Sciamachy CO : *status update*

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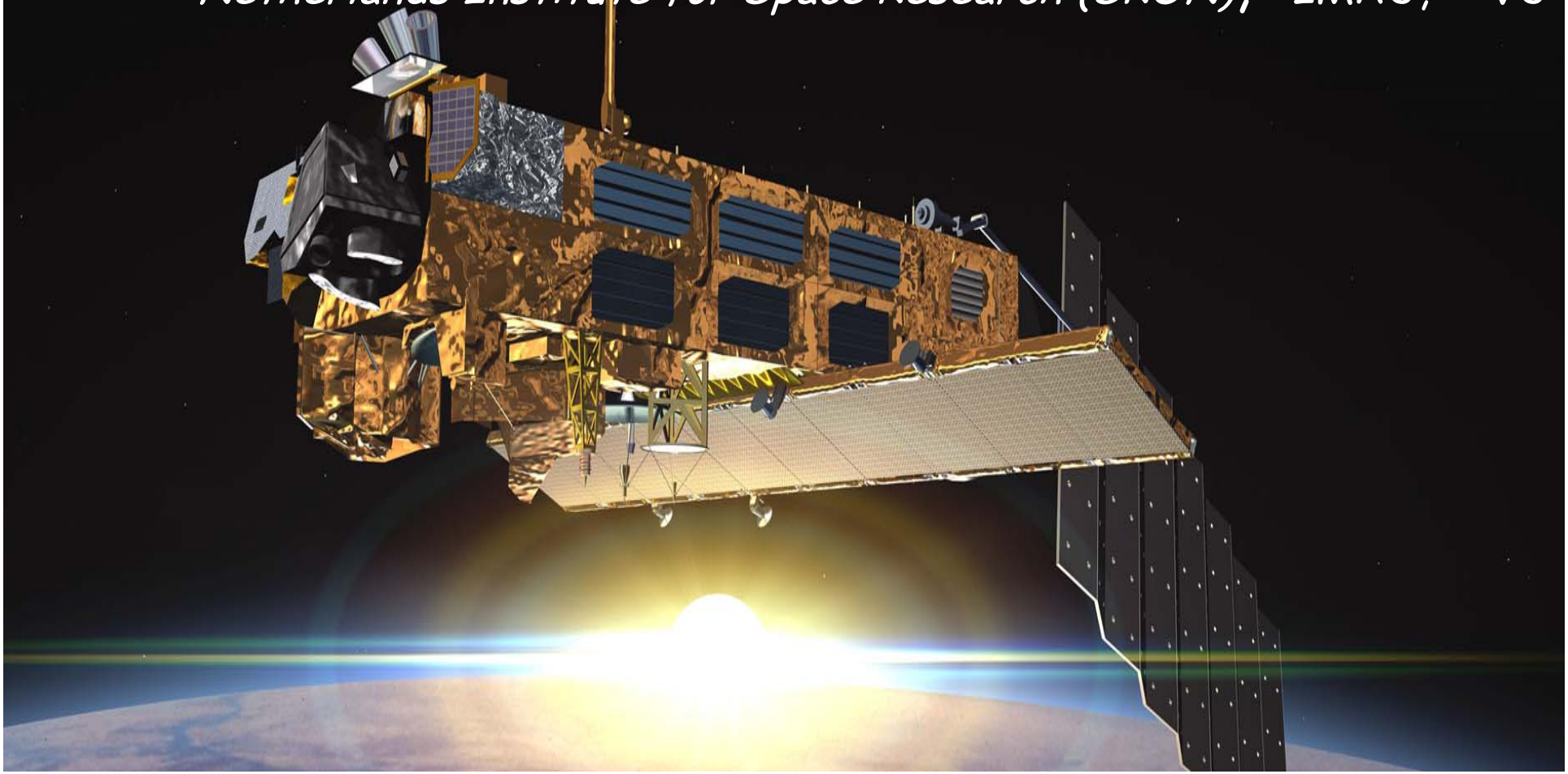
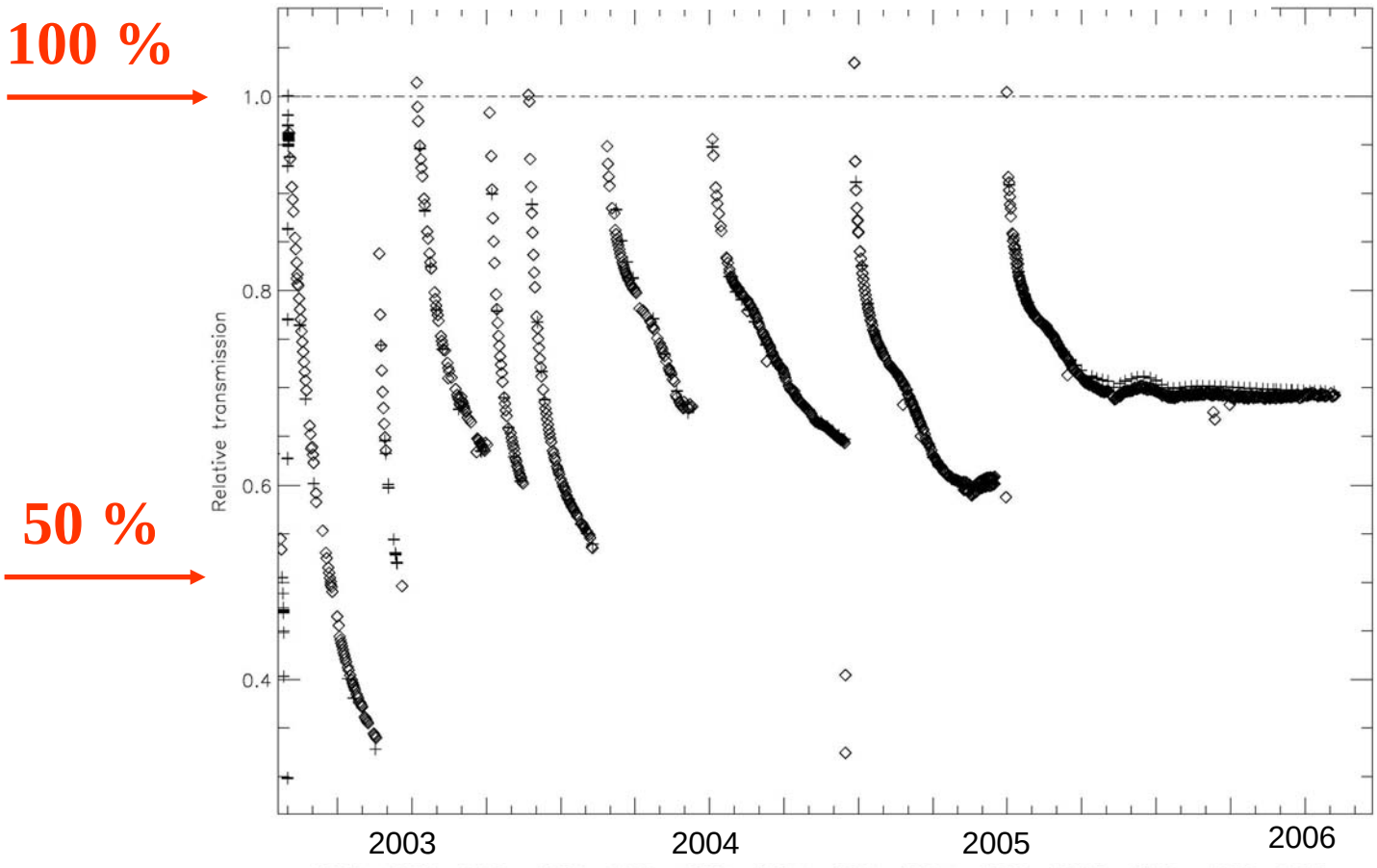
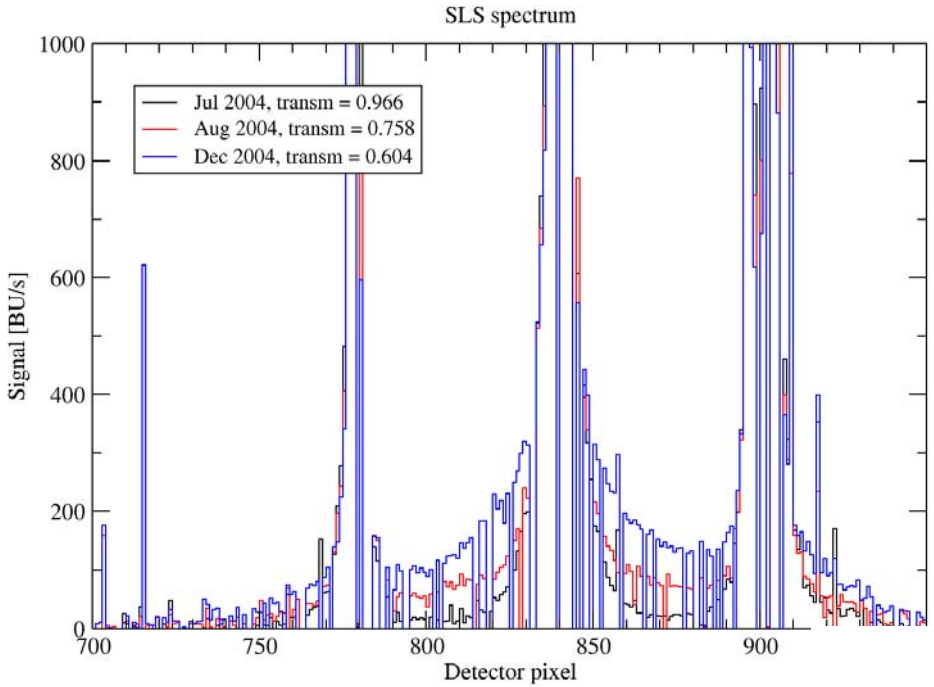


Transmission channel 8 : affected by ice-layer

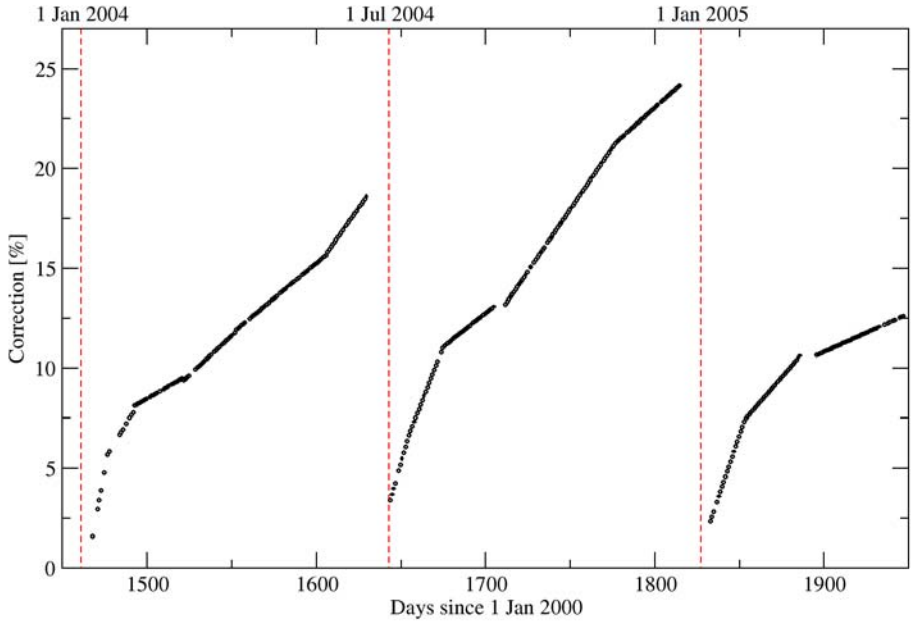




Scattering in ice layer affects spectral resolution

Scattering in ice-layer affects amount useful signal

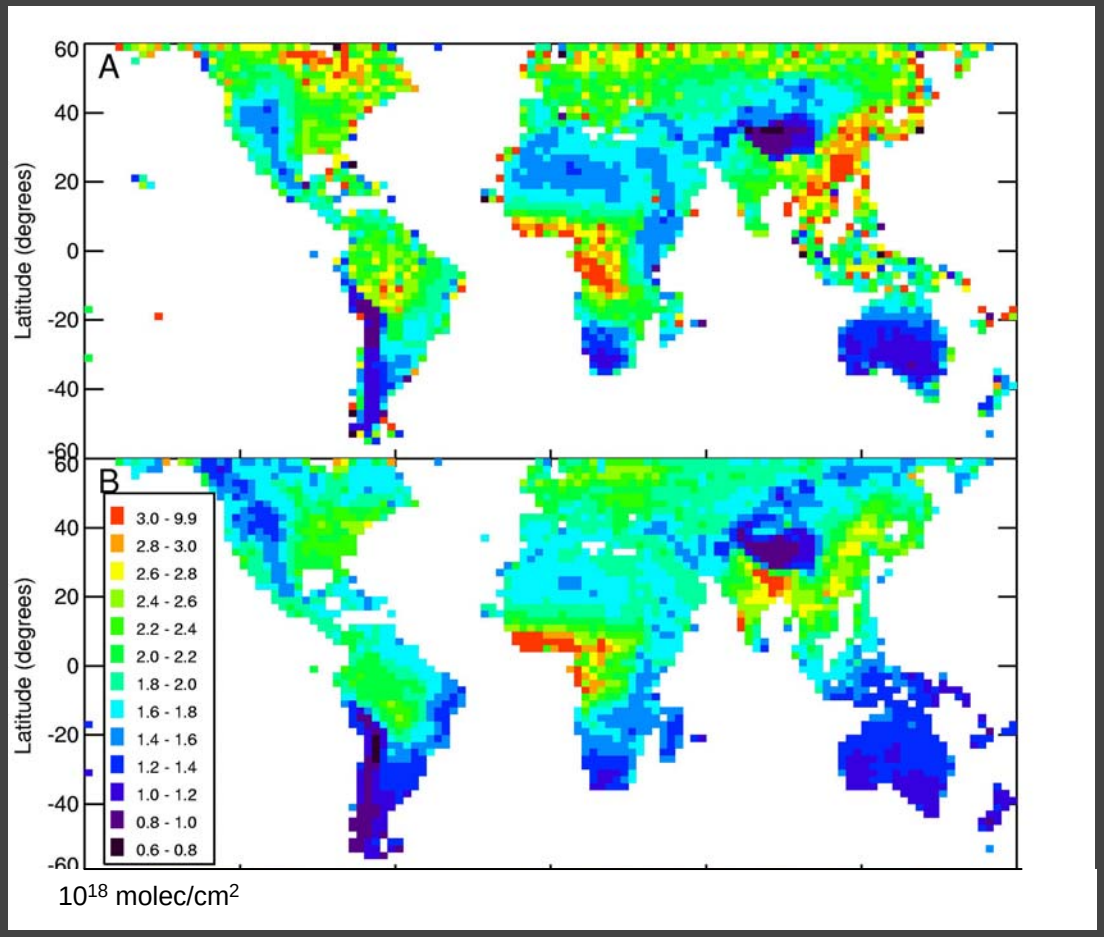
Correct for effect through CH_4 reference calibration



Annual global CO distribution (sept.2003-Aug.2004)

SCIAMACHY

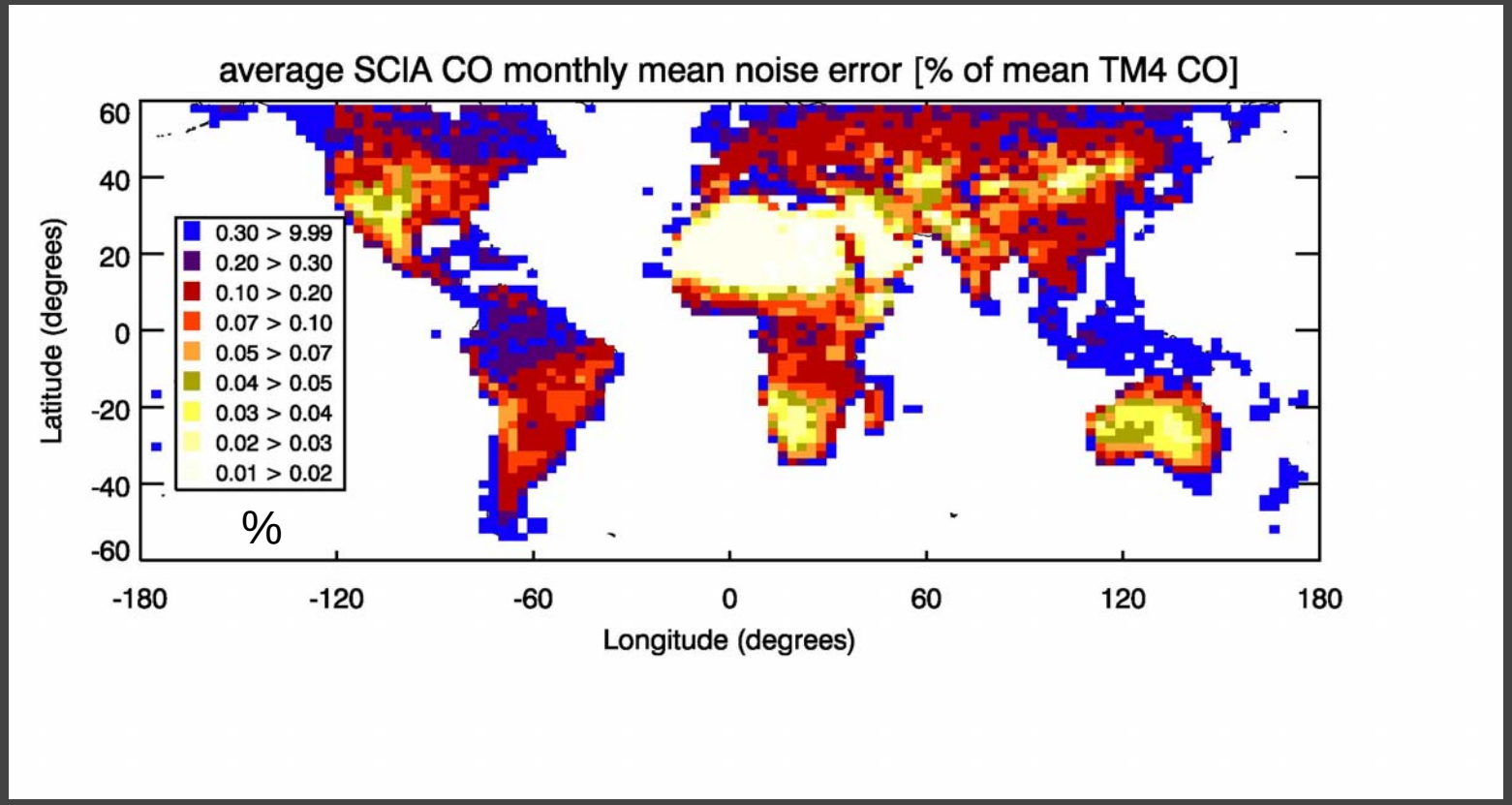
Model TM4



Model sampled at SCIA overpasses, 2^ox3^o boxes

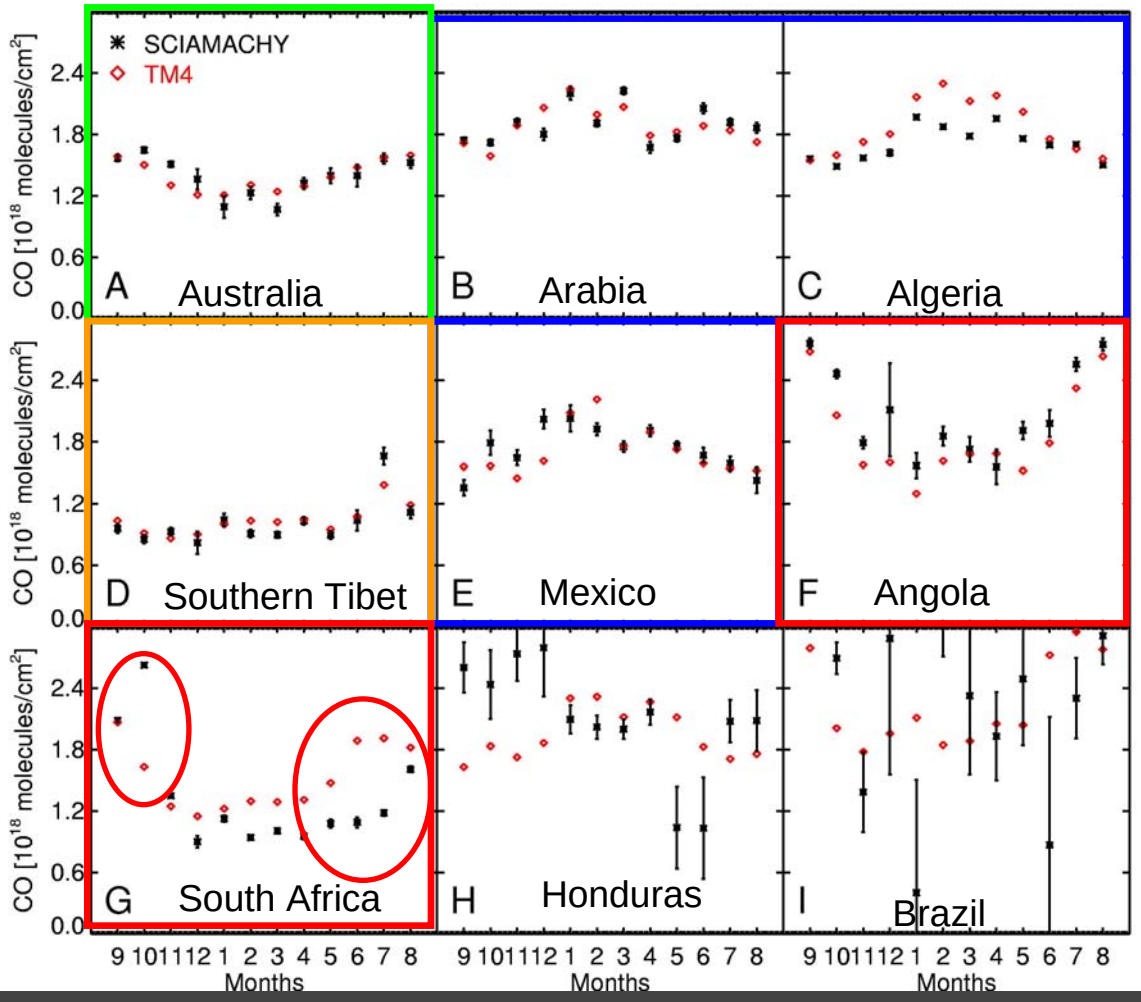
No ocean data considered yet, and only cloud-free observations

Monthly mean instrument noise error



- surface albedo
- number of cloud-free observations

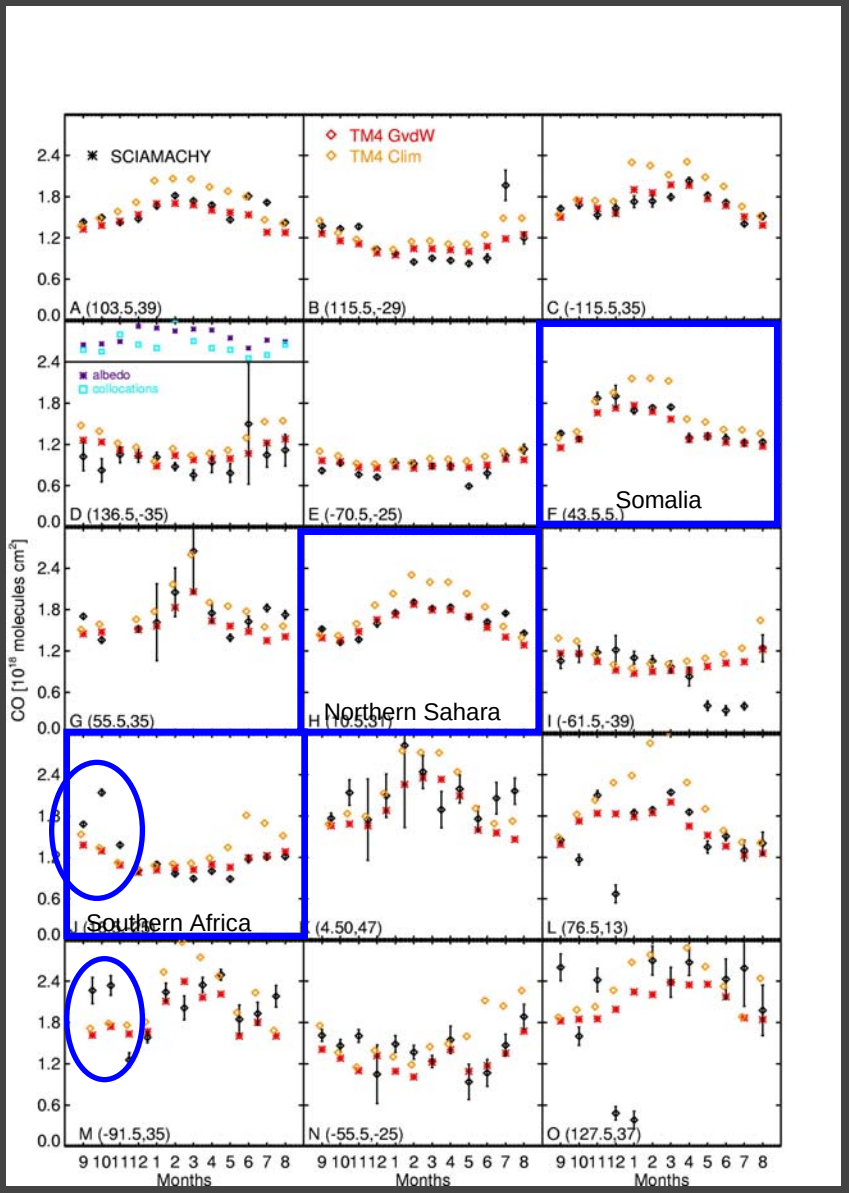
time series



model shortcomings in Biomass Burning Emissions

Confirmed by MODIS fire count

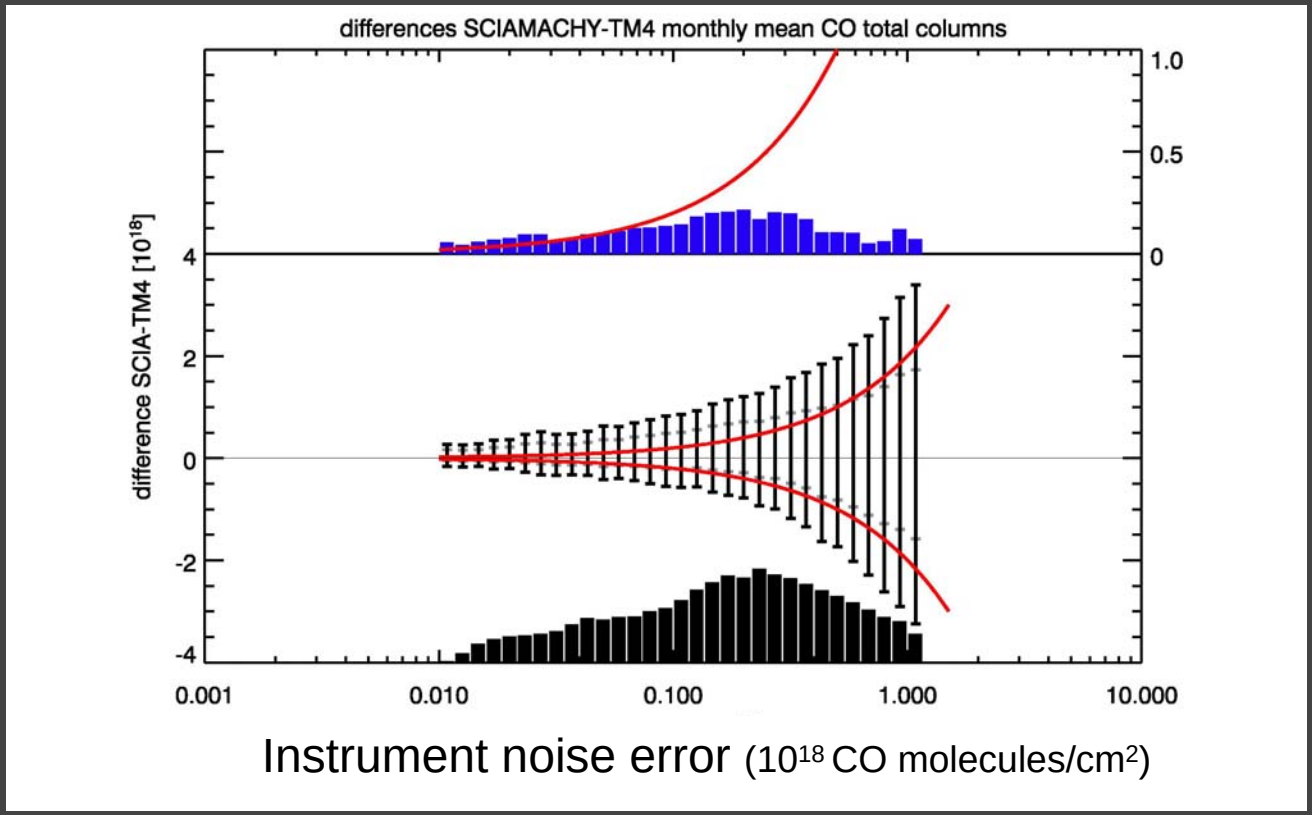
De Laat et al., submitted to GRL



Replaced biomass burning climatology (Hao et al.) with satellite based monthly updated BB emissions (vd Werf et al., 2006

Comparison improves significantly (very preliminary results)

Difference : SCIAMACHY – model TM4 (monthly means)



- instrument noise error provides good first indication overall error
- small positive bias (<1.5 10^{17} molec/cm^2)

Main conclusions :

- resolved ice-layer (& radiation damage) calibration issues
- instrument noise error good first indication of overall error
- monthly mean SCIAMACHY CO provides useful data for science
- currently : small positive bias

FUTURE

SCIAMACHY :

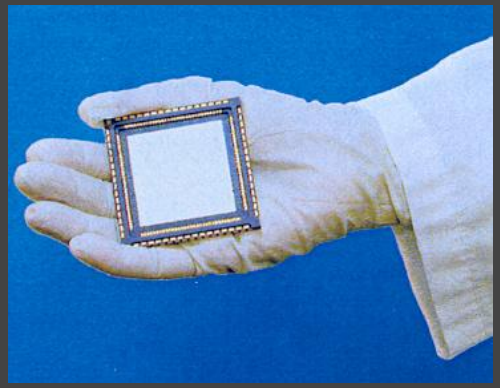
- still lot to be done before we know all limitations and capabilities
- loss CO sensitivity due to ice layer : factor 3
- spatial resolution is limited (120x30 km^2) particularly regarding cloud-free observations
- limited capabilities over ocean ? : cloudy observations not yet considered

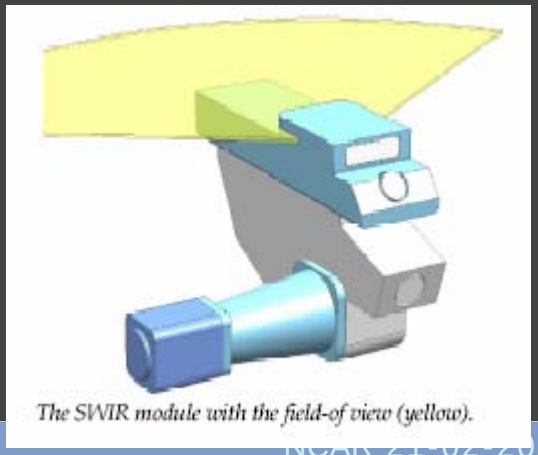
Future SWIR CO (as proposed in TRAQ and CAMEO) :

- somewhat higher CO sensitivities 10x10km^2 compared to ice-free SCIA 120x30km^2

(staring OMI-like versus scanning SCIA-like, better quality detectors)

- combine SWIR (SCIA) with TIR (MOPITT, TES) to isolate lowest few km CO





The SWIR module with the field-of view (yellow).

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