

## GOMOS OZONE

### Balloon validation

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## Balloon instruments

High latitudes, mid-latitudes, tropical latitudes

### - UV visible spectrometers:

AMON (Stars occultation)

SALOMON (Moon occultation)

SAOZ (Sun occultation)

### - IR spectrometers:

MIPAS-B2 (limb sounder)

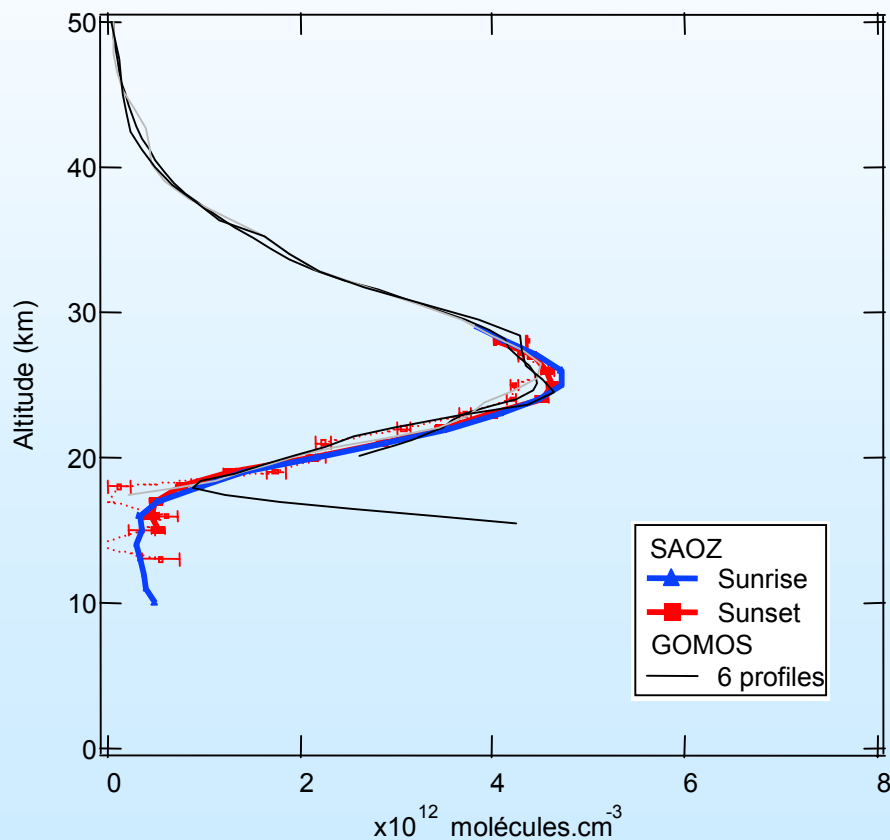
SPIRALE (in-situ measurements)

+

**LPCE algorithm** (derived from SALOMON algorithm)

applied to GOMOS transmissions

## SAOZ : Bauru, Southern Tropics, Feb. 2003

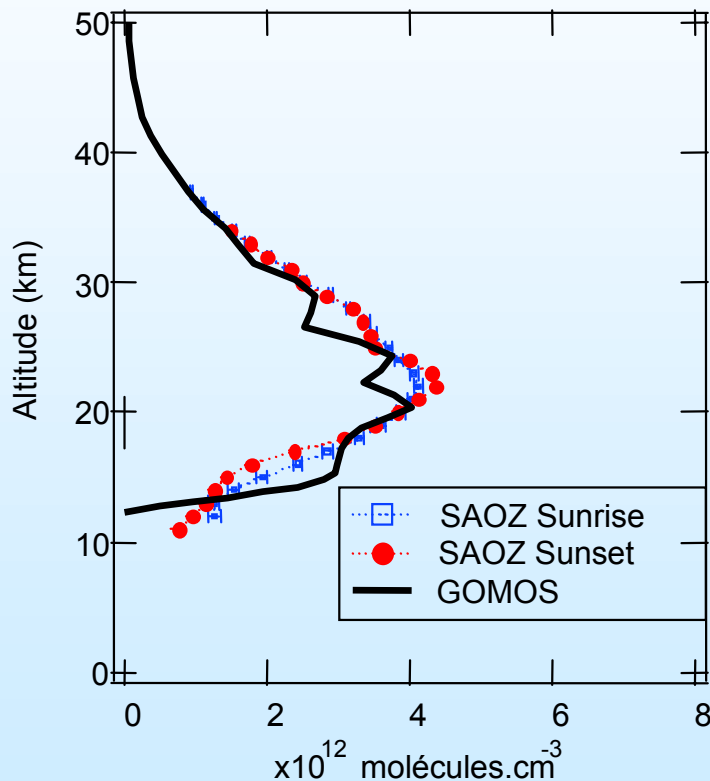


GOMOS : average of 6 profiles using various stars ( $2.3 < m < 2.9$ )

### Precision

- 20-30 km : < 3%
- Below 20 km : unrealistic

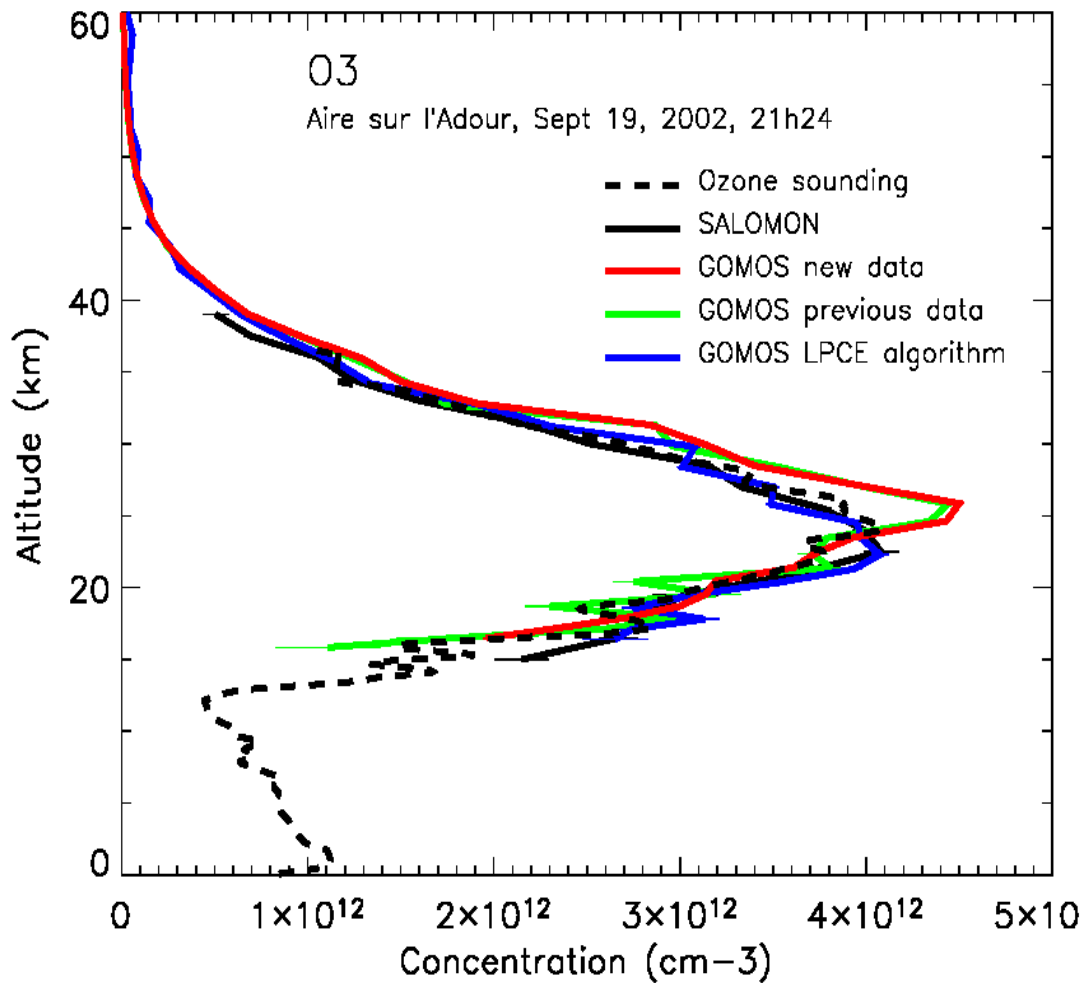
## SAOZ : Vanscoy, Canada, Sept. 4, 2002



- Coincidence criteria:  
less than 600km and 4h

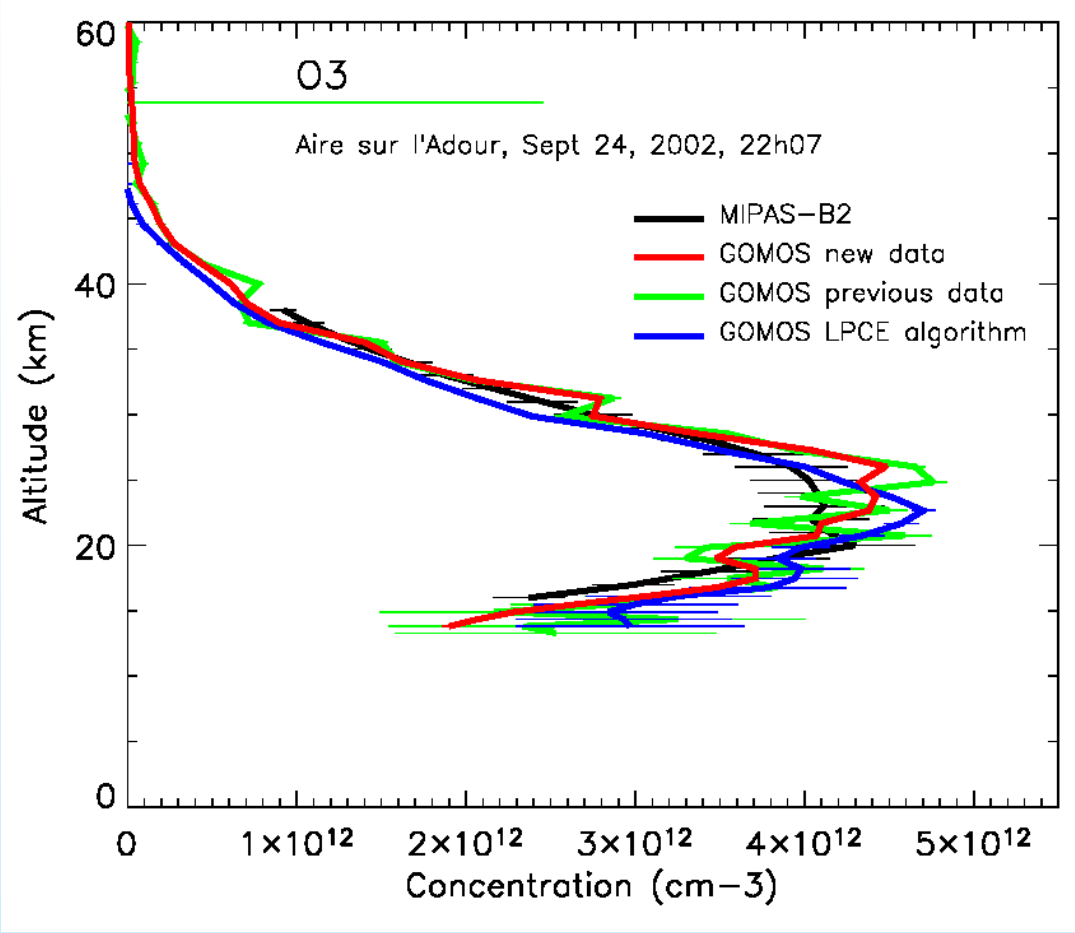
- Local discrepancies

## SALOMON : Aire sur l'Adour, France, Sept. 19, 2002



- Very good coincidence
- Excellent agreement between SALOMON and ozone sounding
- Bad estimation of O<sub>3</sub> maximum by the "GOMOS" algorithm
- Better retrieval by the LPCE algorithm

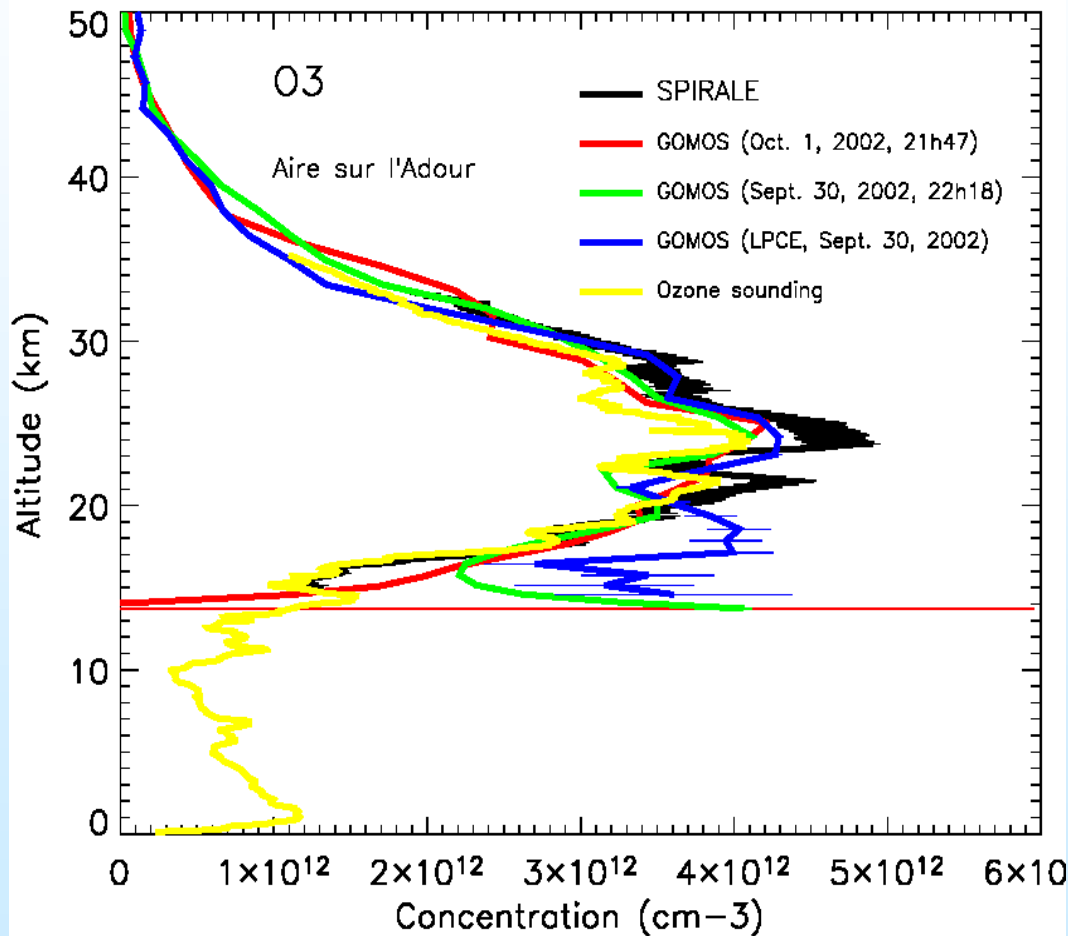
## MIPAS-B2 : Aire sur l'Adour, France, Sept. 24, 2002



Same problem for

the position of the  
concentration maximum

## SPIRALE : Aire sur l'Adour, France, Oct. 1, 2002

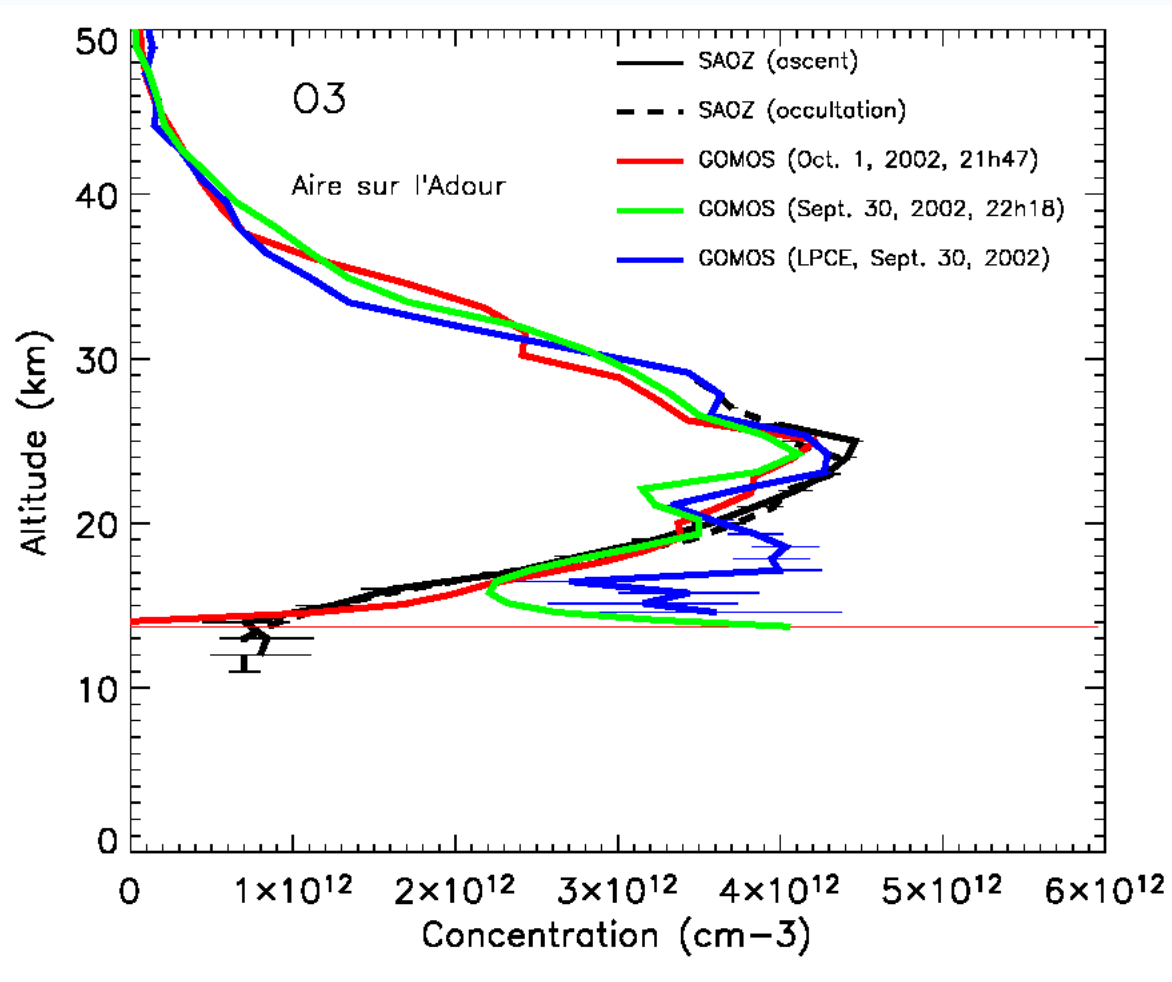


- LPCE algorithm better than "GOMOS" algorithm above 20 km

- Strong discrepancies below 20 km

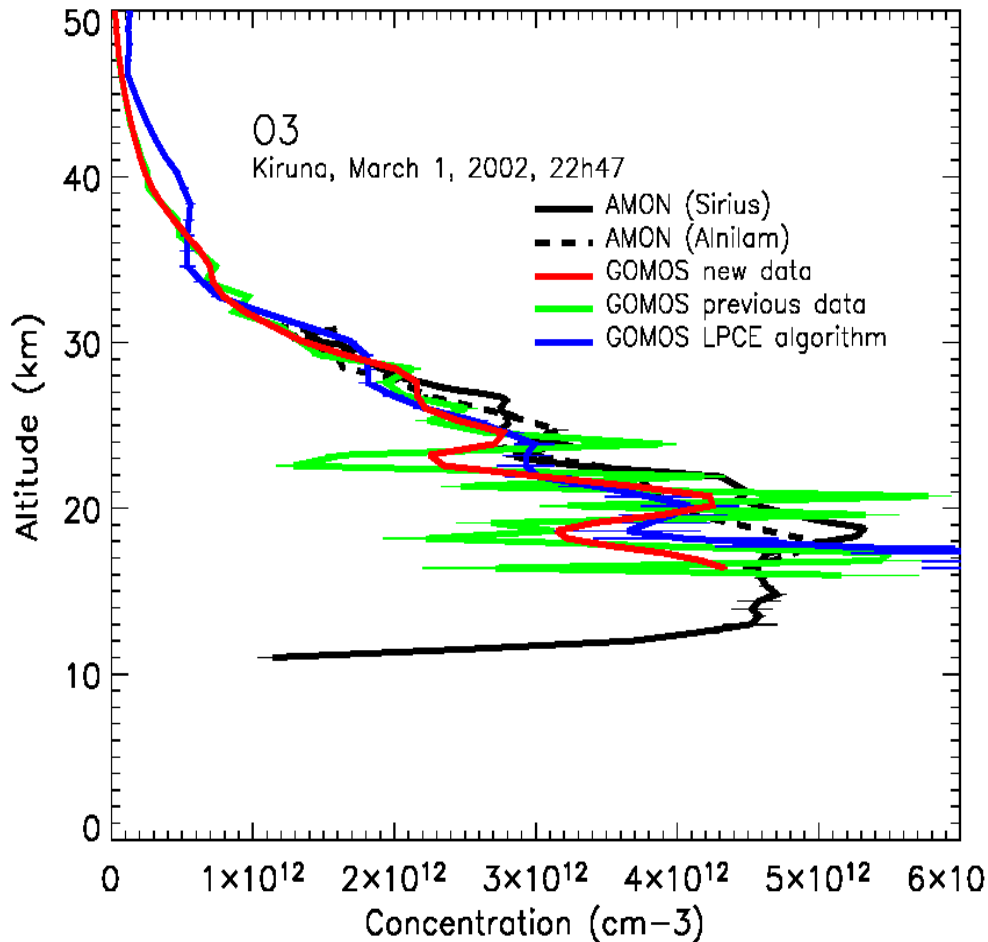
- Discrepancies between IR measurements and (UV-Visible + sounding) need further analysis

## SAOZ : Aire sur l'Adour, France, Oct. 1, 2002



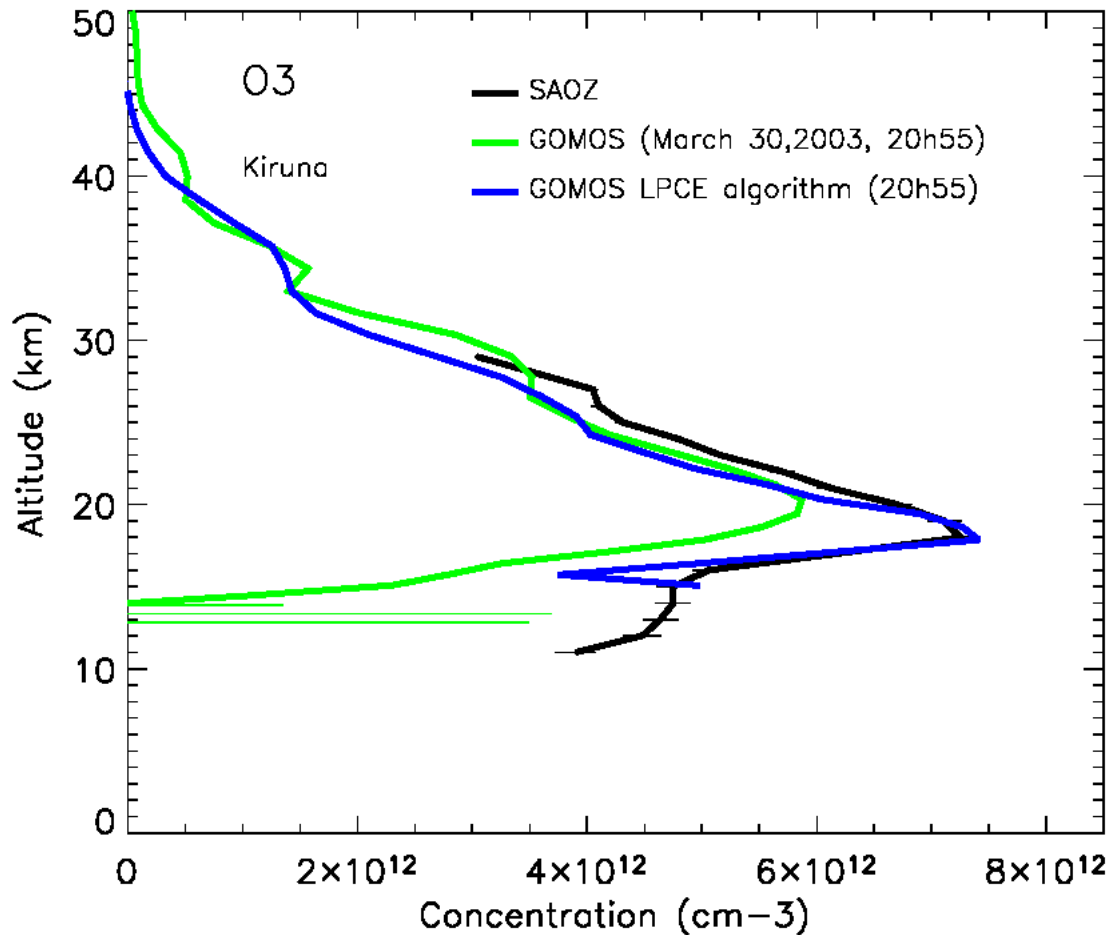
- Same conclusions ...

## AMON : Kiruna, Sweden, March 1, 2003



- Measurements during a PSC event
- Impossible detection of the concentration maximum

## SAOZ : Kiruna, Sweden, March 30, 2003



- Strong discrepancies ...
- Error of 20 % at the maximum concentration

## Conclusions

- Oscillations are removed on the new version of the data but ... **some real structures are lost !**
- **Bad estimation** of the position of maximum concentration
- **Difference between "GOMOS" and LPCE algorithms :**
  - **spectral window (450-700nm)**
  - **chromatic scintillation** removed by a sliding average over 3 consecutive spectra
  - **aerosol contribution** estimated by a third order polynomial

## Accuracy :

- Few percents above 20 km for averaged profiles
- Unrealistic data below 20 km (in the aerosol layer)
- Individual profiles not yet usable ...
- Retrievals difficult in the presence of PSC

## Recommendations :

- Need of labelling the data obtained during a PSC event
- Improvements in the algorithms :
  - spectral window
  - sliding procedure
  - better aerosol estimation