

# *Tropospheric Ozone*

## **GOME / SCIAMACHY - Workshop**

**Annette Ladstätter-Weißmayer**

*E-mail: [lad@iup.physik.uni-bremen.de](mailto:lad@iup.physik.uni-bremen.de)*

*<sup>1</sup>Institute of Environmental Physics/Remote Sensing, University of Bremen,  
Bremen, Germany*

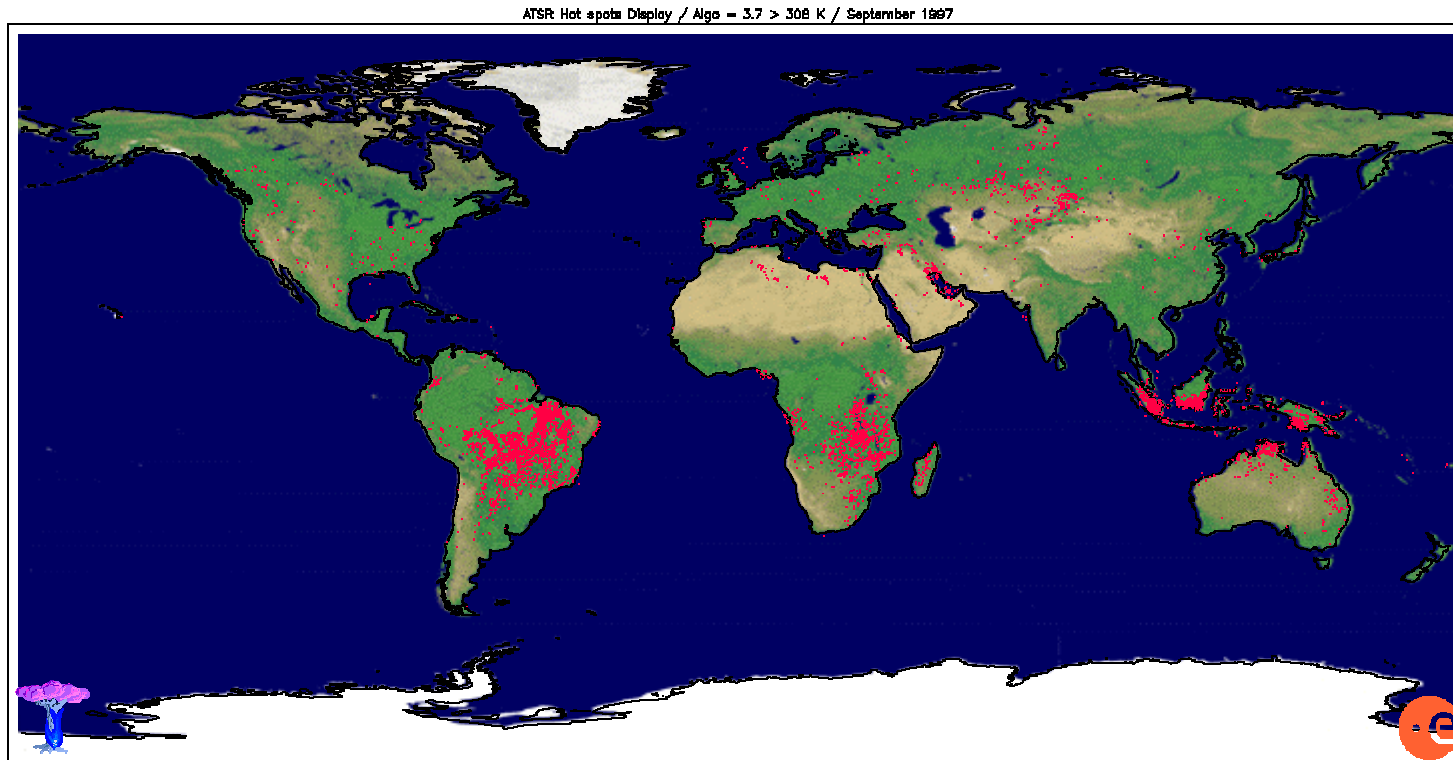
# Motivation

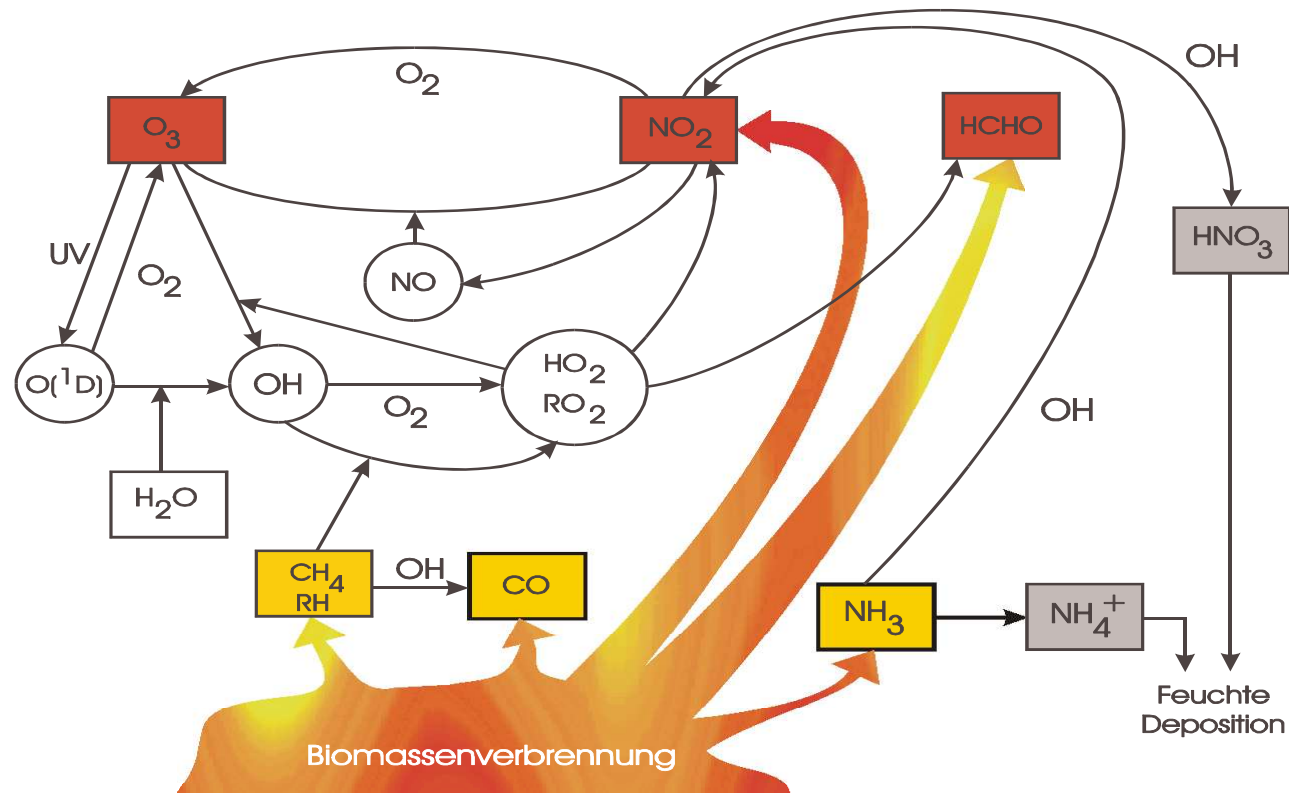
---

- Increasing of world population – increasing of energy consumption (predominantly burning of fossil fuel:
- Asia, Africa, South America: **Biomass Burning** → Emission of atmospheric compounds)
- CO<sub>2</sub>-increasing (mean value 1,5 ppm/year)
- Emission of CO, NO<sub>x</sub>, KW – O<sub>3</sub>-production (smog formation) → (-disaster) in the troposphere
- Pollution events: regional – global problem
- Balloonborne-measurements → SHADOZ-sondes-data  
Model-data → MATCH-MPIC  
Satellite based measurements → **GOME-SCIAMACHY-**  
and FURM-data
- Continous measurements for a long time scale

# Motivation

## Biomass Burning in September 1997



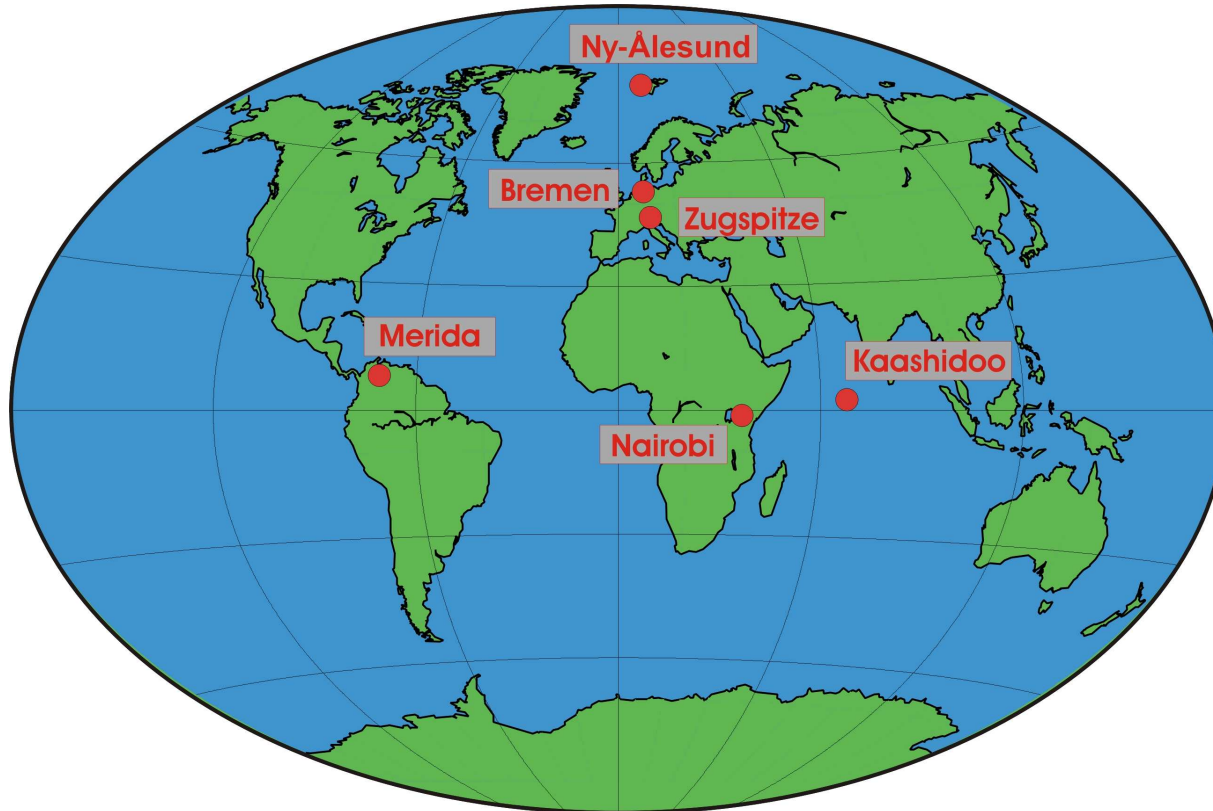


# Tropospheric O<sub>3</sub> in the Tropics: **SHADOZ**-Measurements



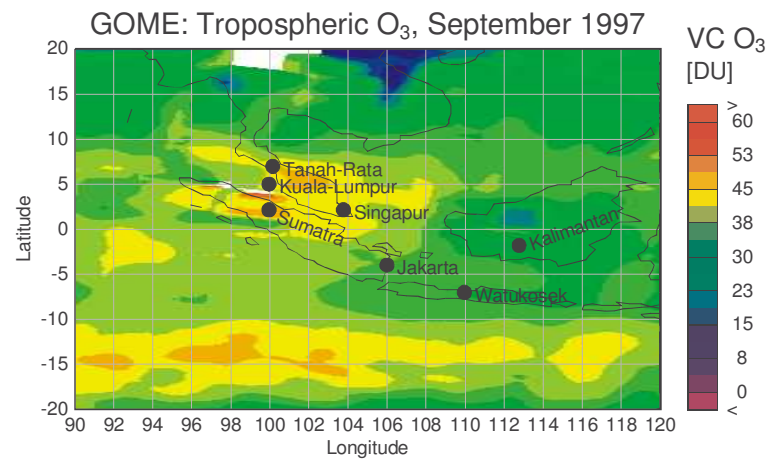
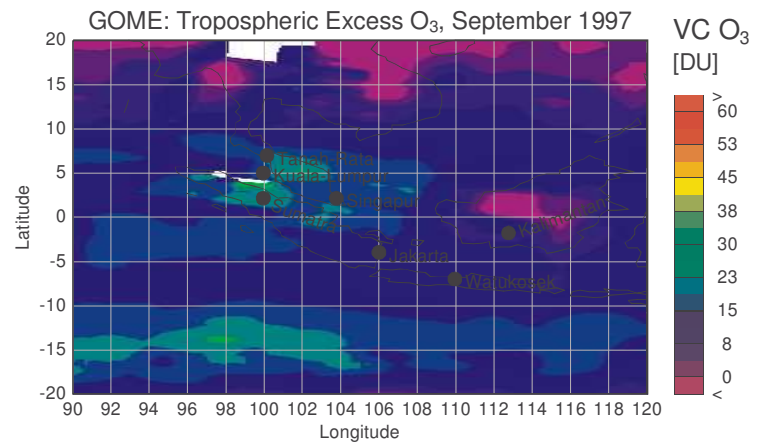
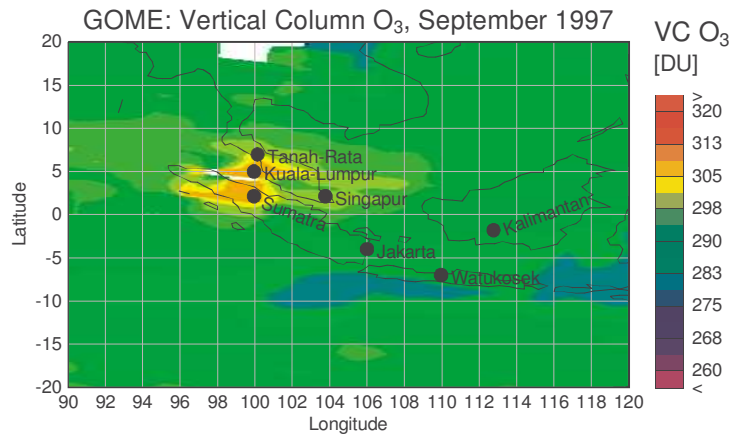
SHADOZ (Southern Hemisphere Additional Ozonsondes)  
A. Thompson et al. 2000

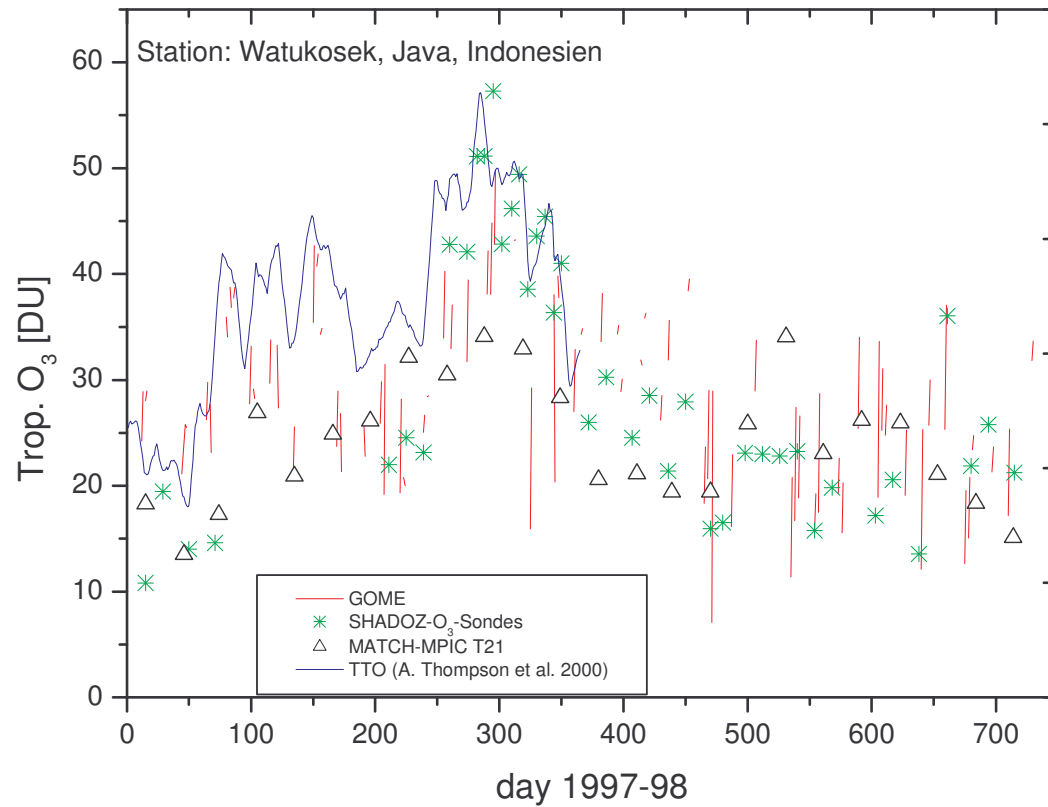
# BREDOM-Measurements



BREDOM (Bremer DOAS Messnetz)

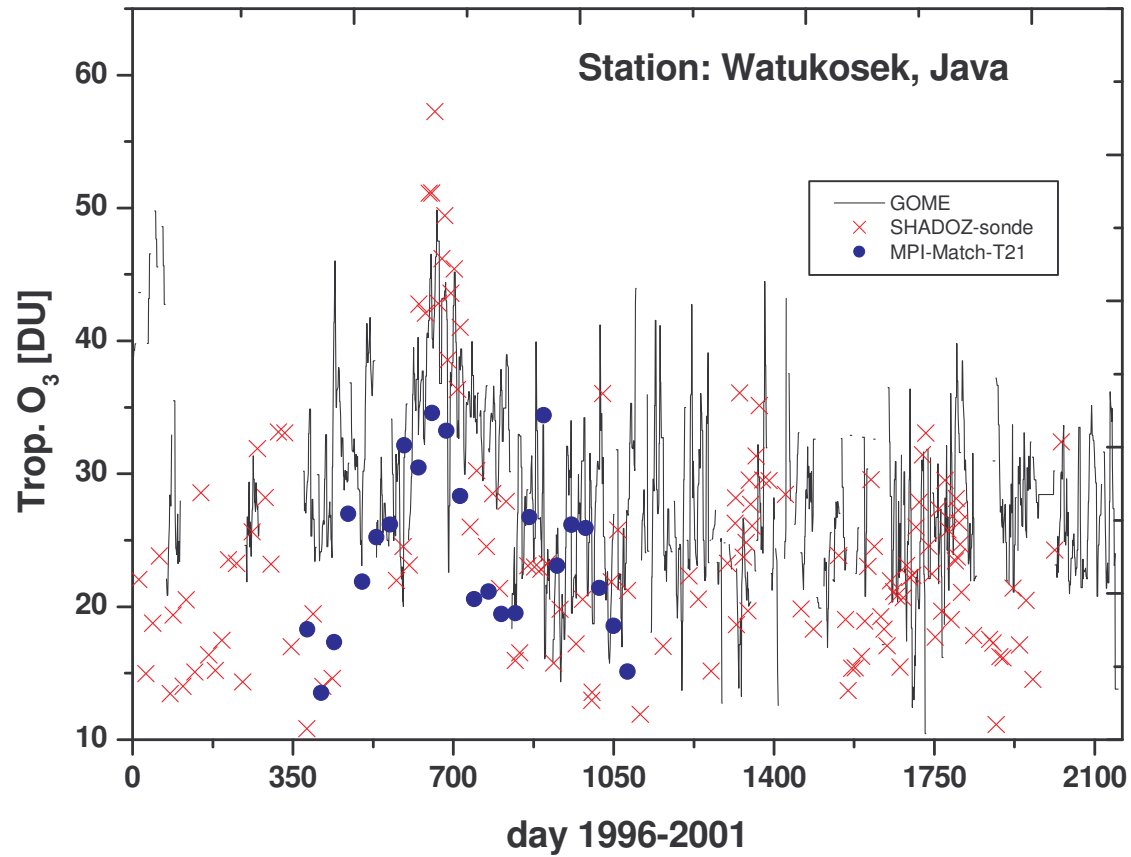
# GOME measurements: Tropospheric O<sub>3</sub> in the Tropics



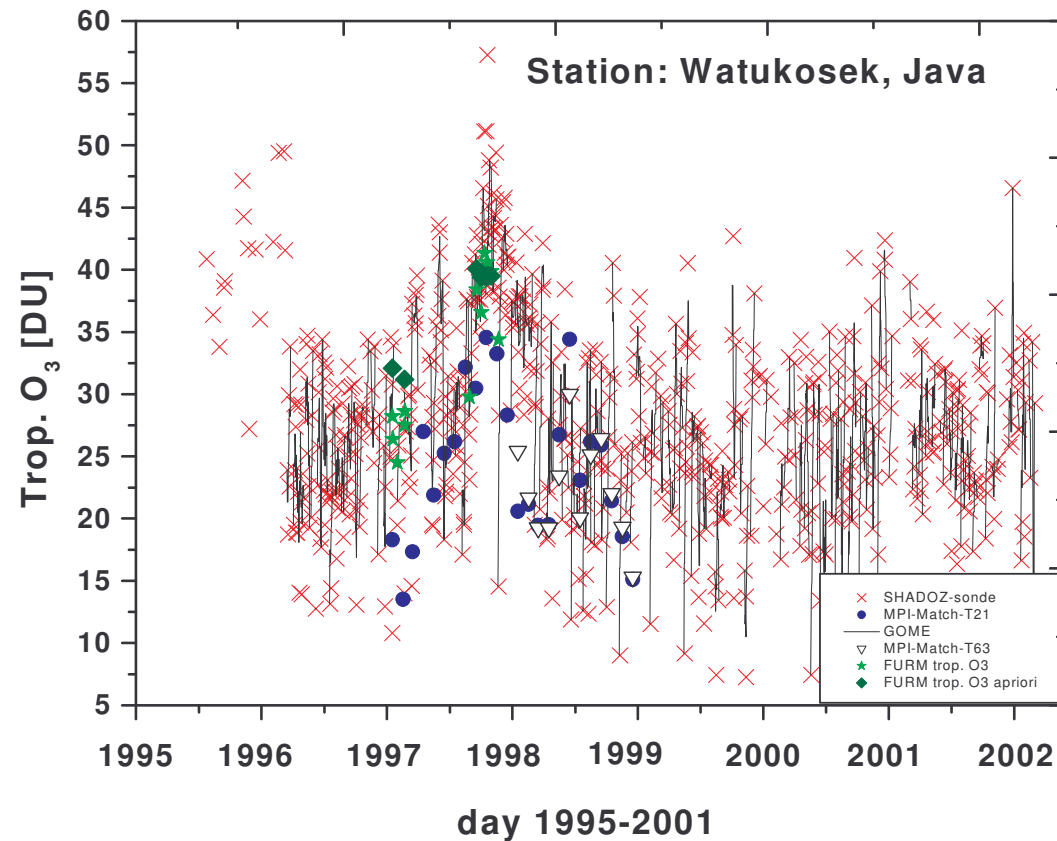




# Comparison: GOME - MATCH-MPIC-Modell - SHADOZ-Sondes-Data (local)

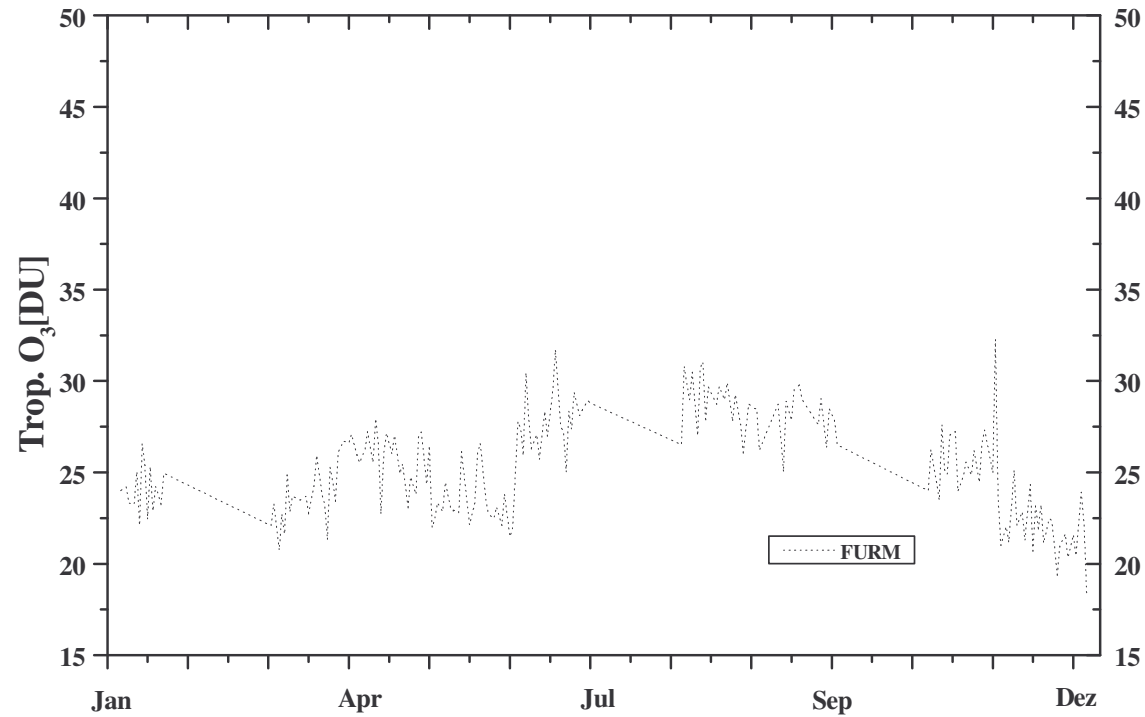


# Comparison: GOME - MATCH-MPIC-Modell - SHADOZ-Sondes-Data – FURM (local)



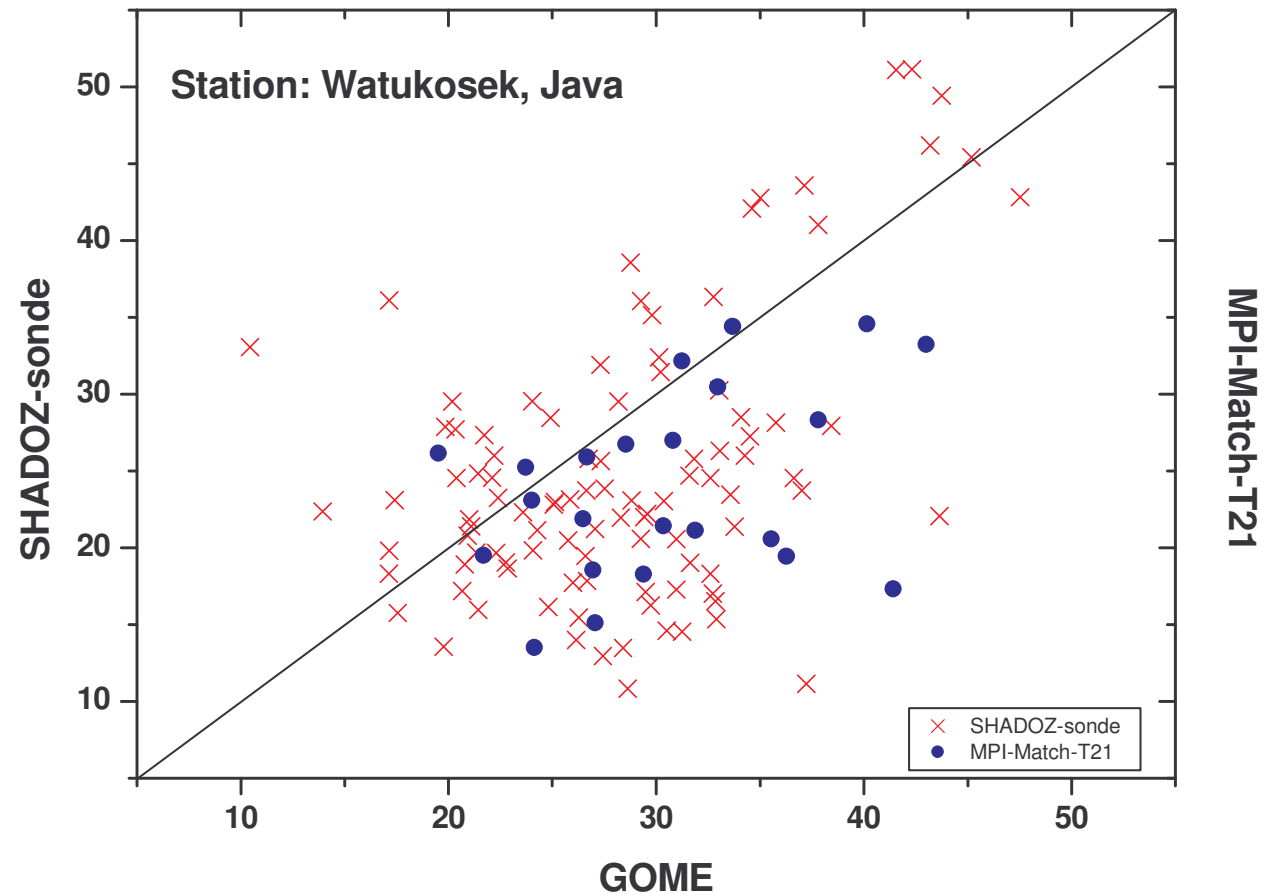
# Tropospheric O<sub>3</sub>: FURM (Pacific)

## FURM: tropospheric background (Reference 180-190°)

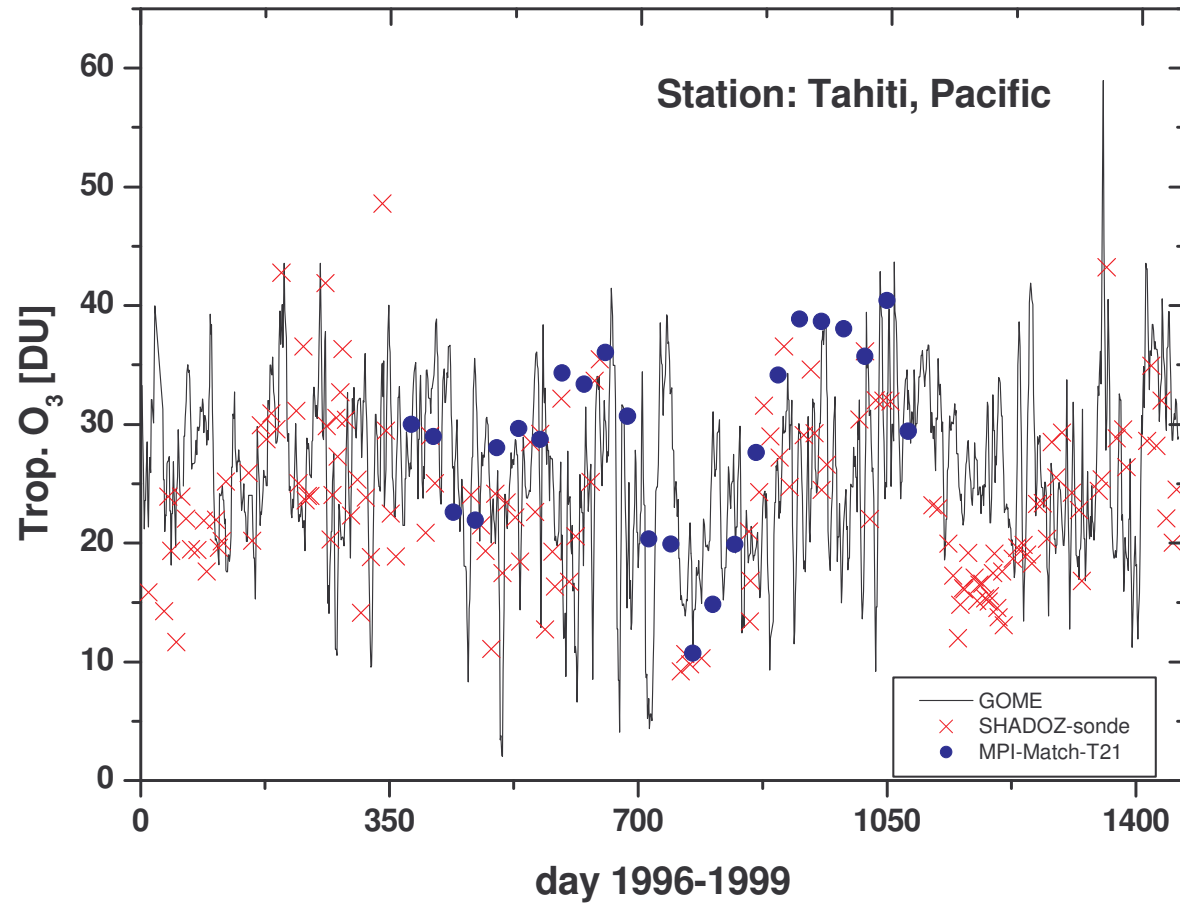


FURM: V. Rozanov et al. 1998, K. Bramstedt et al. 2000

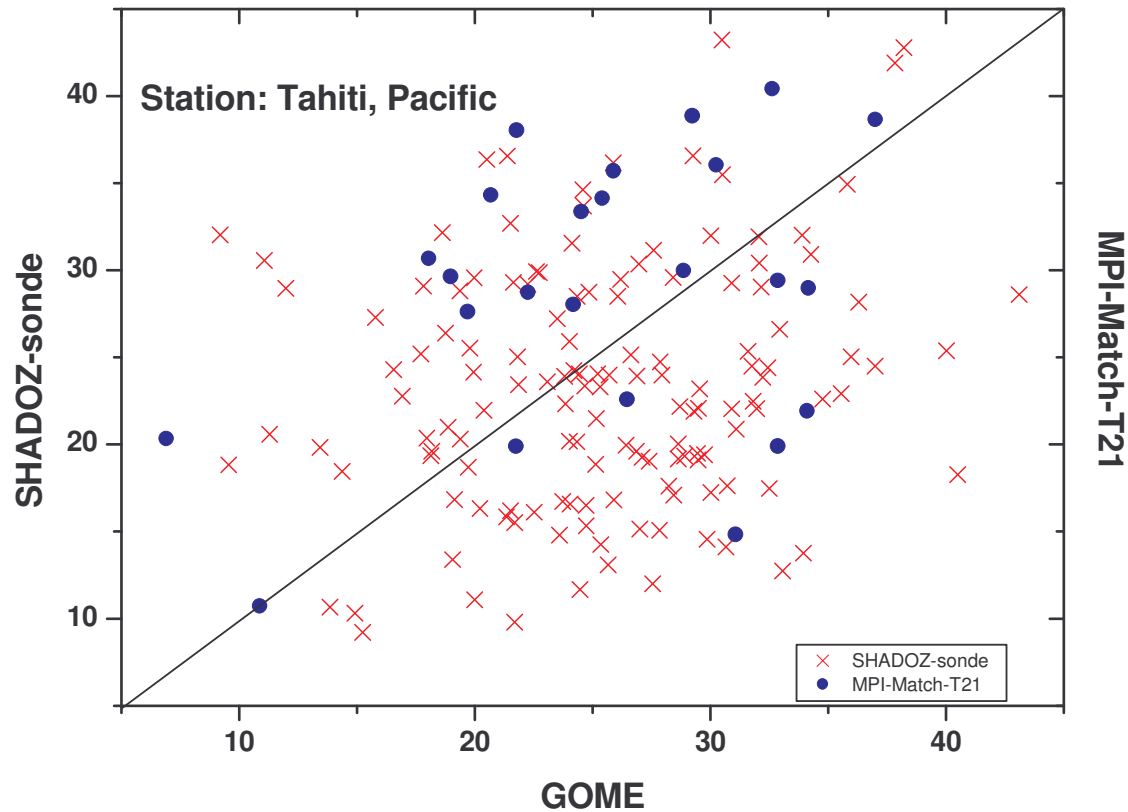
# Comparison: GOME - MATCH-MPIC-Modell - SHADOZ- Sondes-Data (local)



# Comparison: GOME - MATCH-MPIC-Modell - SHADOZ-Sondes-Data (local)

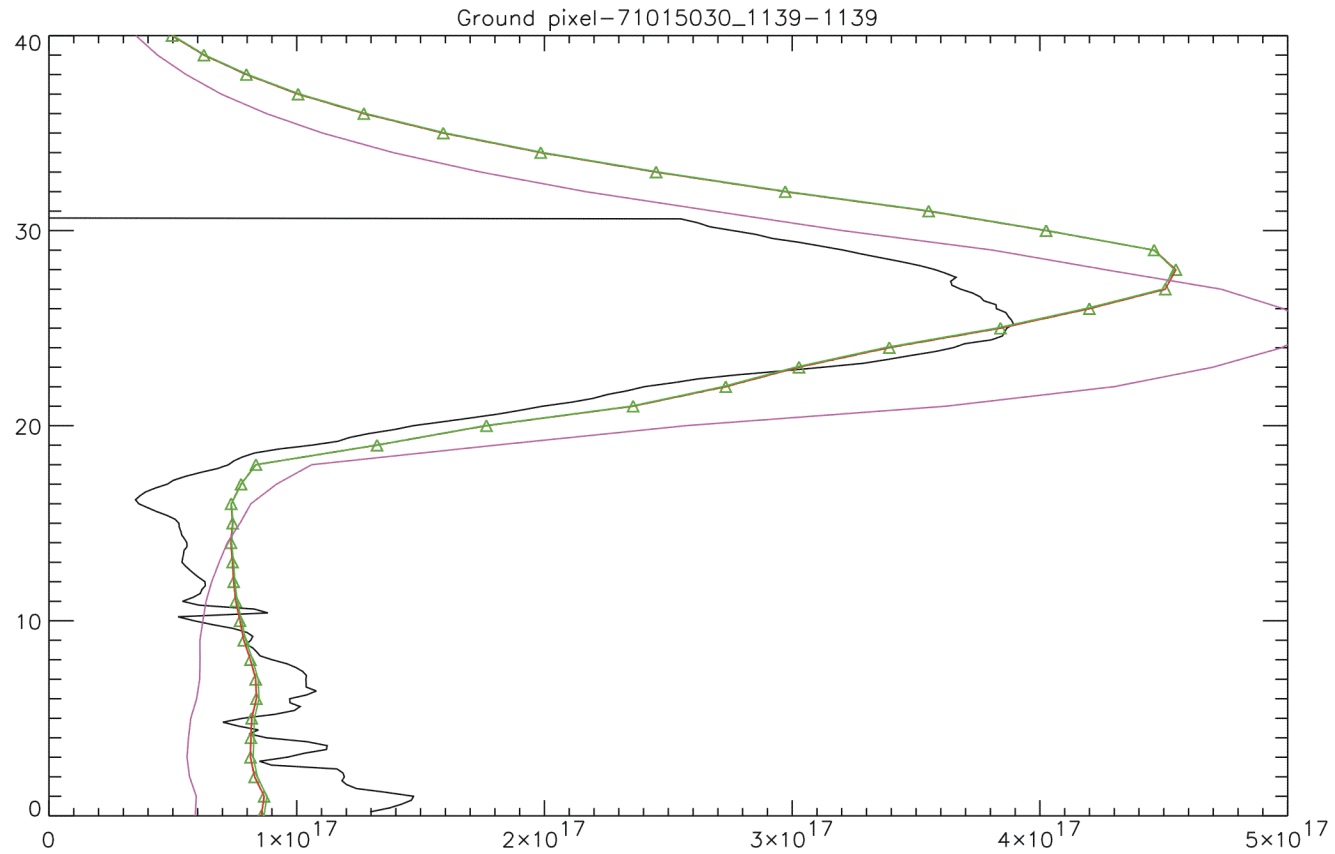


# Comparison: GOME - MATCH-MPIC-Modell - SHADOZ- Sondes-Data (local)



# Comparison: GOME - FURM - SHADOZ-Sondes-Data (local)

## Bestimmung von troposphärischem O<sub>3</sub>: Watukosek, Java



FURM: 50,55 DU

SHADOZ: 51,14 DU

# Future work

---

- Analysis of tropospheric O<sub>3</sub> in the tropics and in northern latitudes
- Measurements:            **global**                    GOME - SCIAMACHY  
                                 **local**                                BREDOM
- Comparison:                with data of:            O<sub>3</sub>-Sondes  
   MATCH-model  
   FURM-data  
   if possible airborne  
   measurements
- Comparison:                **global - local**        GOME – SCIAMACHY