

# SCIAMACHY O<sub>3</sub> Column - GBMCD

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## Contributors

### Analysis

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### Special Thanks

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### SCIAMACHY Data Processing

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### Correlative Data Acquisition

#### Analysis teams +

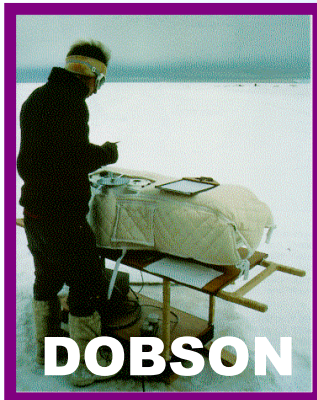
BAS, UK  
CAO, Russia  
CNRS/SA, France  
DMI, Denmark  
DWD, Germany  
FHG, Germany  
FMI/Sodankylä, Finland  
ISAC/CNR, Italy  
IUP/Heidelberg, Germany  
KSNU, Kyrgyzstan  
KTSU, Ukraine

MCH, Switzerland  
MGO, Russia  
MSC, Canada  
NILU, Norway  
NOAA/CMDL, CO  
U. Bordeaux, France  
U. Chalmers, Sweden  
U. Denver, CO  
U. Liège, Belgium  
U. Reims, France  
U. Réunion, France  
U. Sao Paulo, Brazil  
U. Thessaloniki, Greece  
U. Toronto, Canada  
U. Wales, UK  
U. Wollongong, Australia

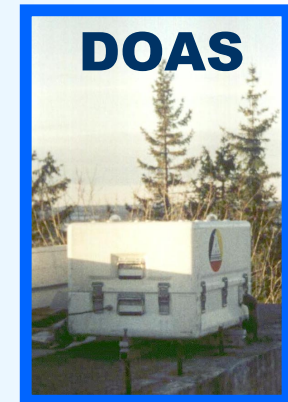
## Outline

1. Ground-based sensors
2. Operational NRT product
  - Change wrt v3.53
  - Global view
  - SZA and cloud fraction dependence
3. KNMI and BIRA-IASB processing
4. Conclusion and outlook

## Ozone Vertical Column: GB Sensors

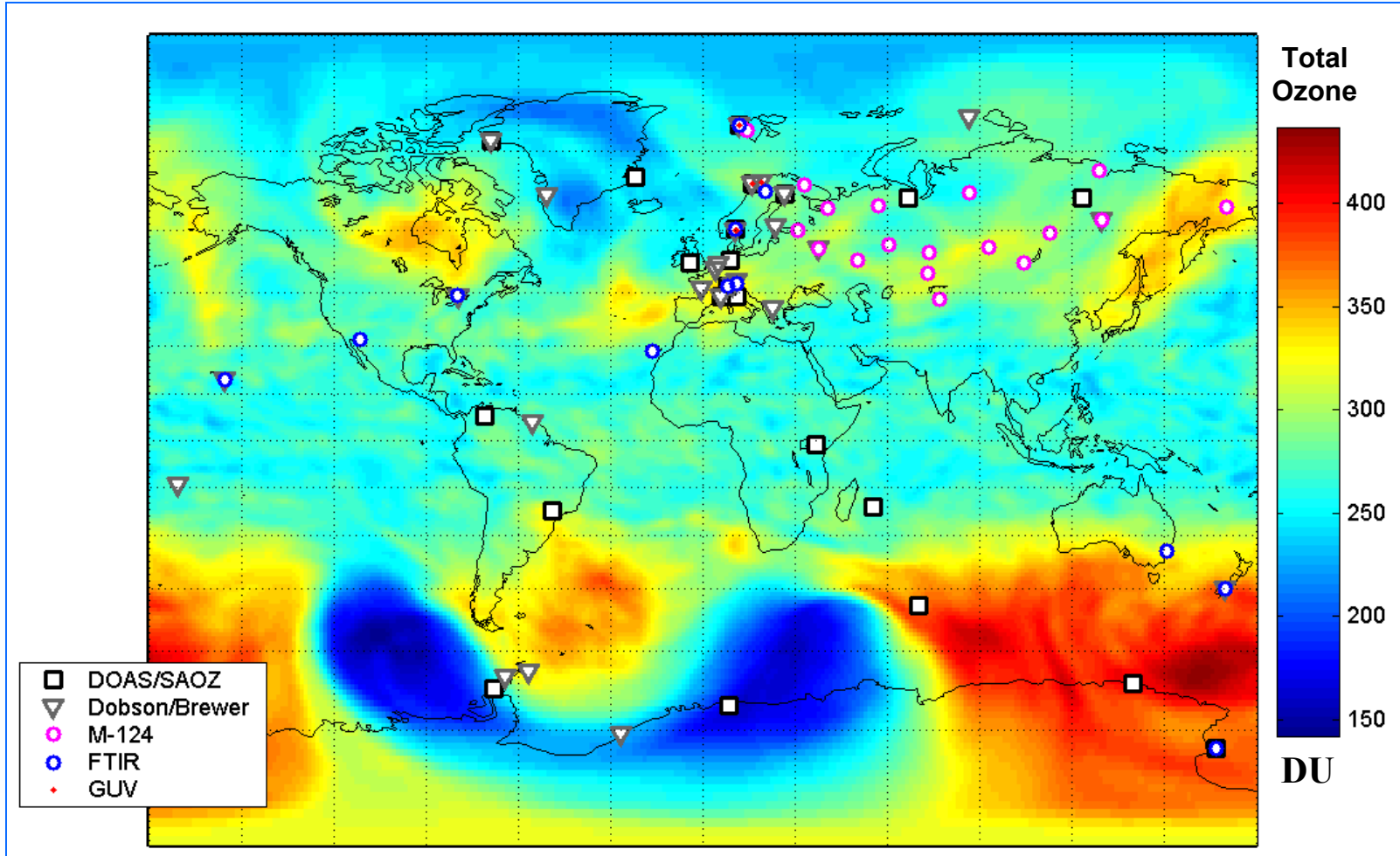


**M-124 UV  
Filter  
Radiometer**



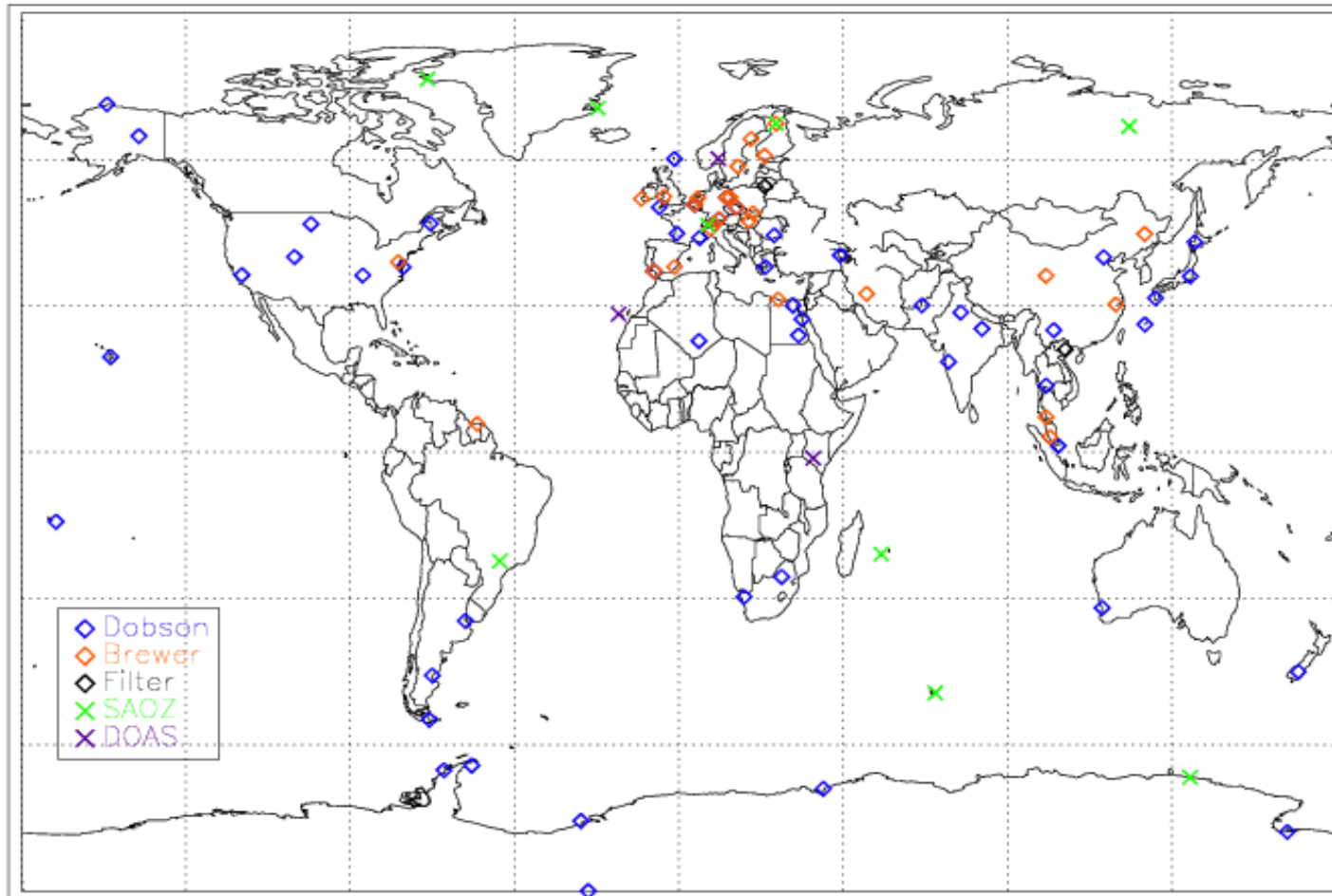


## Contributing Total Ozone Sensors (1)





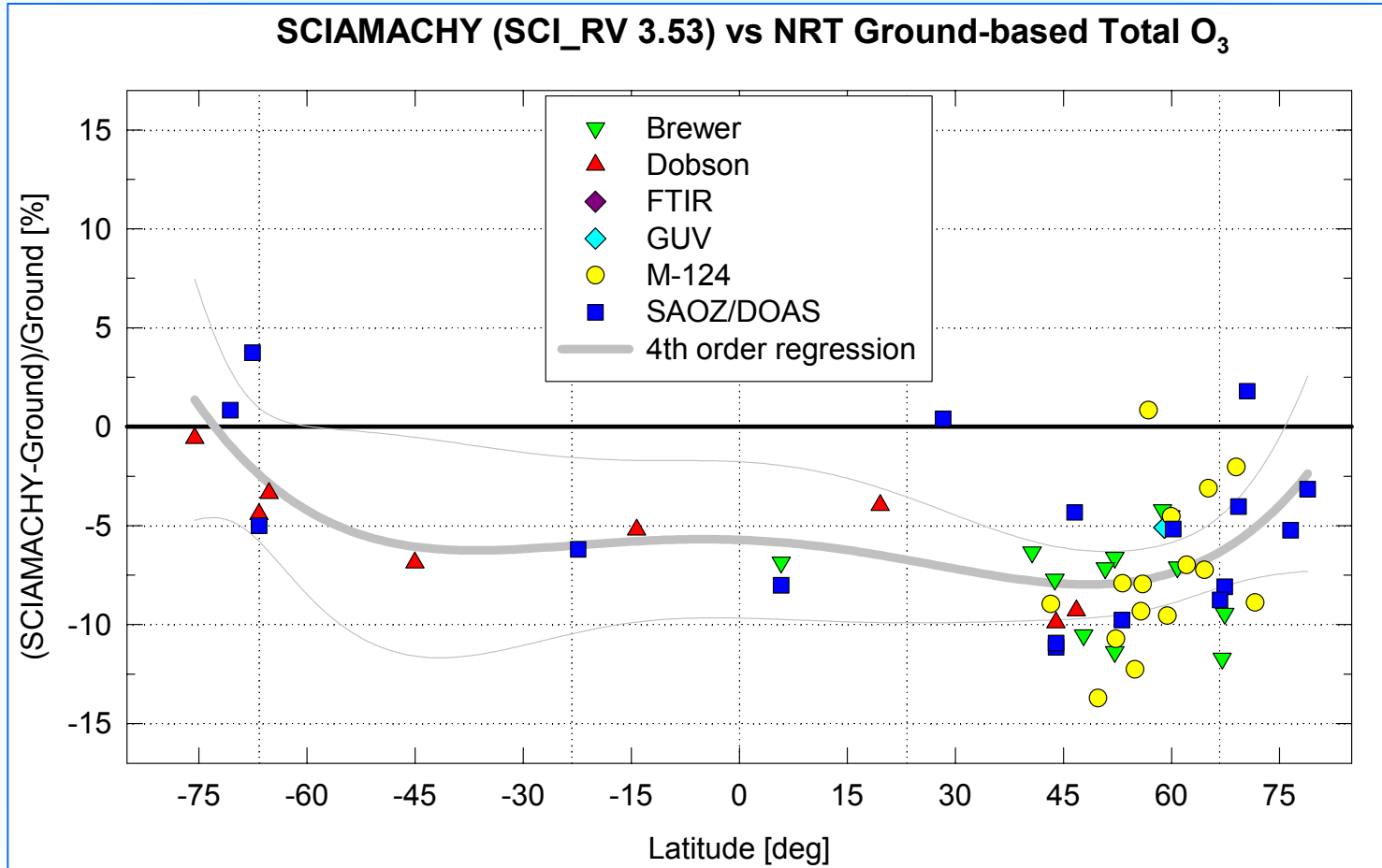
## Contributing Total Ozone Sensors (2)



## Methodology for GB Comparisons

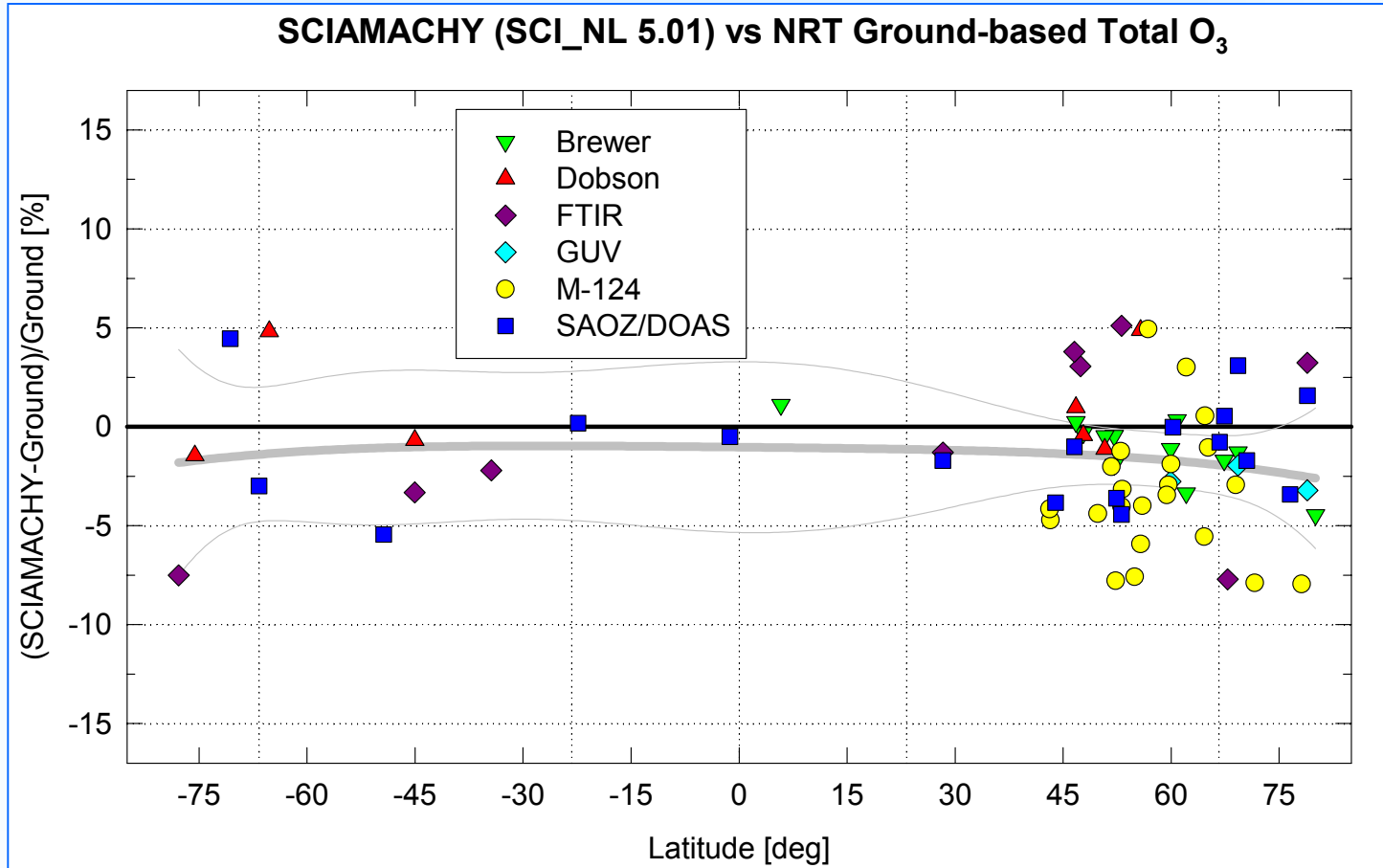
- Qualitative and quantitative studies
- Space criteria: SCIA pixels selected to match effective GB air mass (ray tracing)
- Date criteria: day of the SCIA measurement
- Error budget taken into account

## OPERATIONAL NRT v3.53 (reminder)

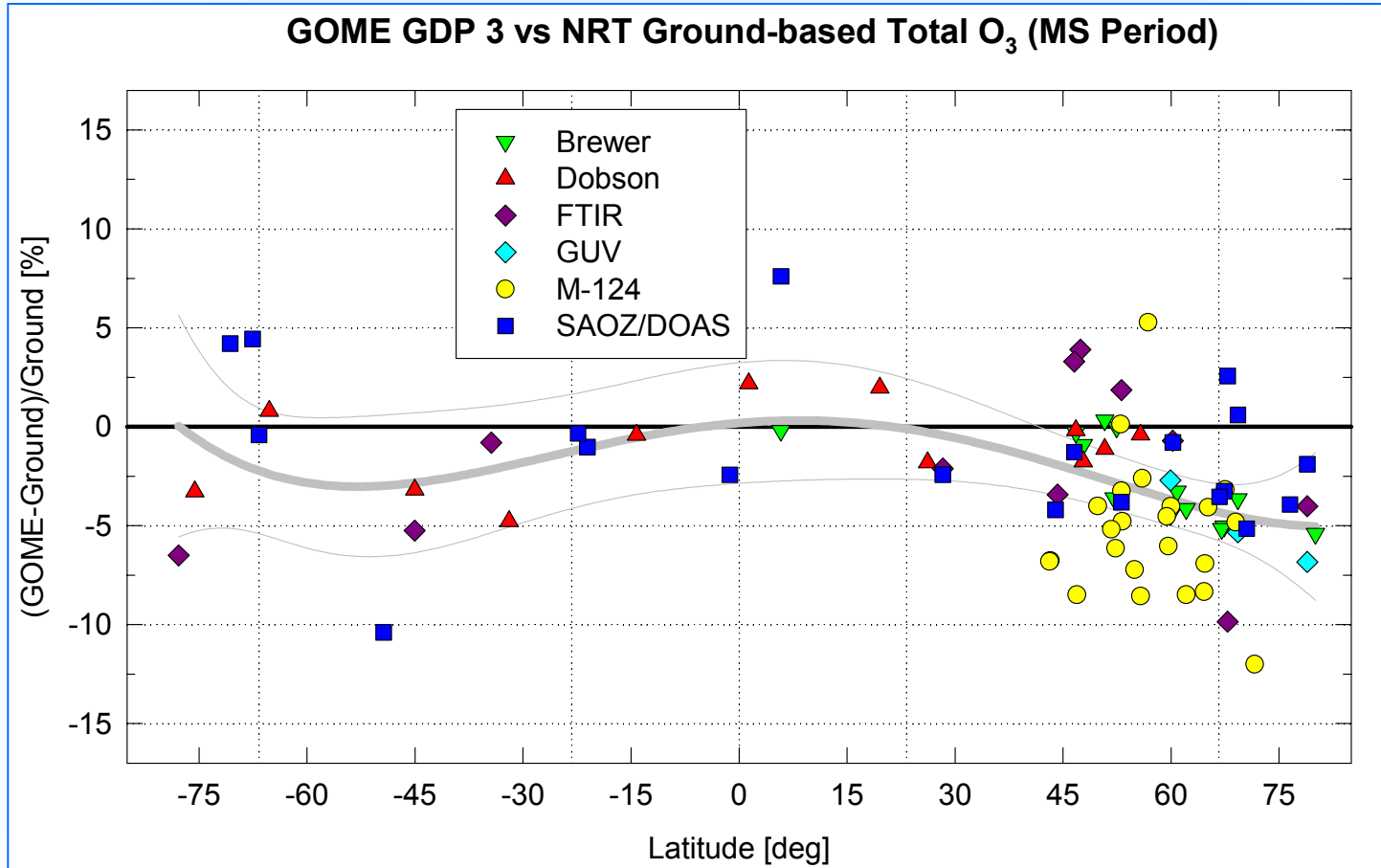


*Lambert et al., ESA SP 531, 2003*

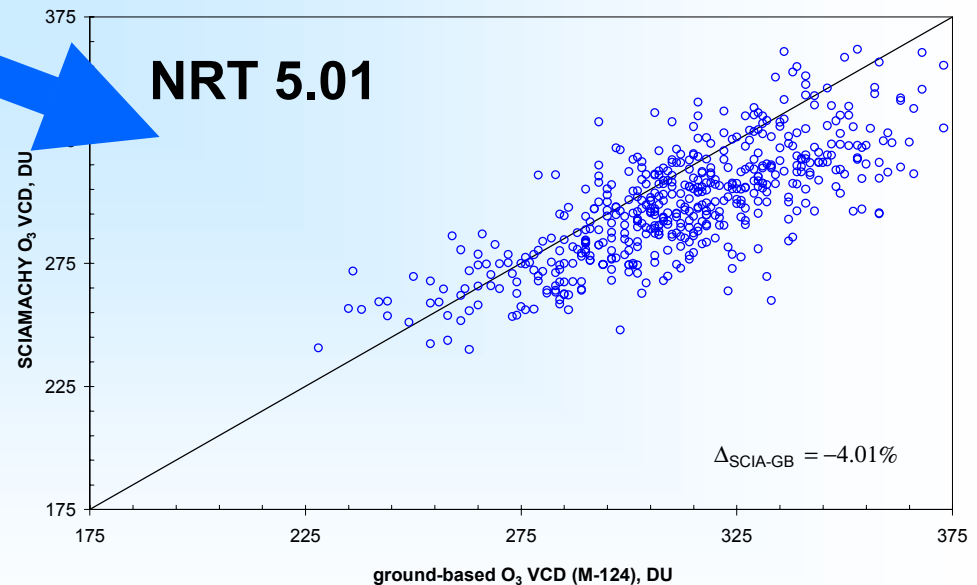
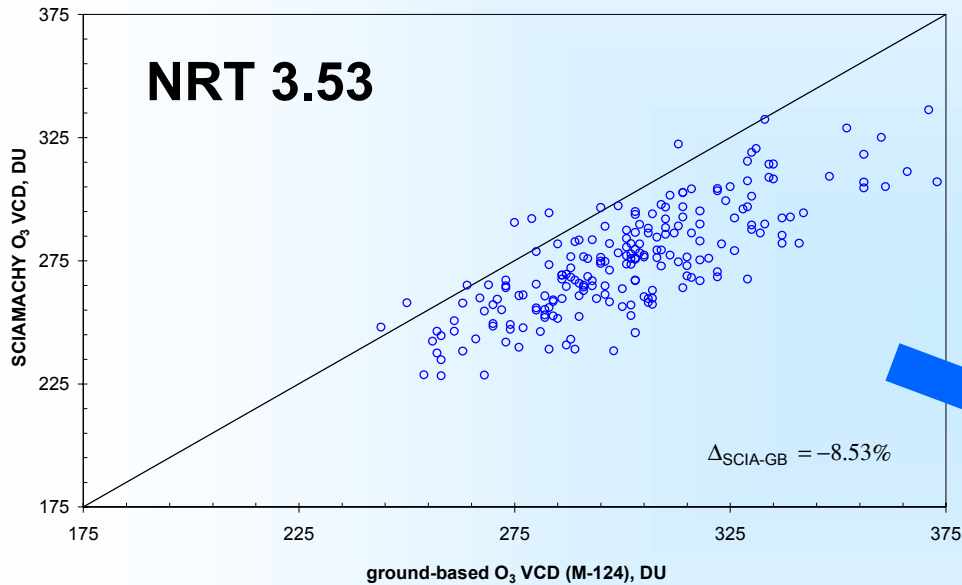
# OPERATIONAL NRT v5.01: Global View



## GOME GDP 3: Global View



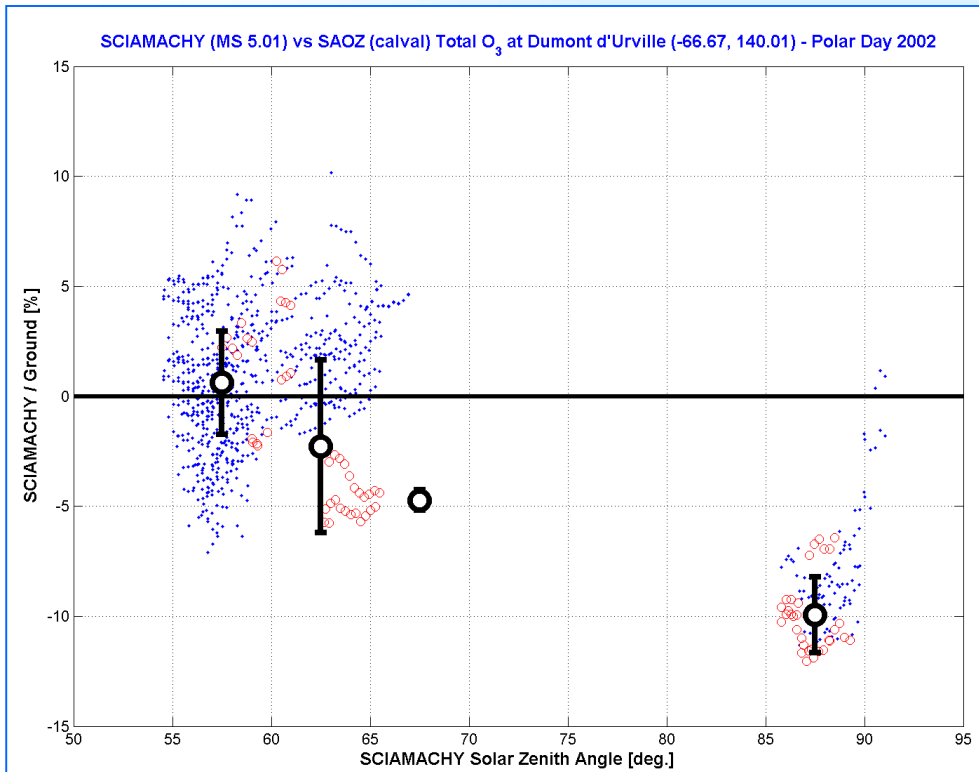
## OPERATIONAL NRT v5.01 vs. M-124 Network



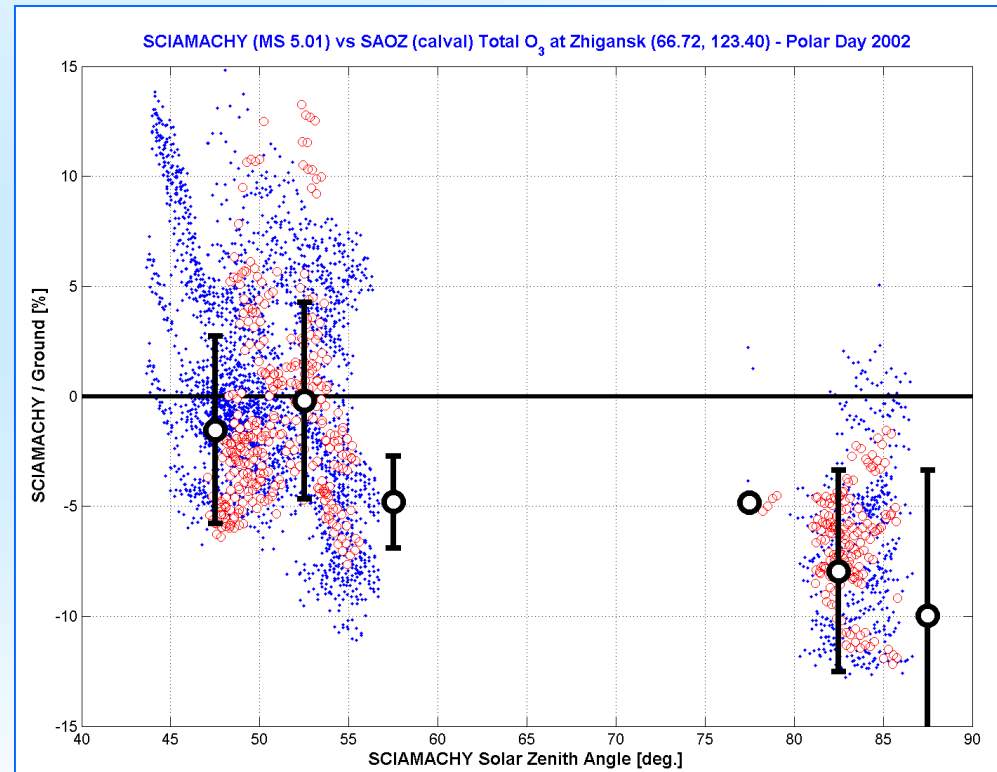
*Courtesy D. V. Ionov, SPbSU*

# OPERATIONAL NRT v5.01: SZA Dependence

Dumont d'Urville (Antarctica, 67°S)



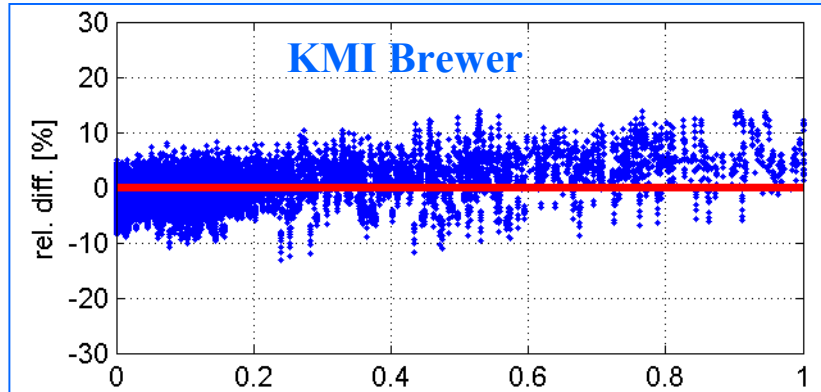
Zhigansk (Eastern Siberia, 67°N)



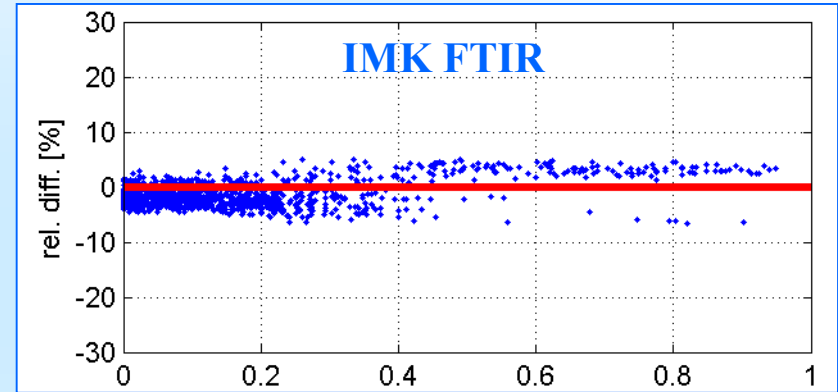
SAOZ data from CNRS and CNRS/CAO

# OPERATIONAL NRT v5.01: Cloud Fraction

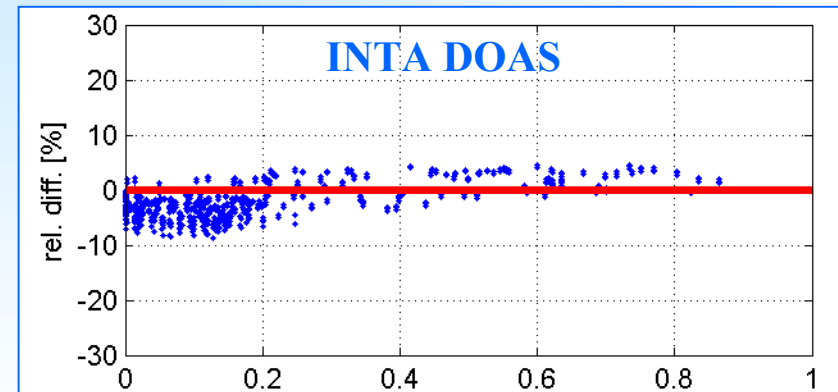
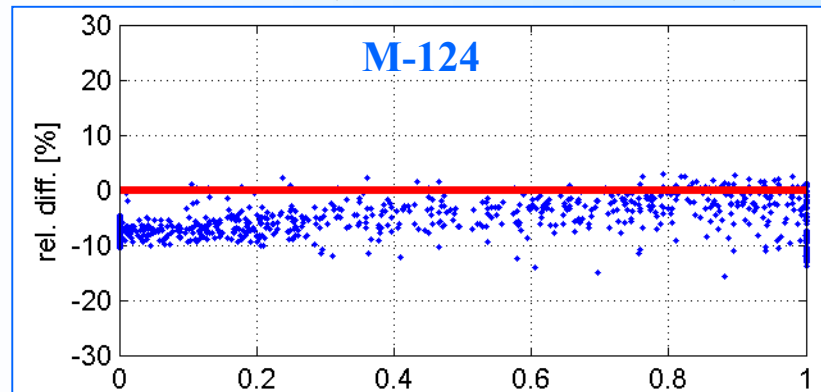
Uccle (Belgium, 50°N)



Izaña (Canary Islands, 28°N)



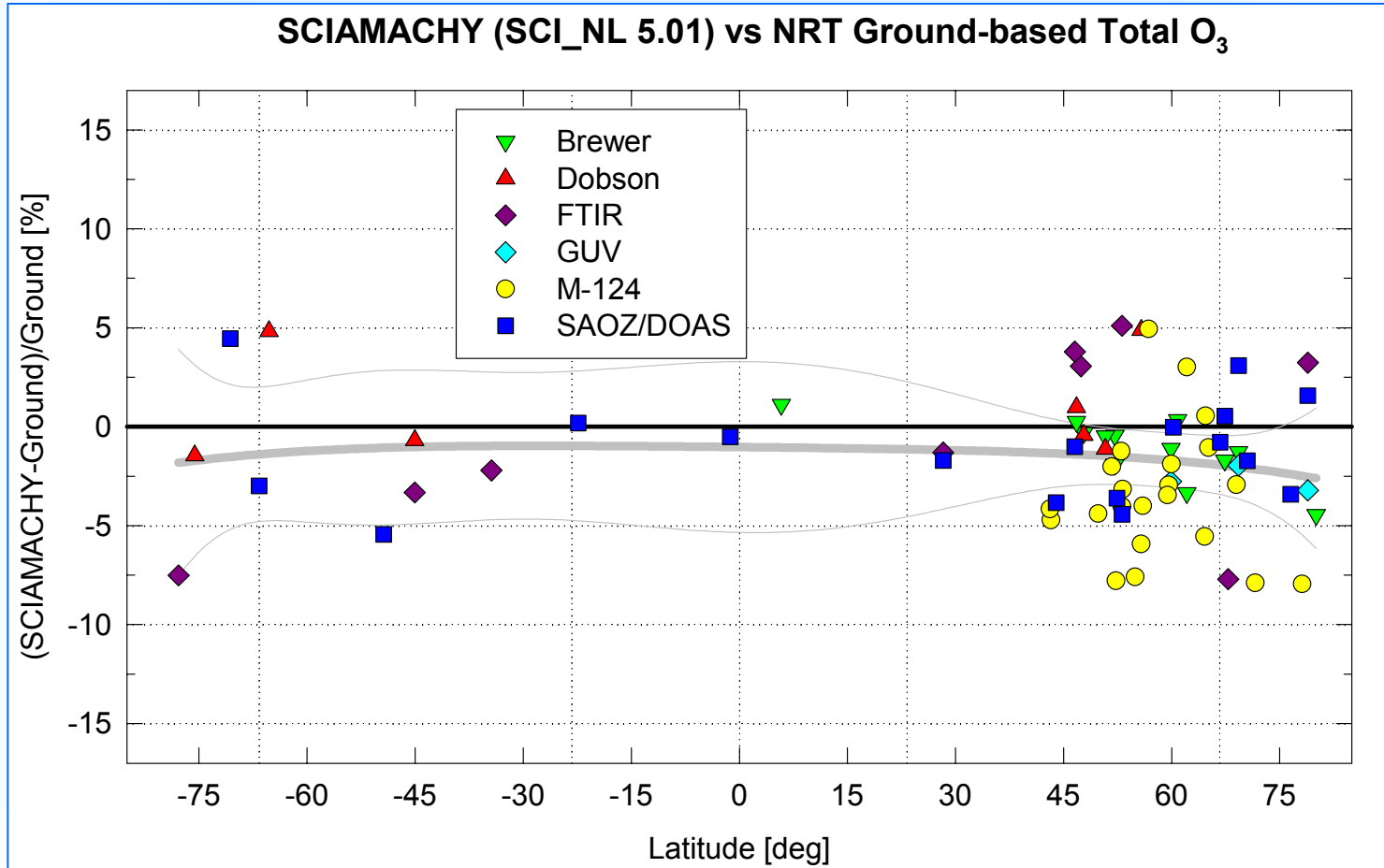
Vladivostok (Eastern Siberia, 43°N)



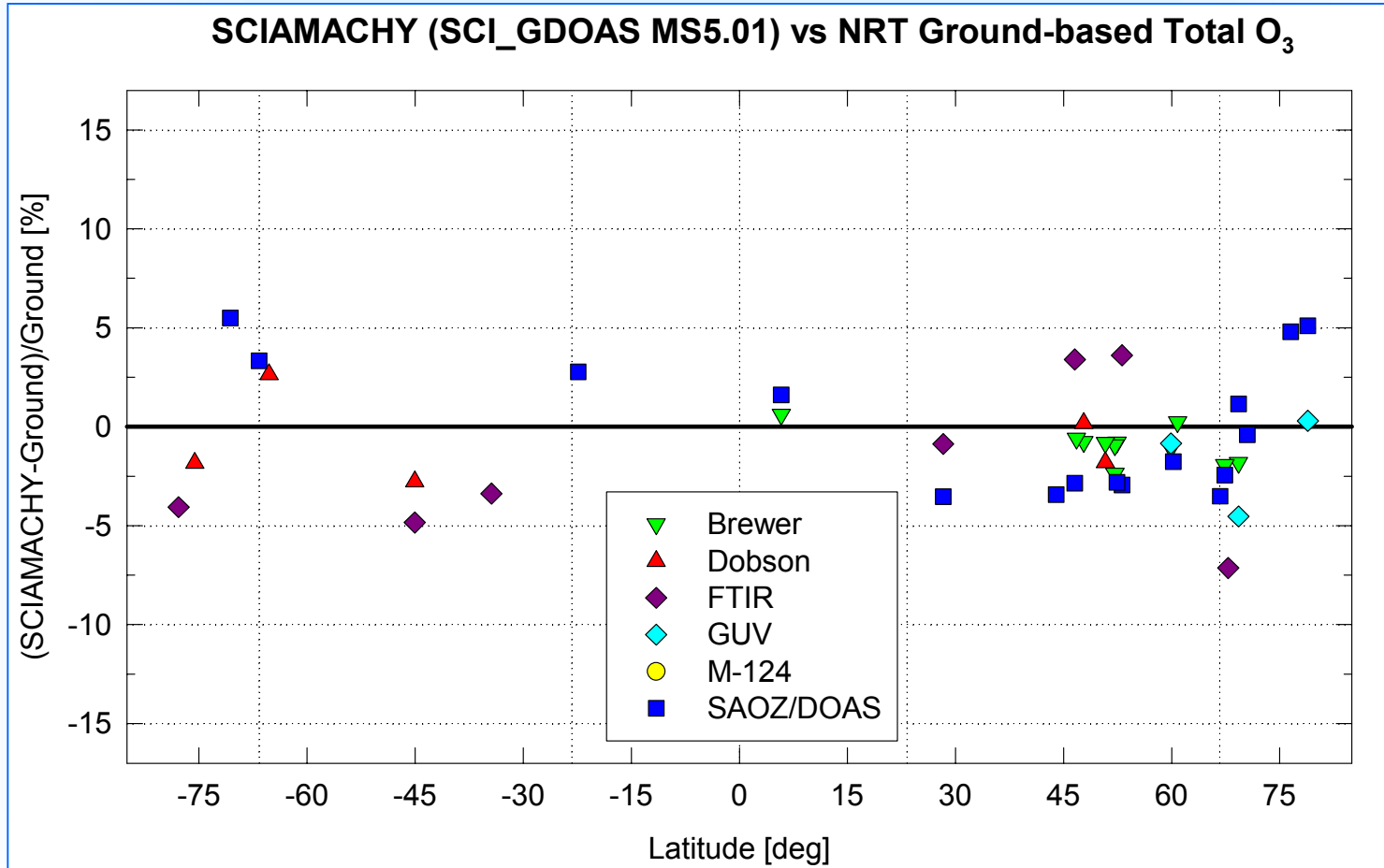
## NON OPERATIONAL ALGORITHMS

- GDOAS (BIRA-IASB): CALVAL + NDSC-NRT
- TOSOMI (KNMI): CALVAL + WOUDC
- Others?

# OPERATIONAL NRT v5.01: Global View

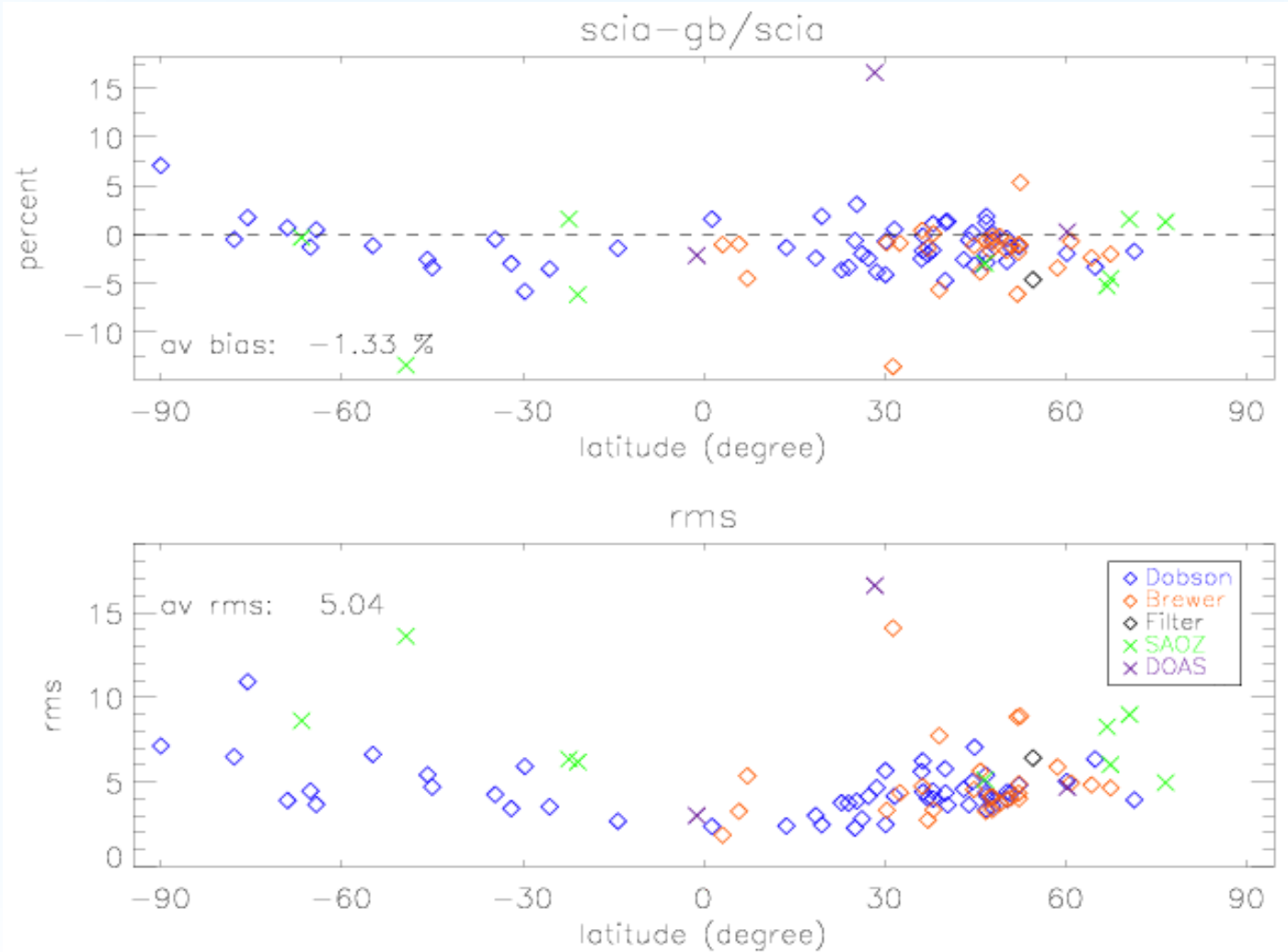


## GDOAS (L1 MS 5.01)



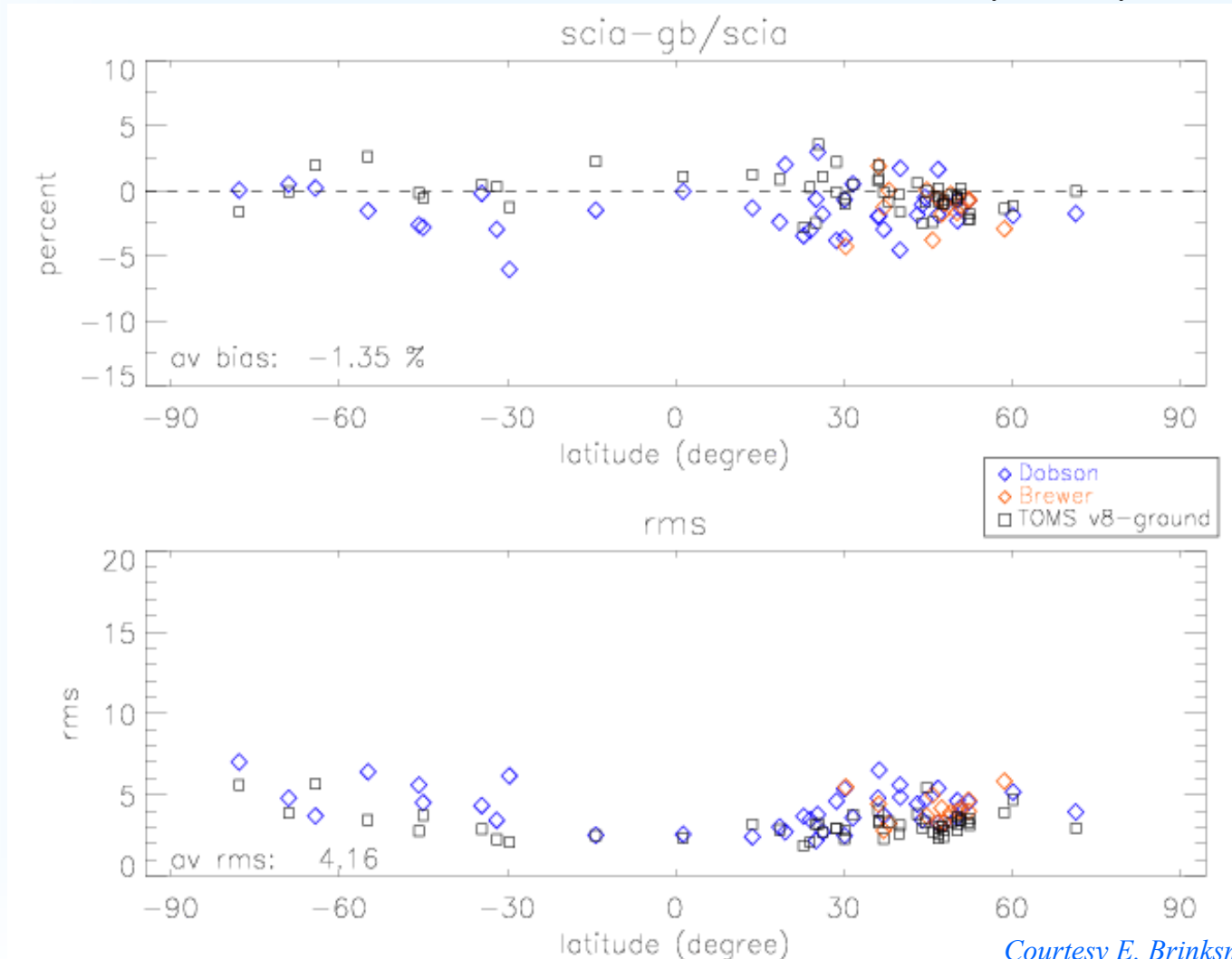
*GDOAS data from M. Van Roozendael, BIRA-IASB*

## TOSOMI (2003)



*Courtesy E. Brinksma, KNMI*

## TOSOMI vs TOMS v8 (2003)



*Courtesy E. Brinksma, KNMI*

## Conclusion

- Operational data product
  - Good geophysically consistency
  - Agreement of about  $\pm 2-10\%$
  - SZA dependence of 8-10%
  - Comparable (not equal !) to GDP 2.x
  - Cloud fraction dependence
  - Season/latitude dependence
  - Master Set not suitable for deeper investigation
- Other data products: TOSOMI & GDOAS