

SCIAMACHY SO₂
All

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Overview over SO₂ fit on SCIAMACHY measurements

- SO₂ retrieval works well on SCIAMACHY data
 - IASB-BIRA Brussels
 - IUP Bremen
- values agree well with GOME
- residuals larger than for GOME
=> further improvements possible?
- settings of operational processor not yet optimal:
 - fitting window needs to cross cluster boundary
 - earth-shine or ASM diffuser background needed
 - if off-line processor is used with "scientific settings", results agree
- validation so far only by comparison with GOME data

SCIAMACHY Slant Column Fits:

Fitting interval:

315 - 326 nm

Molecular absorption cross-sections:

SO₂ [Bogumil et al., 1999]

O₃ at 223K V2 [Bogumil et al., 1999]

O₃ at 243K V2 [Bogumil et al., 1999]

NO₂ at 243K V1 [Bogumil et al., 1999]

Additional terms/corrections:

Calculated Ring cross-sections [Vountas, 1998]

Polynomial (order 4)

Offset (constant + slope)

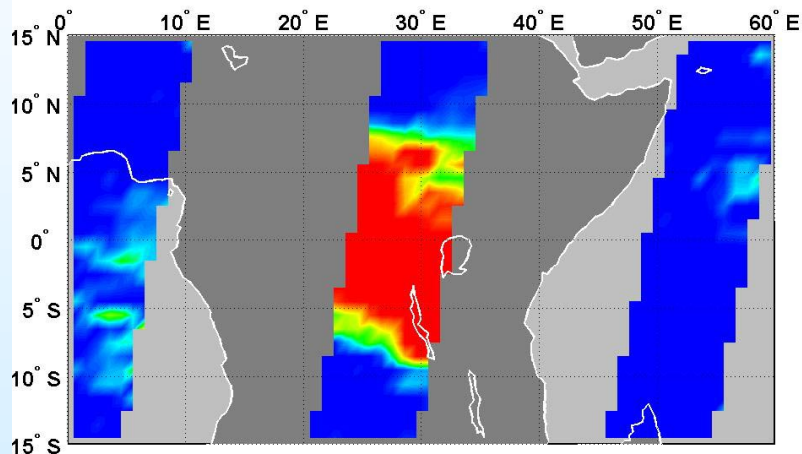
Background Spectrum:

earth-shine over Indian Ocean
and offset correction (BIRA)

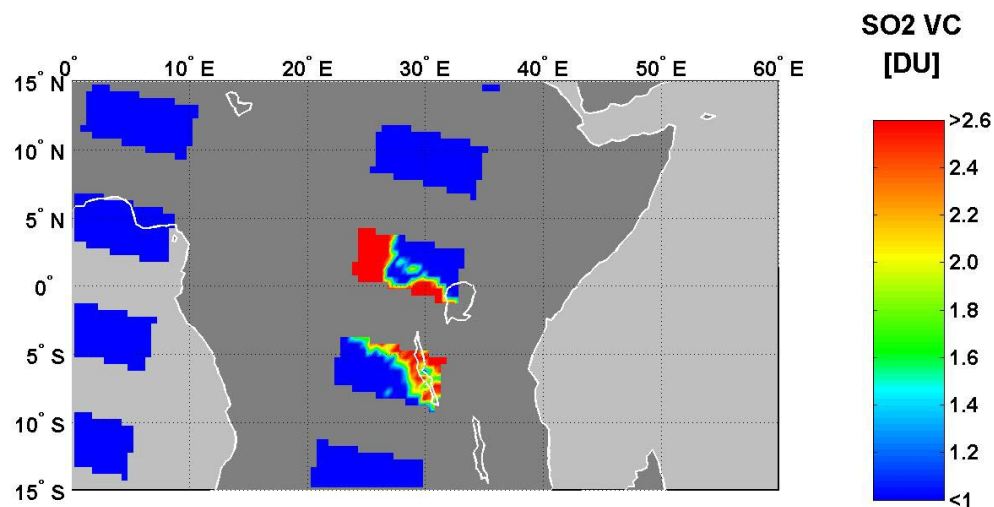
or: ASM diffuser spectrum (IUP Bremen)

Comparison GOME / SCIAMACHY:

GOME SO₂, Congo, 3 Aug 2002

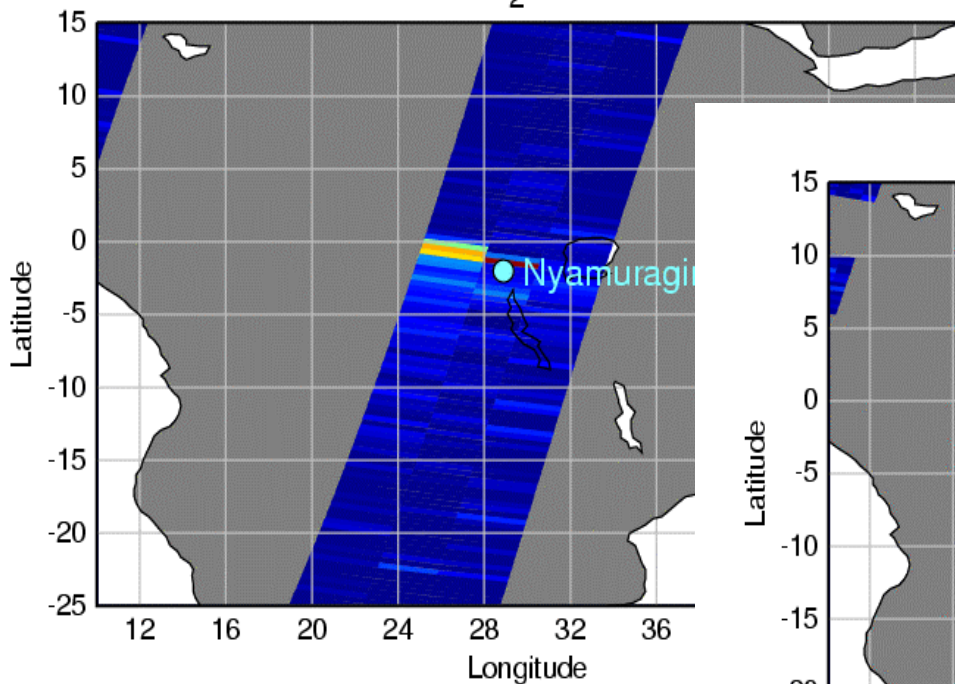


SCIAMACHY SO₂, Congo, 3 Aug 2002

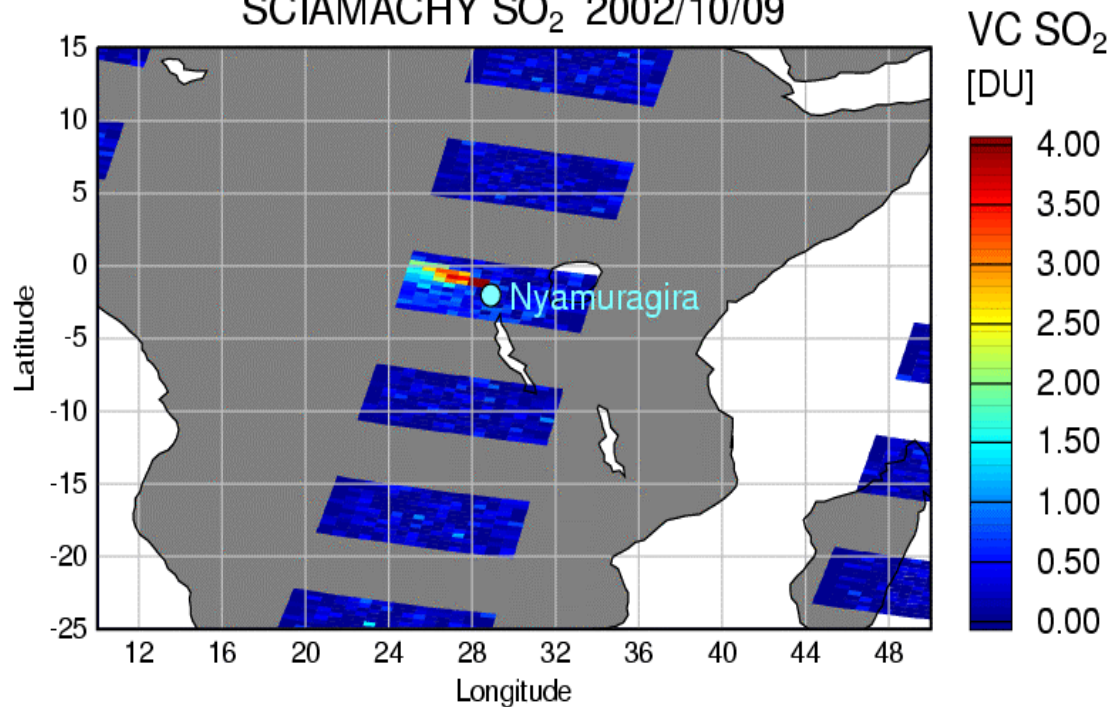


Comparison GOME / SCIAMACHY:

GOME SO₂ 2002/10/09

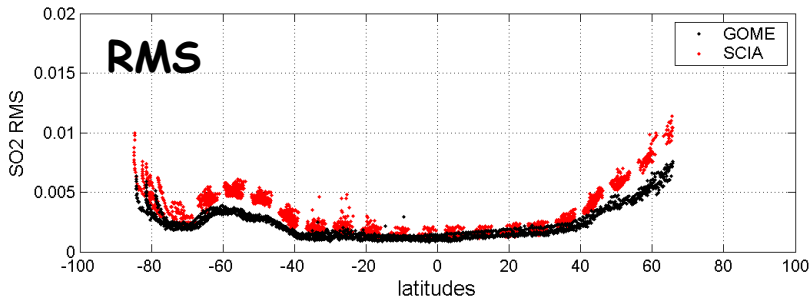
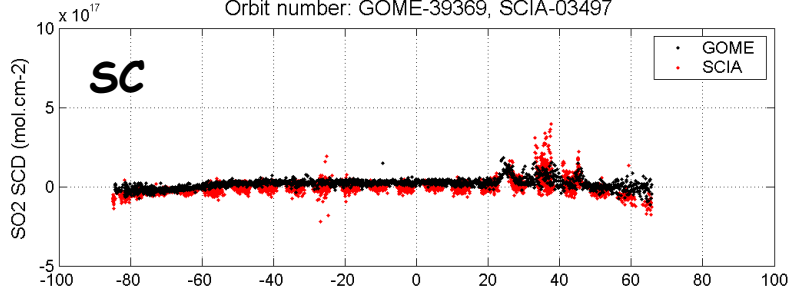


SCIAMACHY SO₂ 2002/10/09

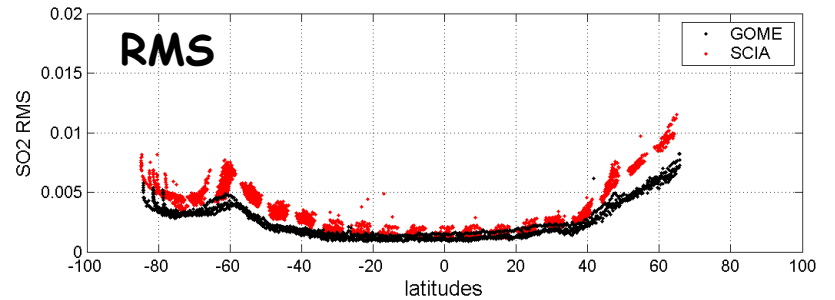
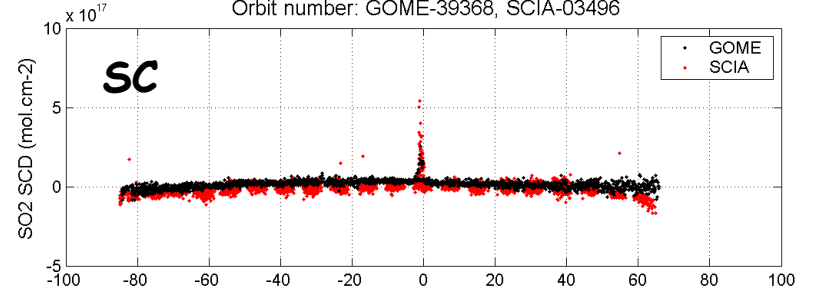


Comparison GOME / SCIAMACHY:

GOME-SCIAMACHY SO₂ SCD, Date: 31/10/2002
Orbit number: GOME-39369, SCIAMACHY-03497

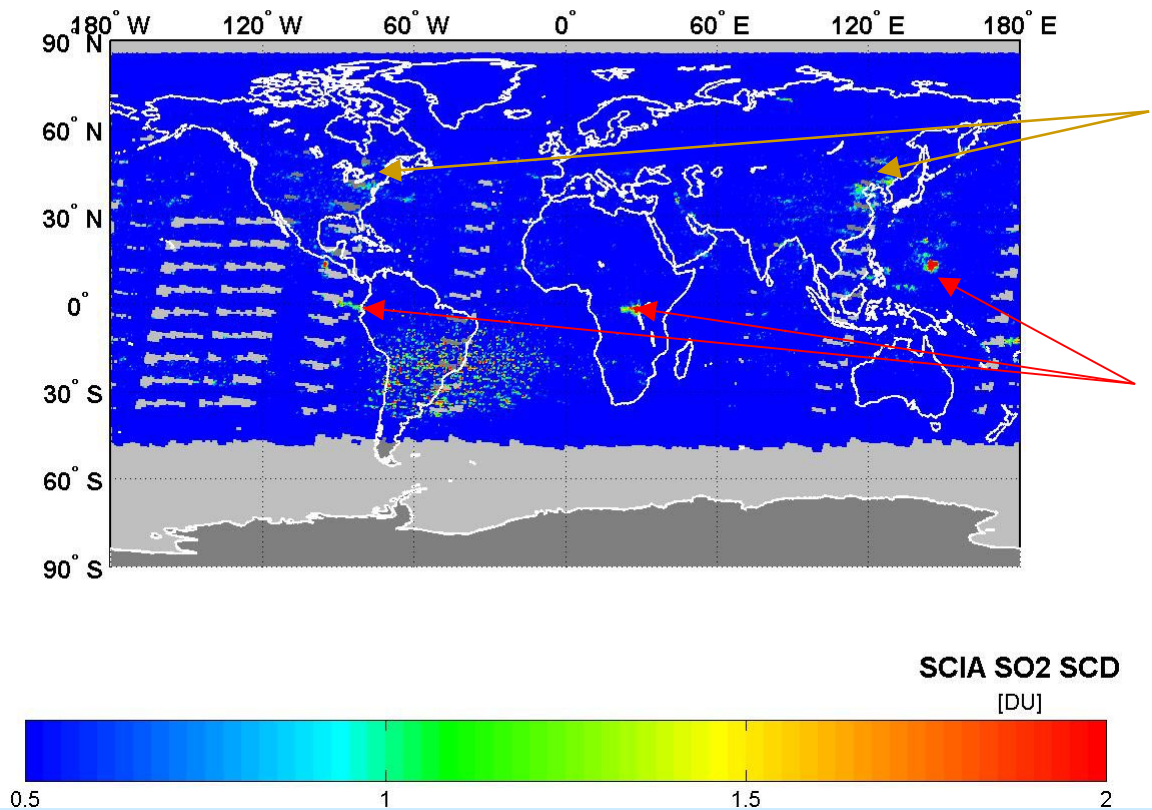


GOME-SCIAMACHY SO₂ SCD, Date: 31/10/2002
Orbit number: GOME-39368, SCIAMACHY-03496



SCIAMACHY: Overview

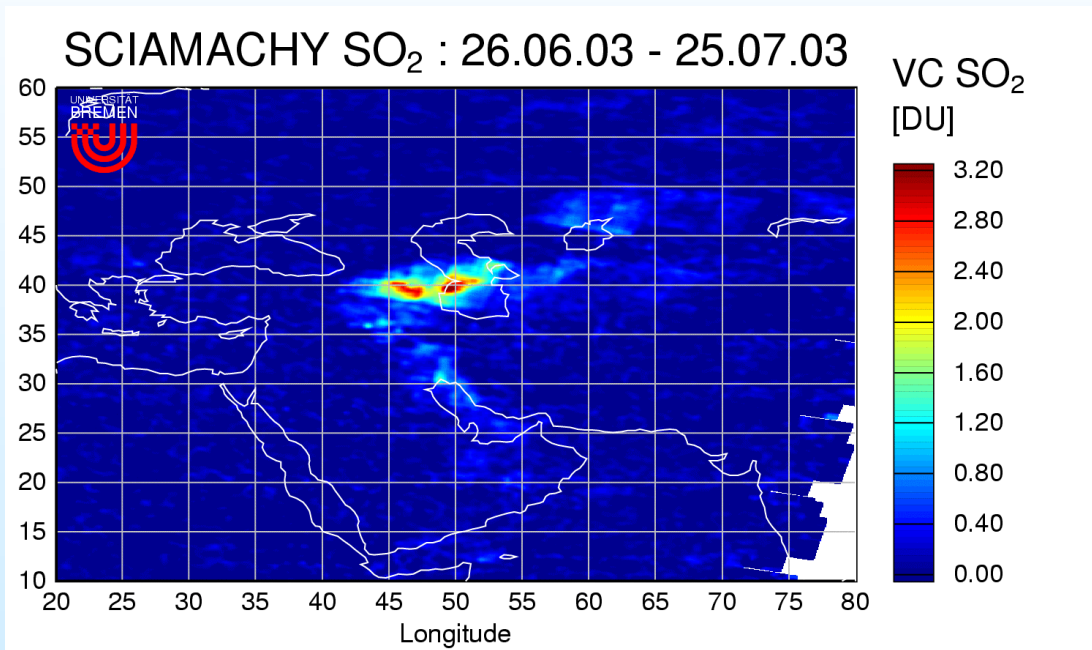
SCIAMACHY SO₂, Jun 2003



Strong pollution events

Volcanic eruptions

SCIAMACHY: Special Events



Fire in a sulphur plant
in Qayyarah, Iraq

Conclusions

- Two scientific implementations for SO_2 columns
 - IASB-BIRA Brussels
 - IUP Bremen
- Good agreement with SO_2 from GOME for both
- Currently no validation numbers because lack of independent measurements in high polluted areas (e.g. volcanic eruptions)
- Similar quality expected for operational products after optimisation of settings