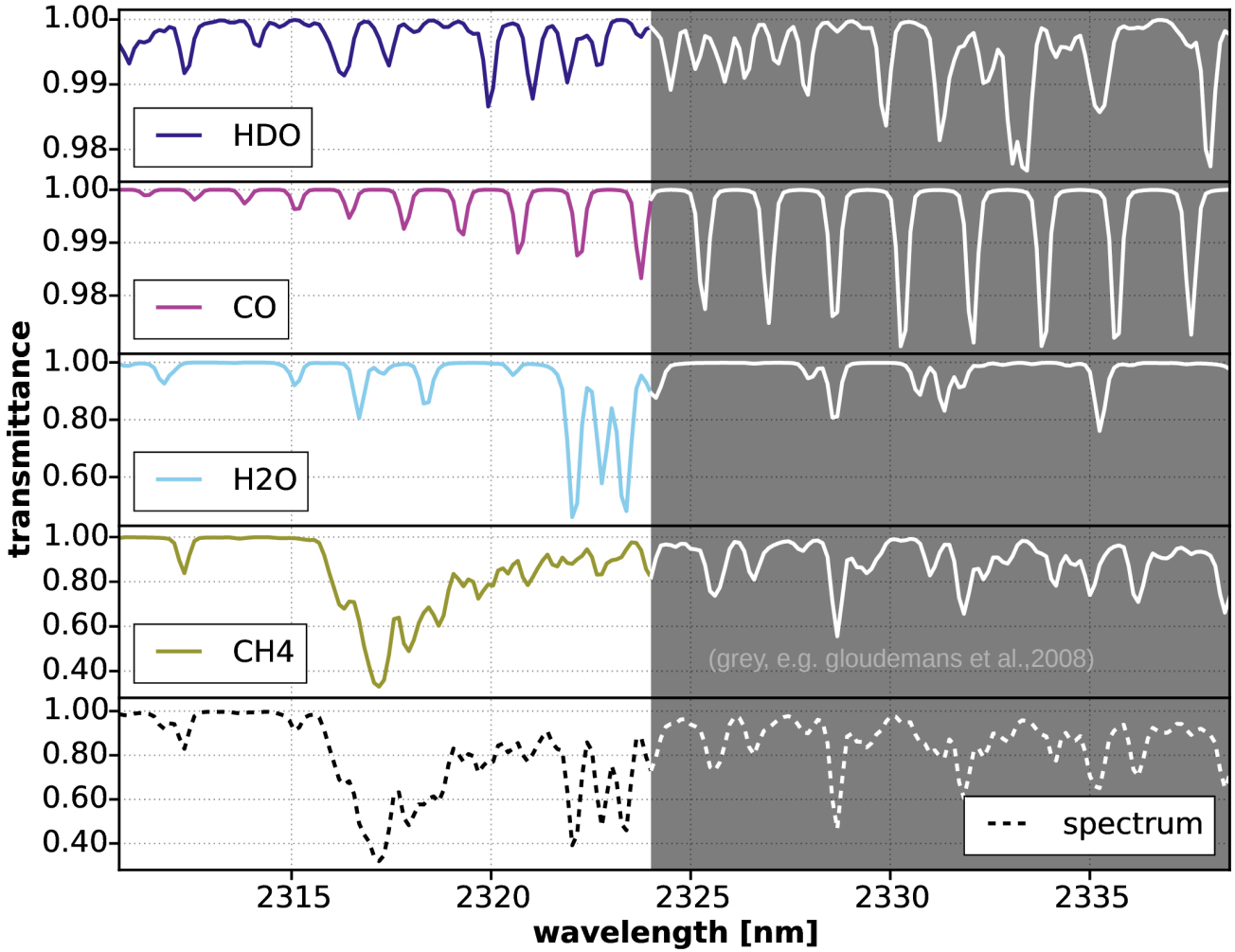


The need for a reflectance retrieval



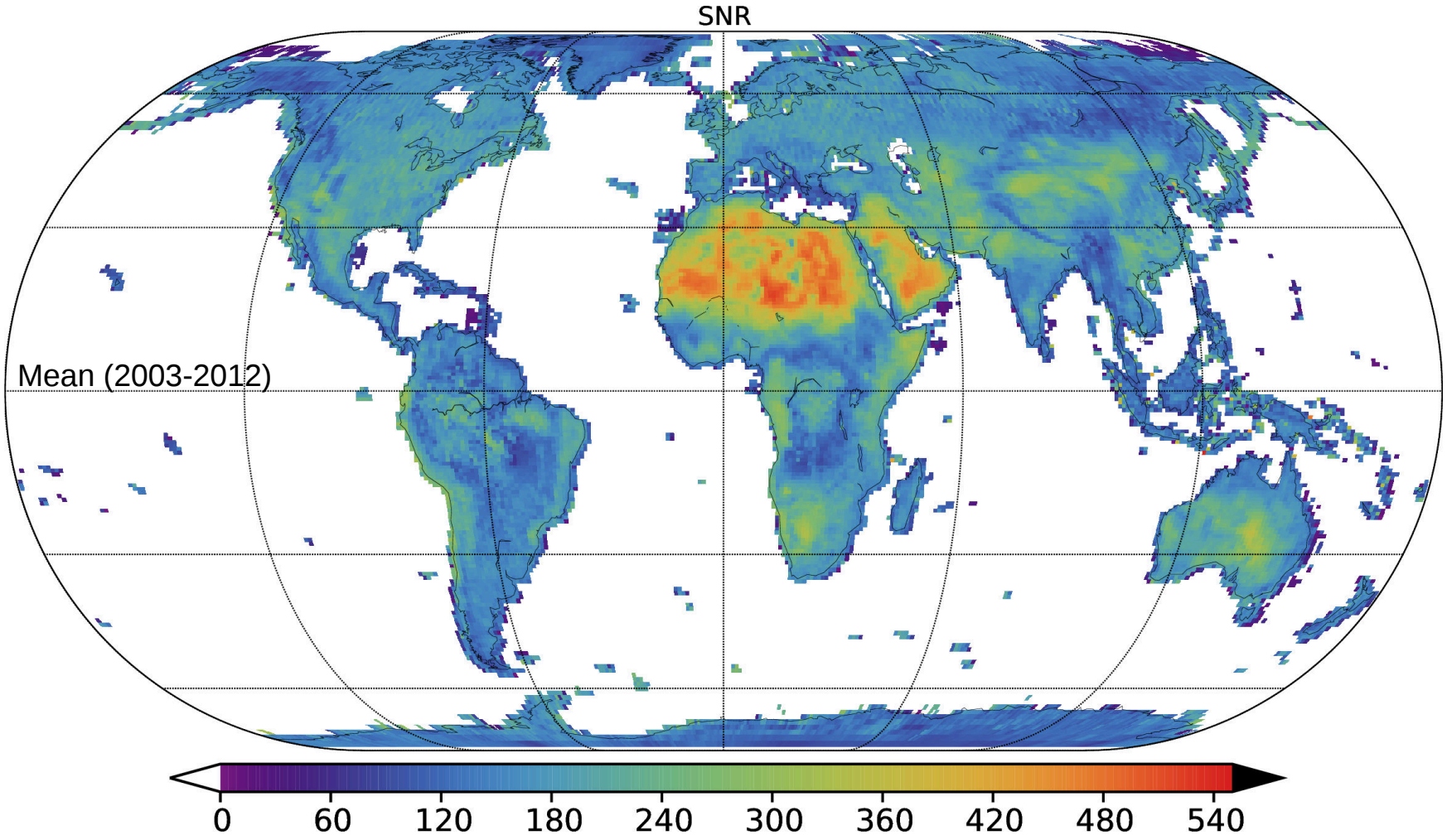


A wider CO retrieval window

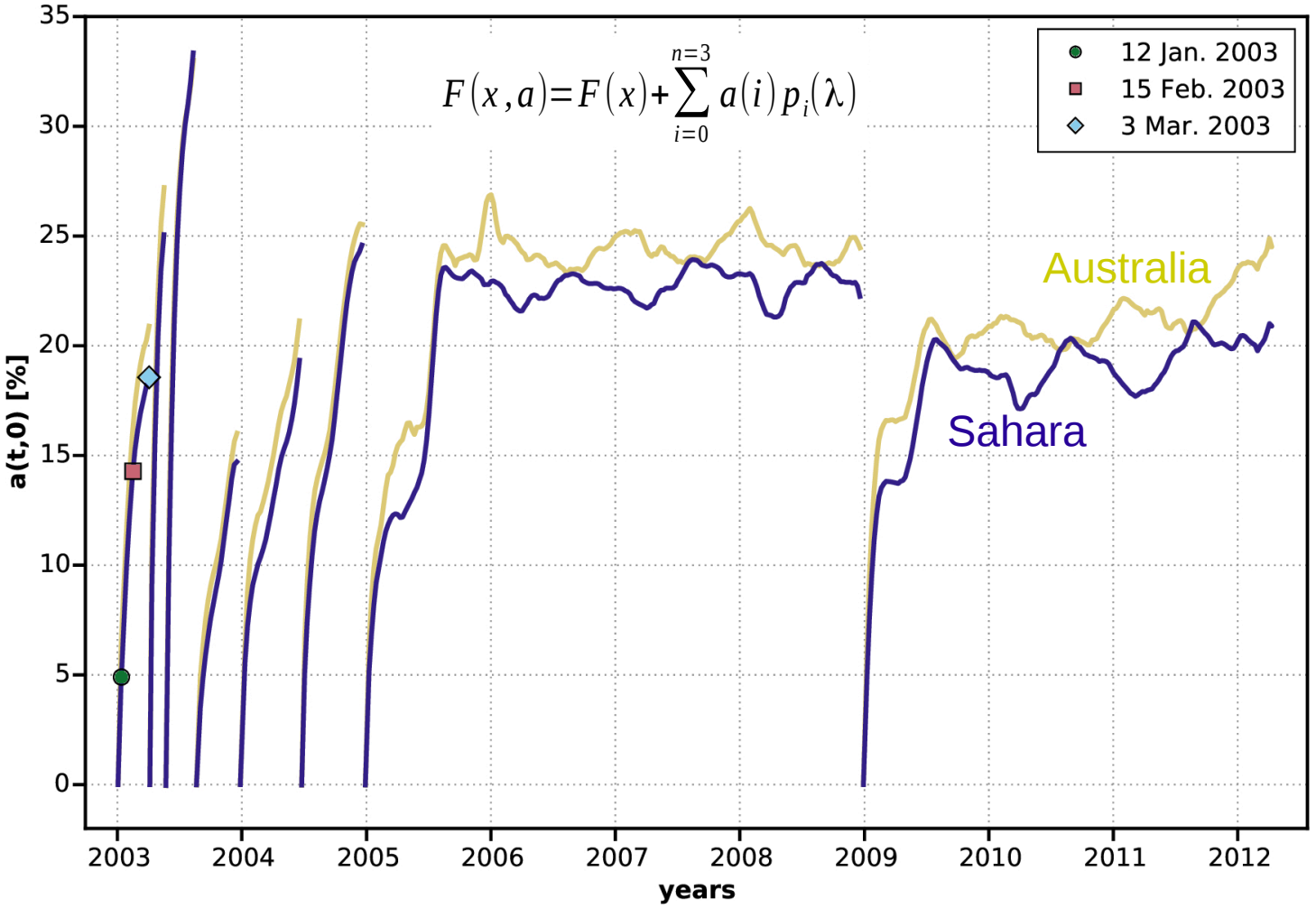


SRON Netherlands Institute for Space Research

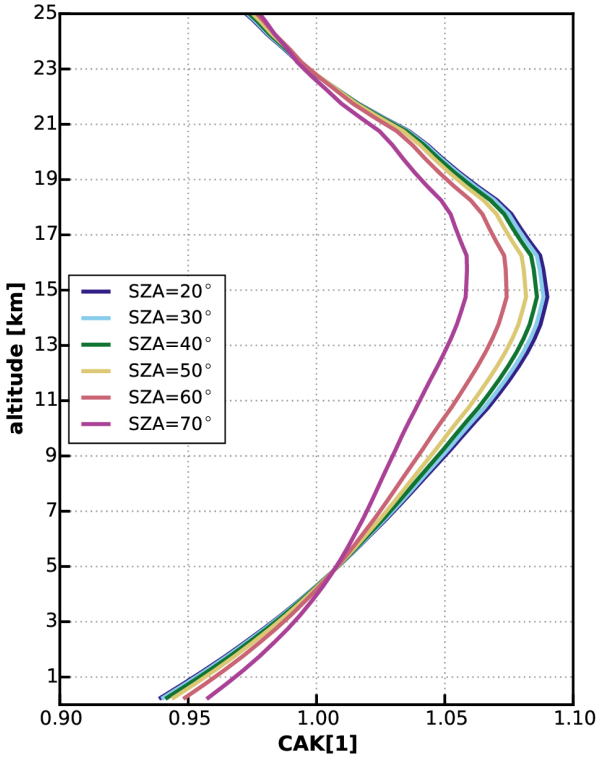
Signal to noise of SCIAMACHY spectra

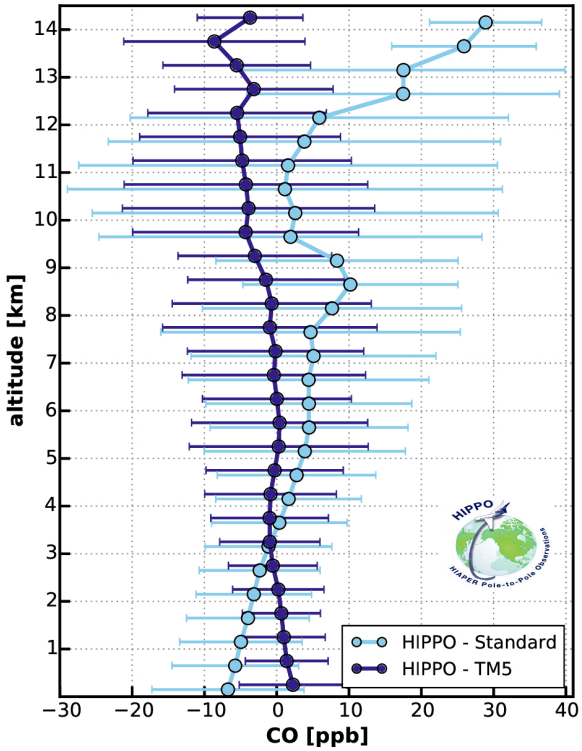


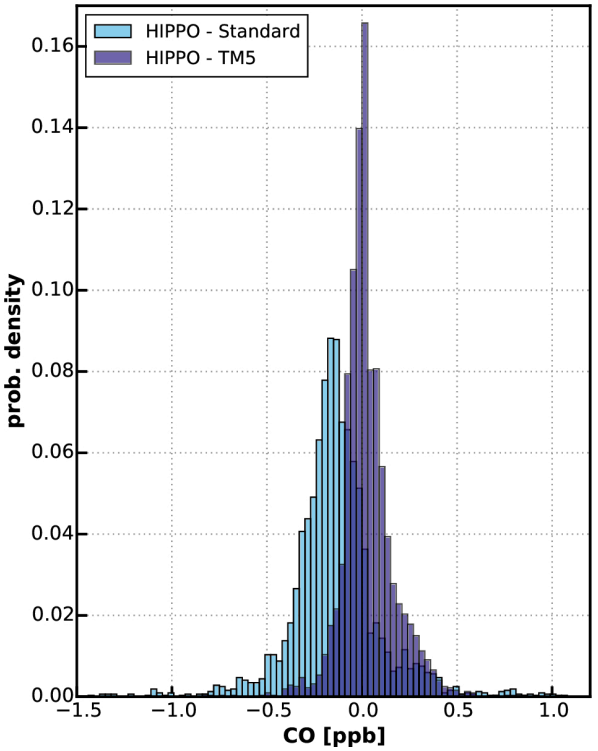
Radiometric offset correction



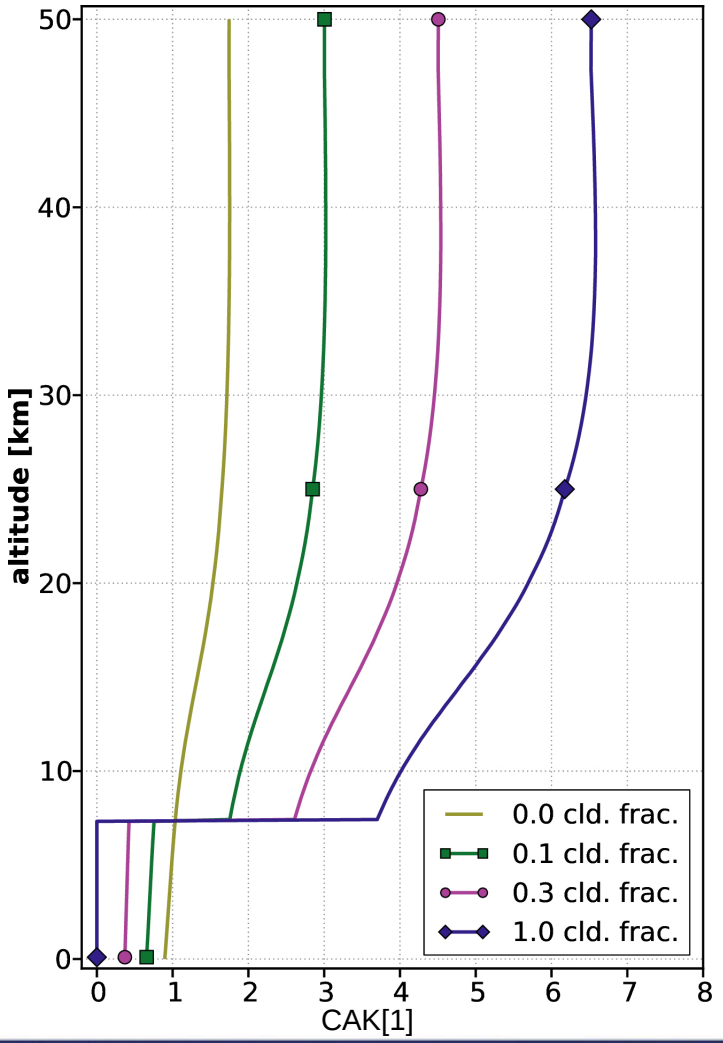
Error of clear sky retrievals

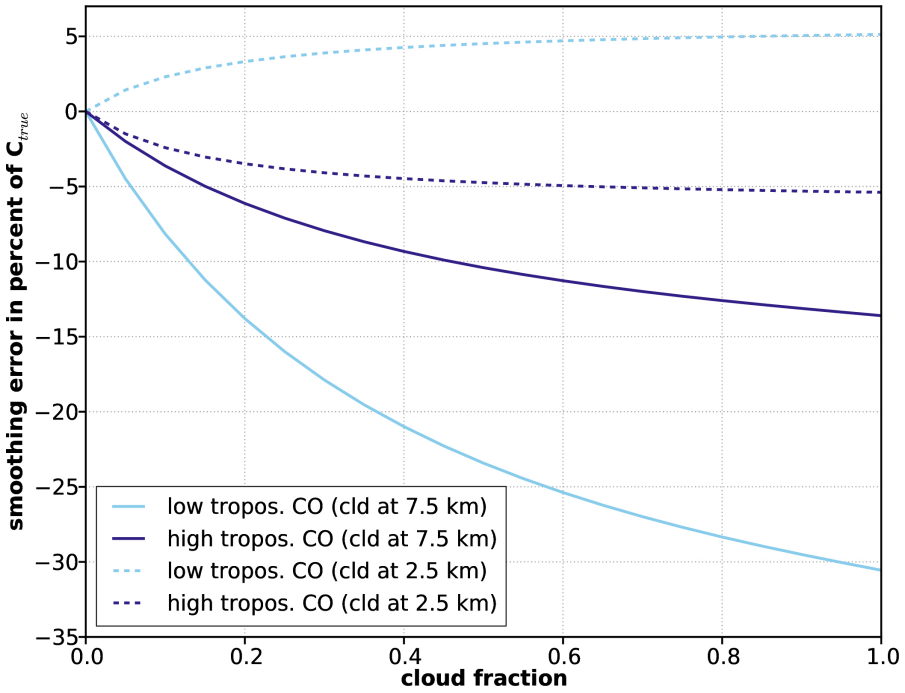






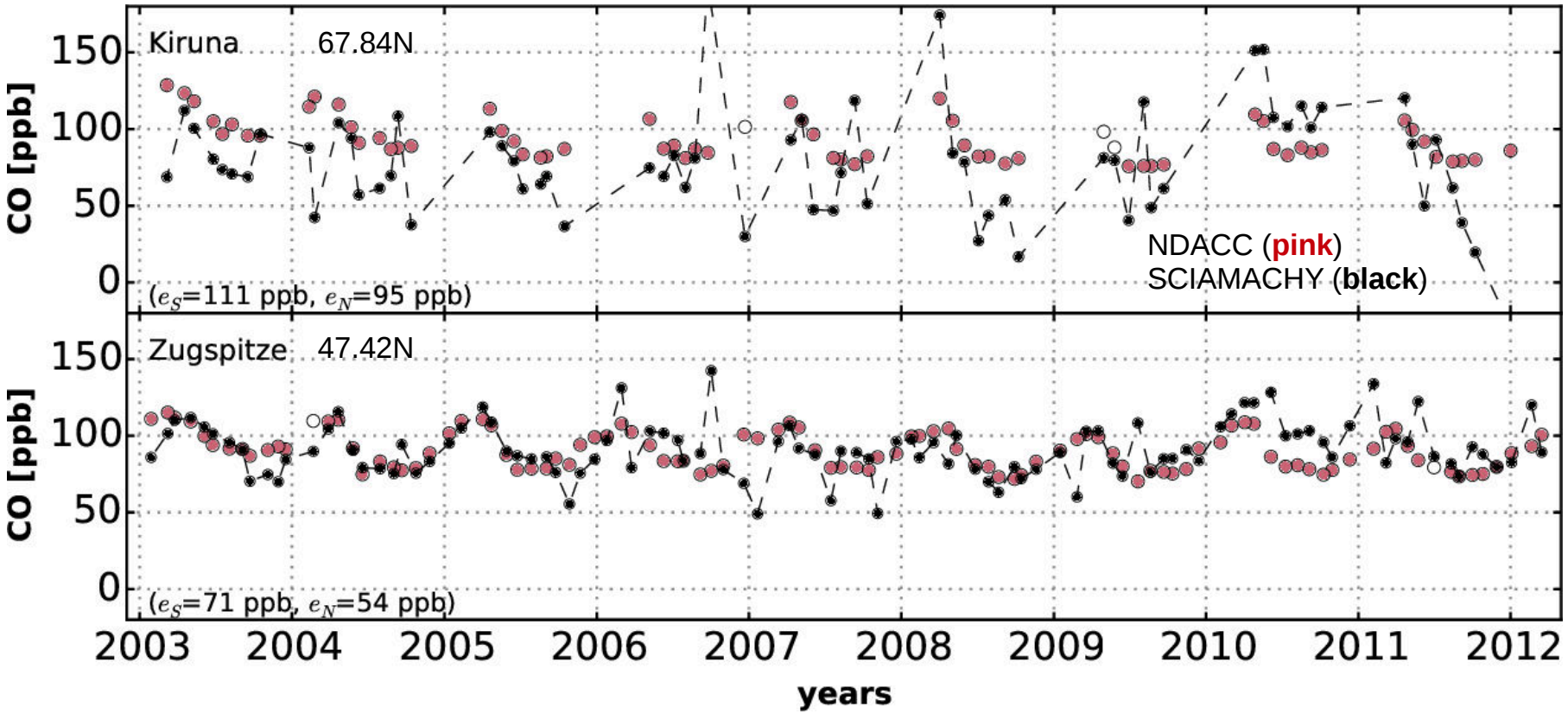
Error of cloud contaminated retrievals



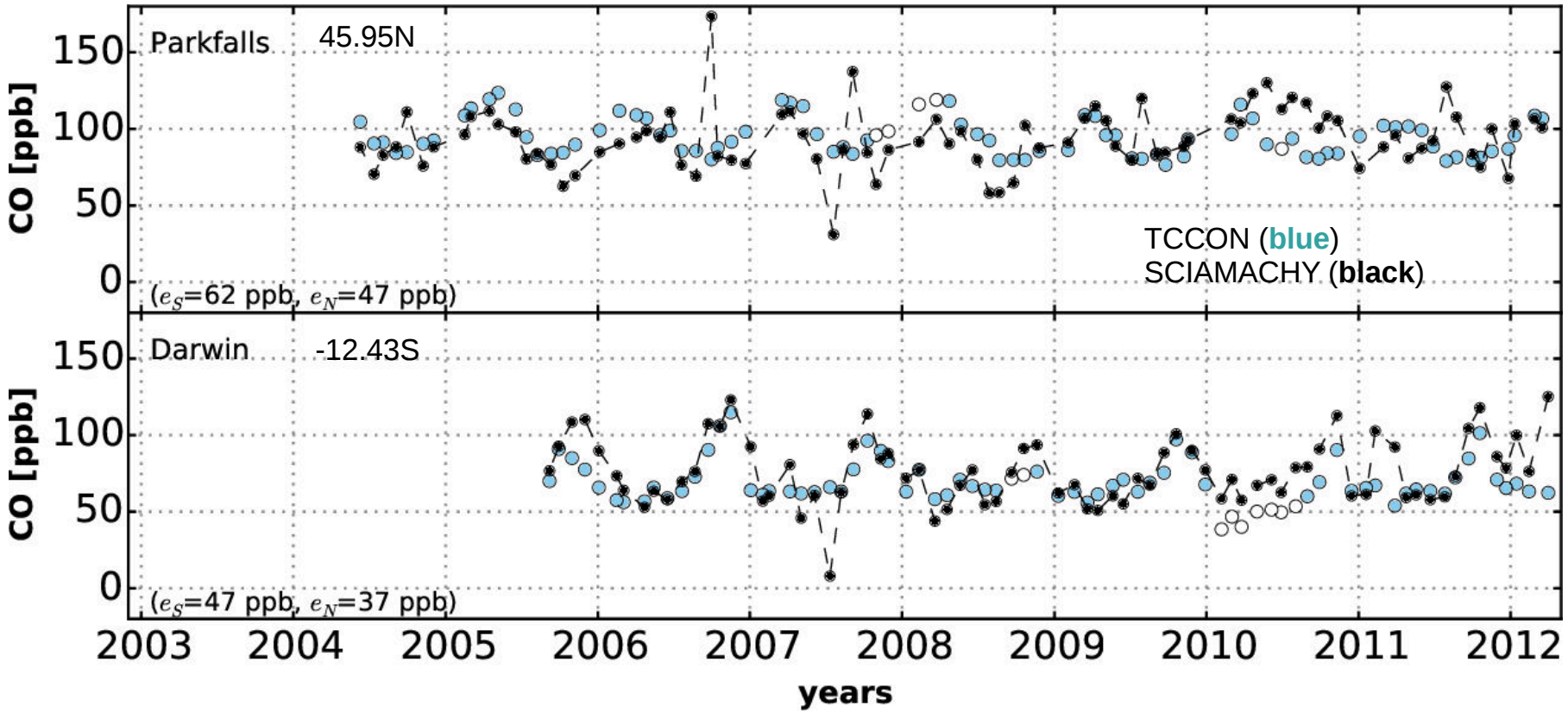


Borsdorff, T., Hasekamp, O. P., Wassmann, A., and Landgraf, J.: *Insights into Tikhonov regularization: application to trace gas column retrieval and the efficient calculation of total column averaging kernels*, Atmos. Meas. Tech., 7, 523-535, doi:10.5194/amt-7-523-2014, 2014.

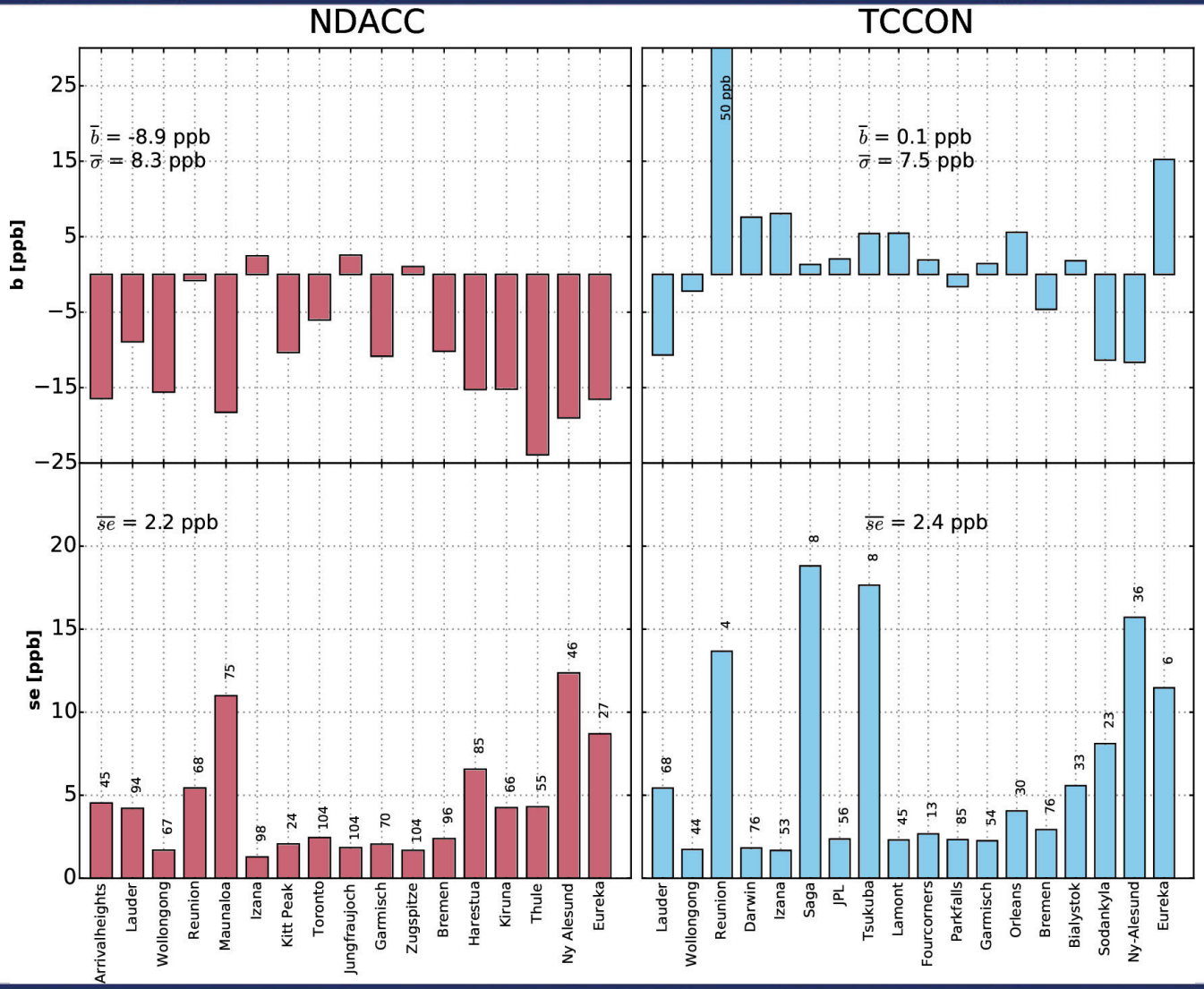
Validation: SCIAMACHY vs. NDACC/IRWG



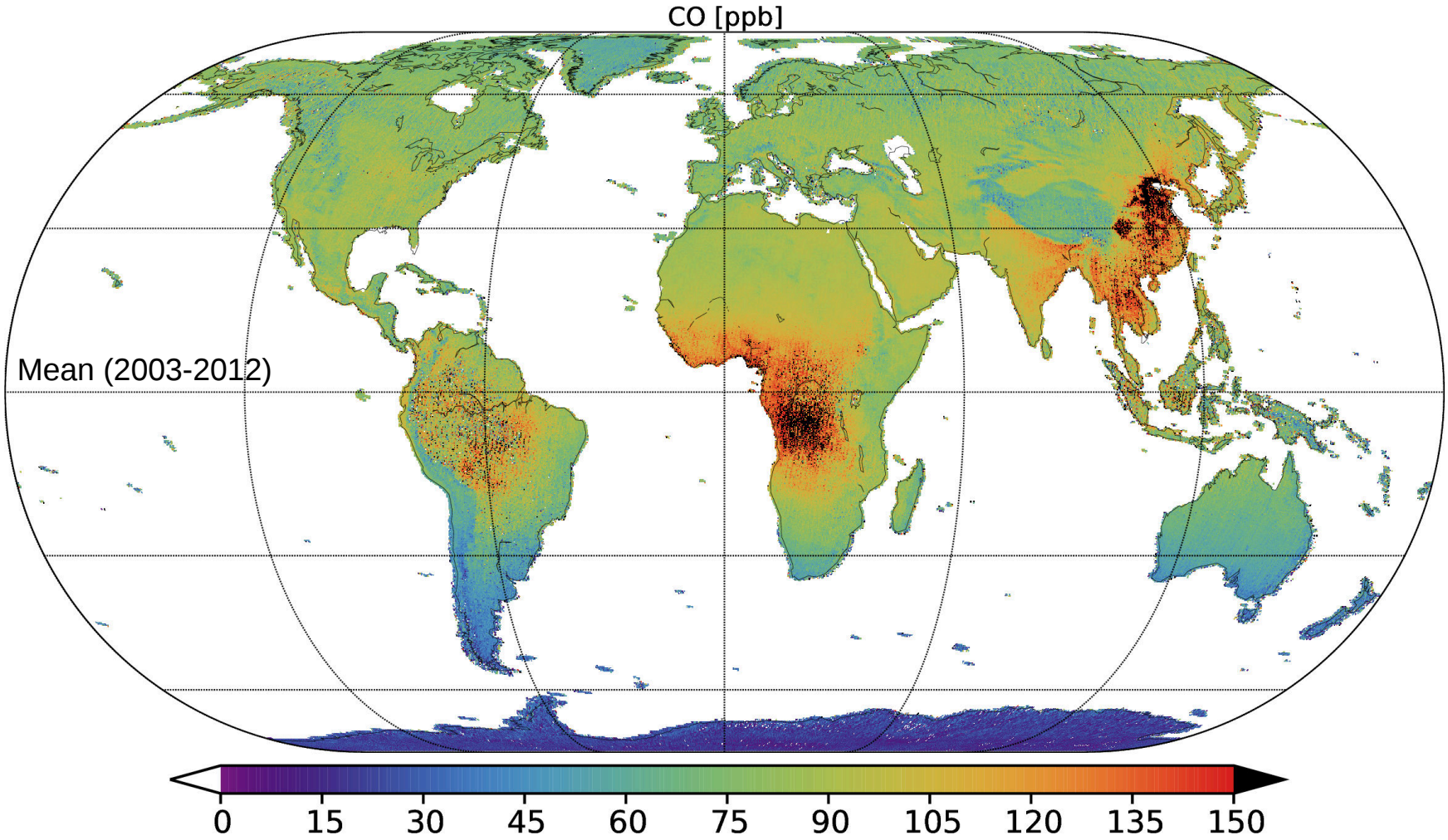
Validation: SCIAMACHY vs. TCCON



Validation: bias (SCIAMACHY - FTIR)

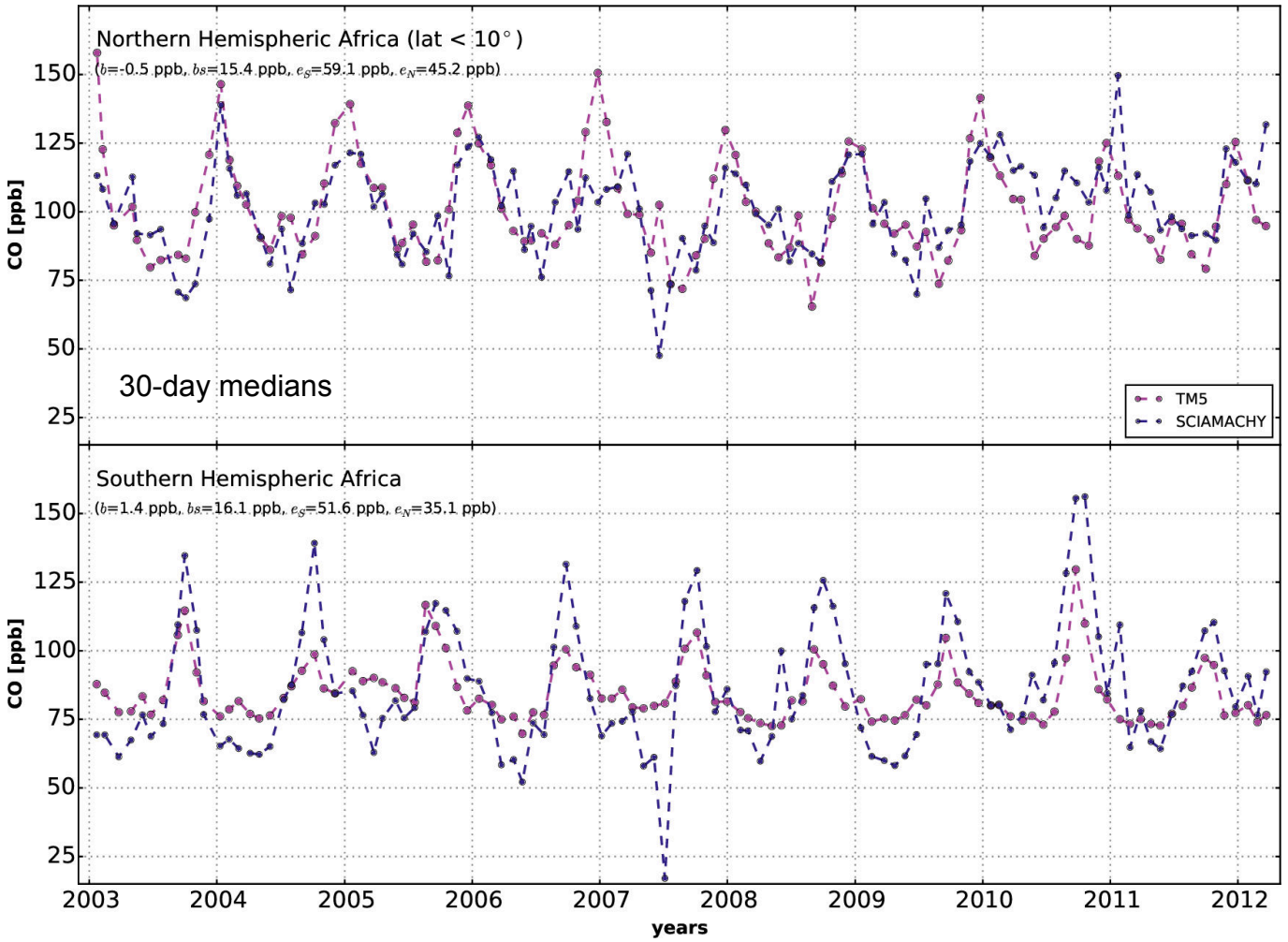


Data usage: spatial resolution

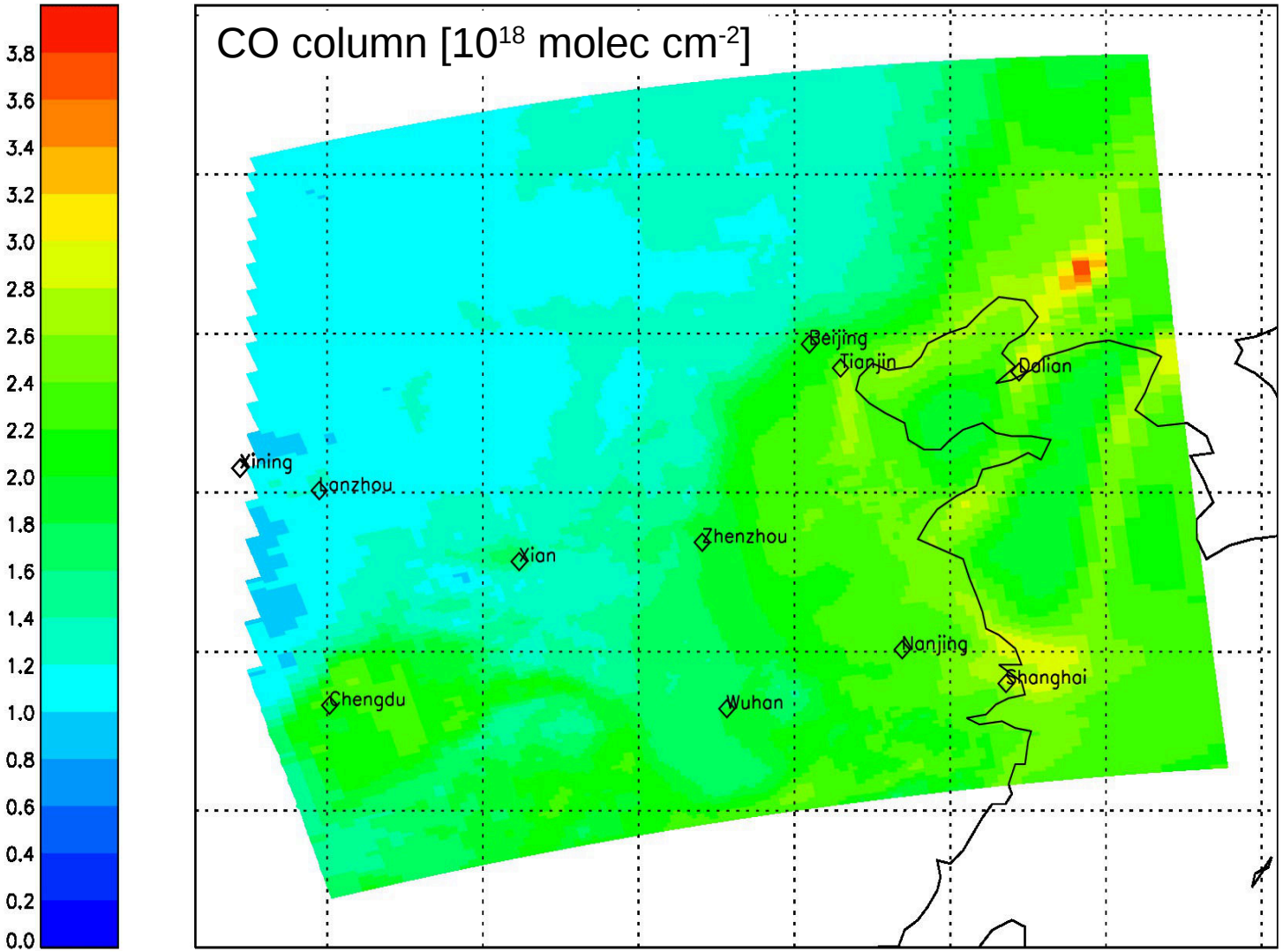


cylindrical equal area projection (nlat=180, nlon=360)

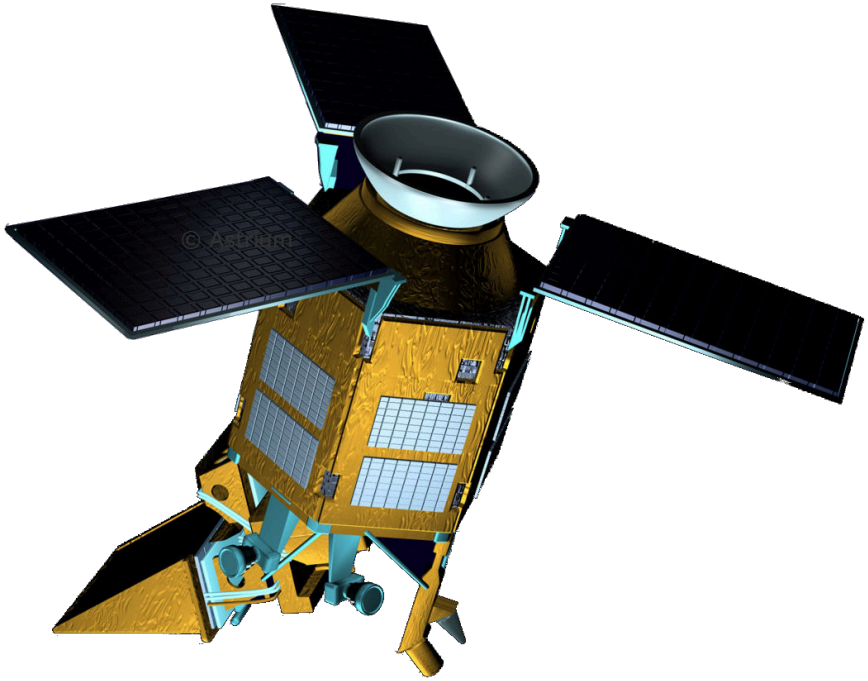
Data usage: temporal resolution

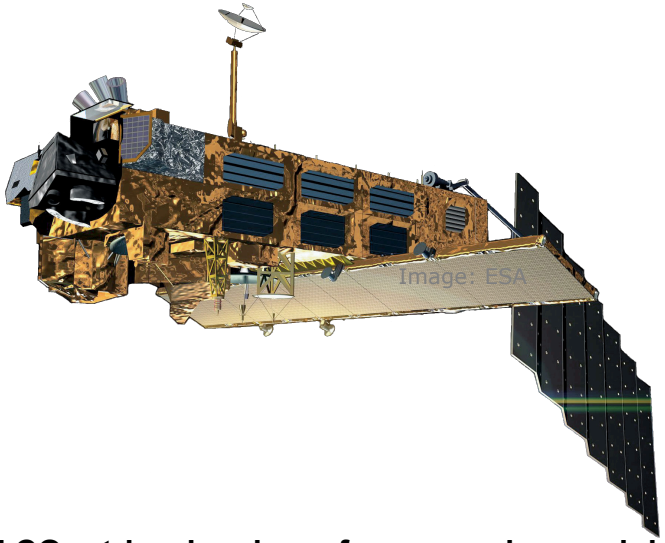


TROPOMI: single overpass over china



Summary and conclusions





- **TROPOMI CO retrieval code performs good on real data**:
  - good agreement with TCCON (0.1 ± 7.5 ppb).
  - bias with NDACC/IRWG (-8.9 ± 8.3 ppb)
  - good agreement with TM5 over Africa
- **Next: TROPOMI cloud retrieval with SCIAMACHY spectra**
- **Now available: full mission SCIAMACHY CO dataset** (cloud free scenes over land)