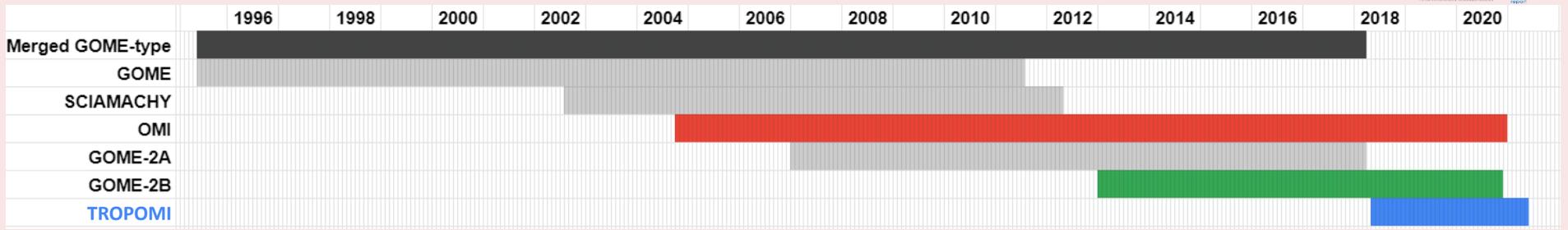


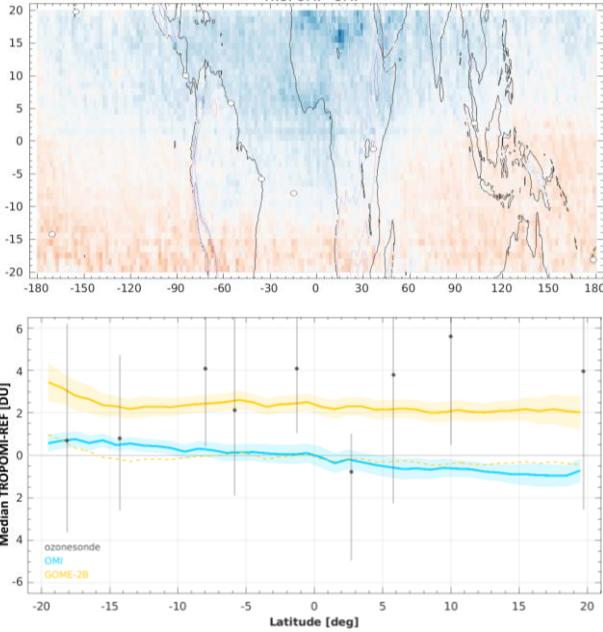
# Characterisation of Sentinel-5p TROPOMI in Support of its Addition to the GOME-type Tropospheric Ozone Climate Data Record

D. Hubert<sup>1</sup> (daan.hubert@aeronomie.be), K.-P. Heue<sup>2,3</sup>, J.-C. Lambert<sup>1</sup>, T. Verhoelst<sup>1</sup>, A. Keppens<sup>1</sup>, S. Compennolle<sup>1</sup>, A. Dehn<sup>4</sup>, D. E. Kollonige<sup>5,6</sup>, C. Lerot<sup>1</sup>, D. Loyola<sup>2</sup>, F. Romahn<sup>2</sup>, A. M. Thompson<sup>6</sup>, J. P. Veefkind<sup>7</sup>, C. Zehner<sup>4</sup>

**Objective** : characterise TROPOMI data quality to optimise its inclusion in the GOME-type tropospheric ozone CDR

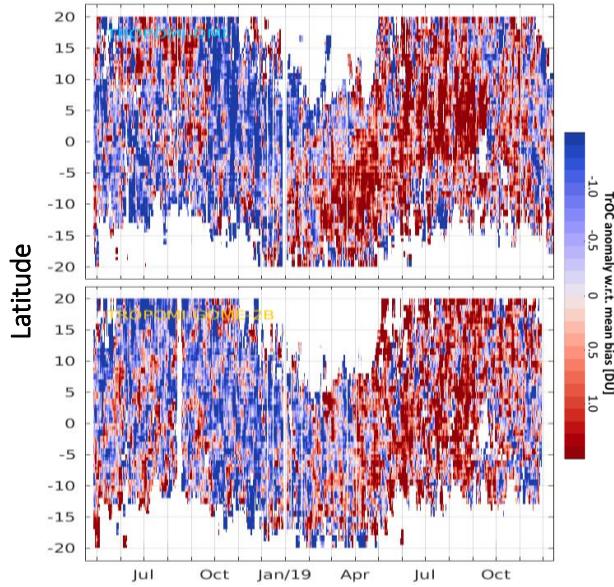


## Bias : spatial structure



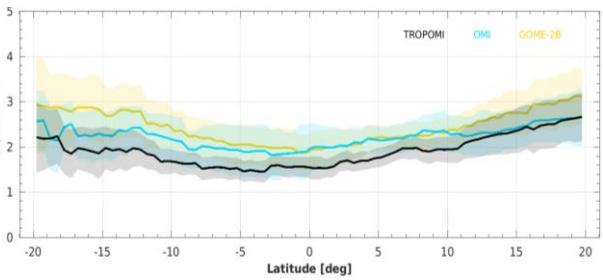
Excellent agreement with OMI (-0.1 DU)  
 Good agreement with GOME-2B & sonde (+2.3 DU, +13%)  
 Latitude-dependent (0.5–1 DU)

## Bias : temporal structure



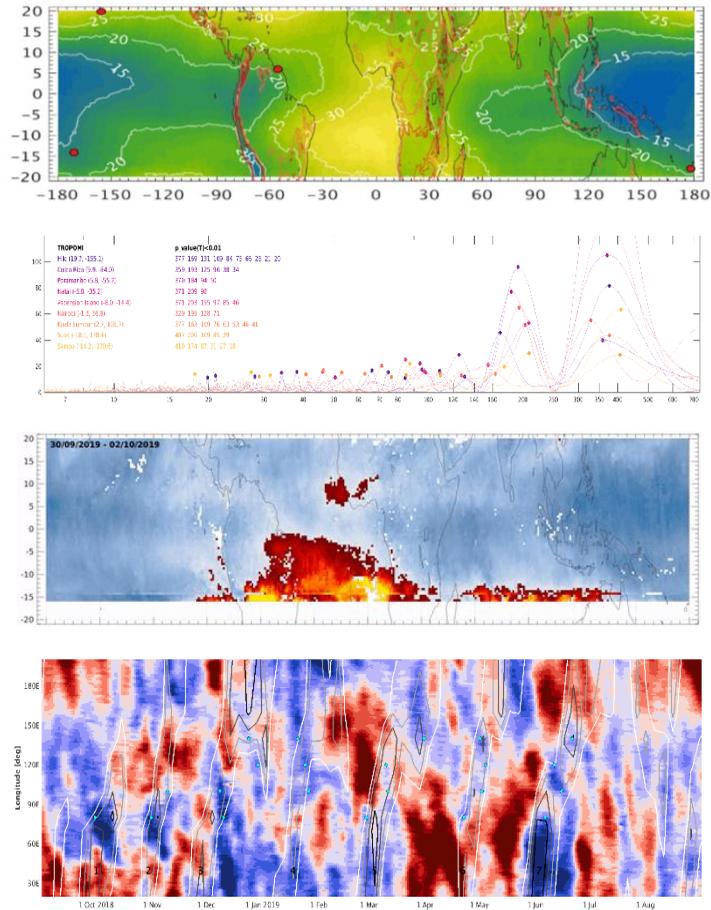
Signs of a seasonal cycle in satellite difference time series, amplitude ~0.7-1.2 DU  
 Indication of ~5 DU more positive biases w.r.t. ozonesonde during biomass burning season (not shown)

## Estimating precision from co-located triplets



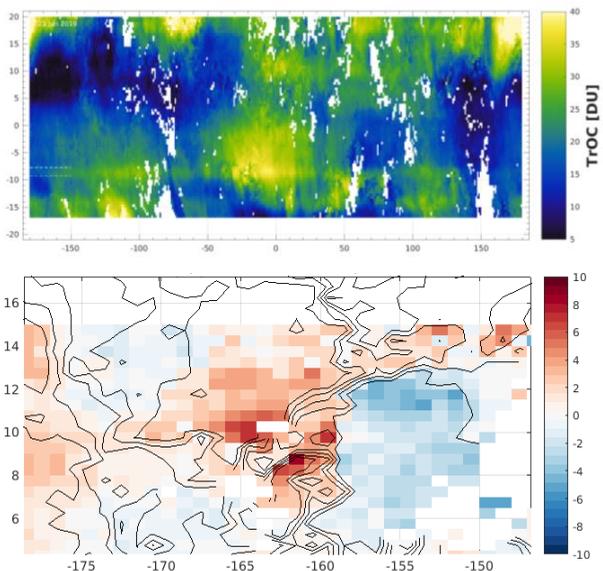
Precision TROPOMI (1.5-2.5 DU), which is 20-25% better than OMI or GOME-2B  
 Latitude-dependent (1–1.5 DU)

## Geophysical assessment



Zonal wave-one ✓  
 Periodic cycles ✓  
 Biomass burning ✓  
 Madden-Julian Oscillation ✓

## TROPOMI sampling errors



Striping (up to 0.5-1 DU) due to sampling error for stratospheric reference column.  
 Correlated anomalies at smallest scale (up to 5 DU) due to sampling error for total column.

## Conclusion

- TROPOMI clearly offers added value w.r.t. heritage missions.
- It has better precision, resolution and coverage than other satellites.
- Clear imprints of major geophysical patterns in the data record.

## More info

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**Affiliations** <sup>1</sup>Royal Belgian Institute for Space Aeronomy (BIRA-IASB), Belgium; <sup>2</sup>German Aerospace Centre (DLR), Germany; <sup>3</sup>Technische Universität München, Germany; <sup>4</sup>European Space Agency/Centre for Earth Observation (ESA/ESRIN), Italy; <sup>5</sup>Science Systems and Applications, Inc., MD, USA; <sup>6</sup>Atmospheric Chemistry and Dynamics Lab, NASA Goddard Space Flight Center, MD, USA; <sup>7</sup>Royal Netherlands Meteorological Institute (KNMI), The Netherlands,