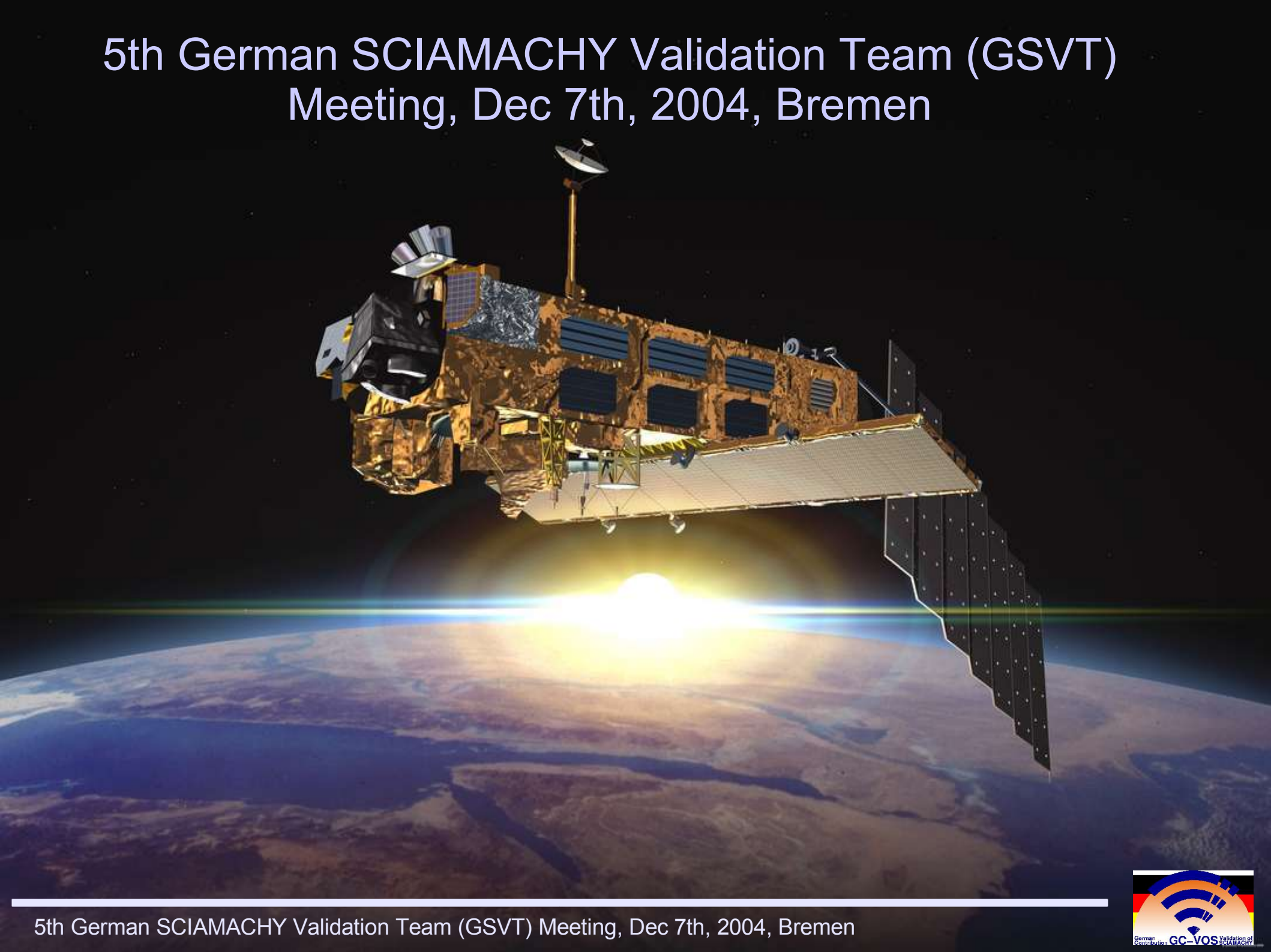
5th German SCIAMACHY Validation Team (GSVT) Meeting, Dec 7th, 2004, Bremen

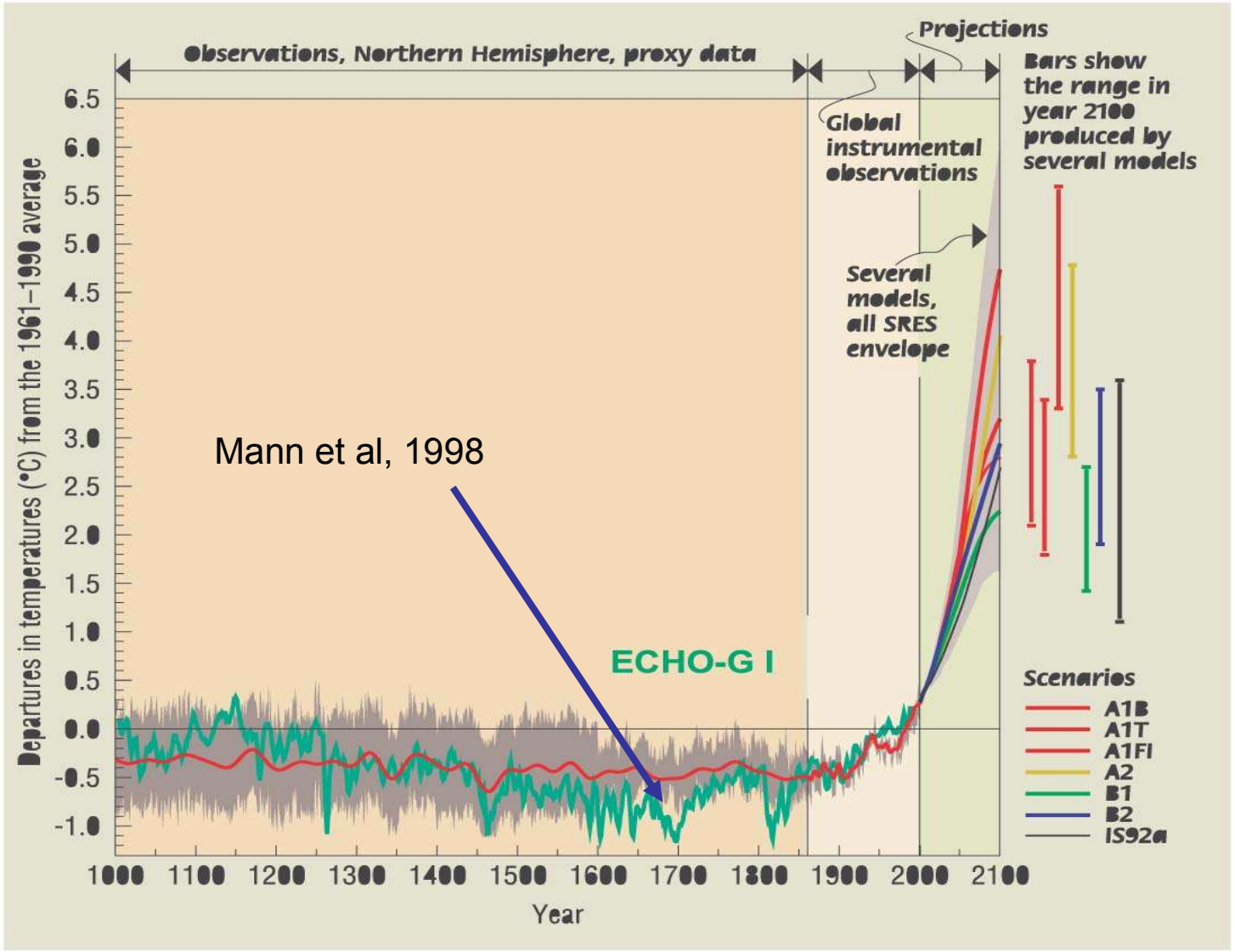


Why are we here?

- Earth's atmosphere changes by natural variability and anthropogenic impact are a key issue of geophysical research
- Prominent examples of global changes are
  - the dramatic loss of stratopheric ozone in polar spring (ozon hole)
  - global warming caused by increasing greenhouse gases such as CO2 and CH4
- Global Observation of Earth's atmosphere is a prerequisite for understanding atmospheric processes

and therefore a prerequisite for political decisions about consequences

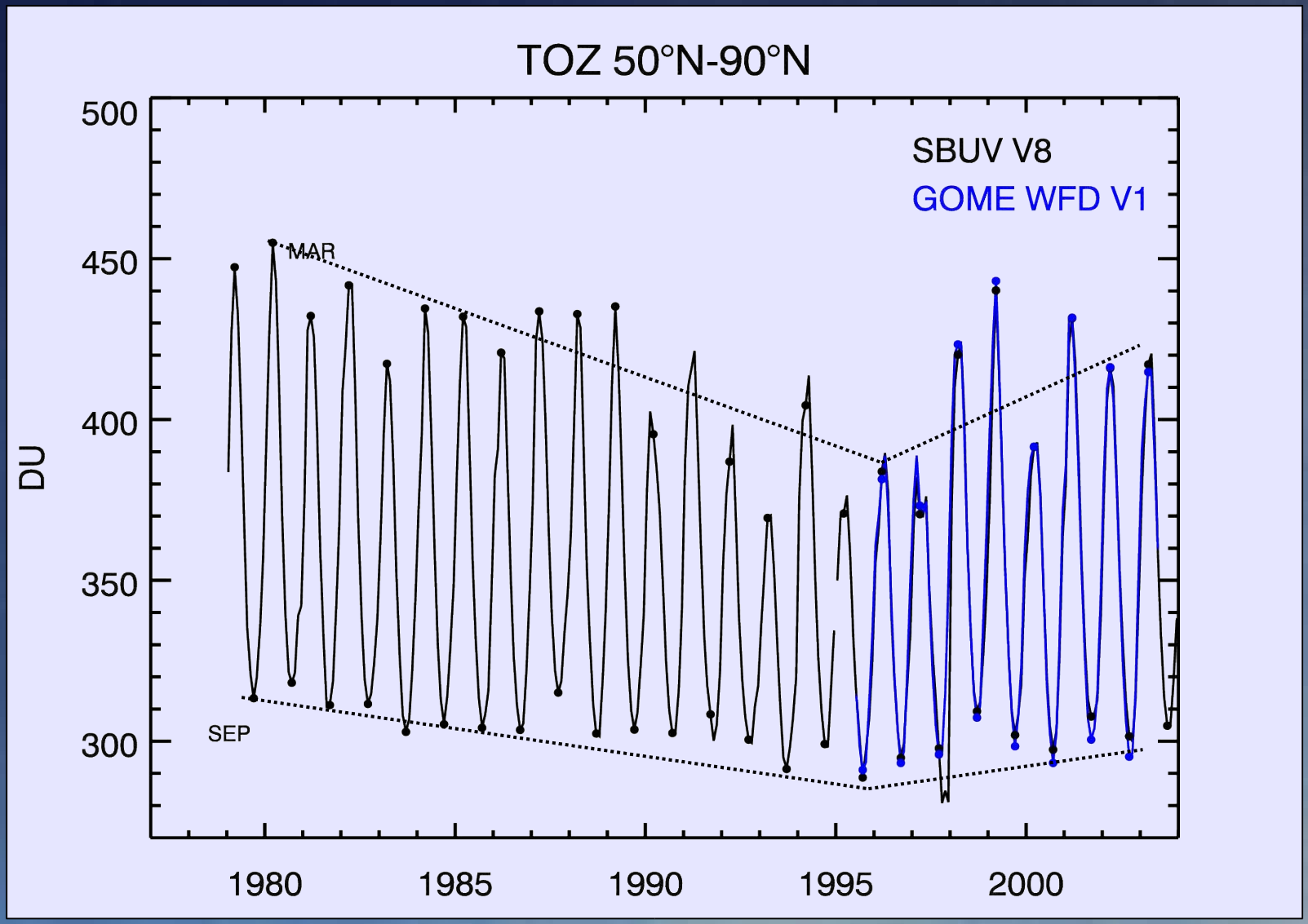
Observed and expected changes of global temparature



Mann et al., 1998: temperature proxy data

ECHO-G1: climate model result

Mean total ozon from 50N-90N : trend 1980 - 2004



courtesy M. Weber

Why are we here?

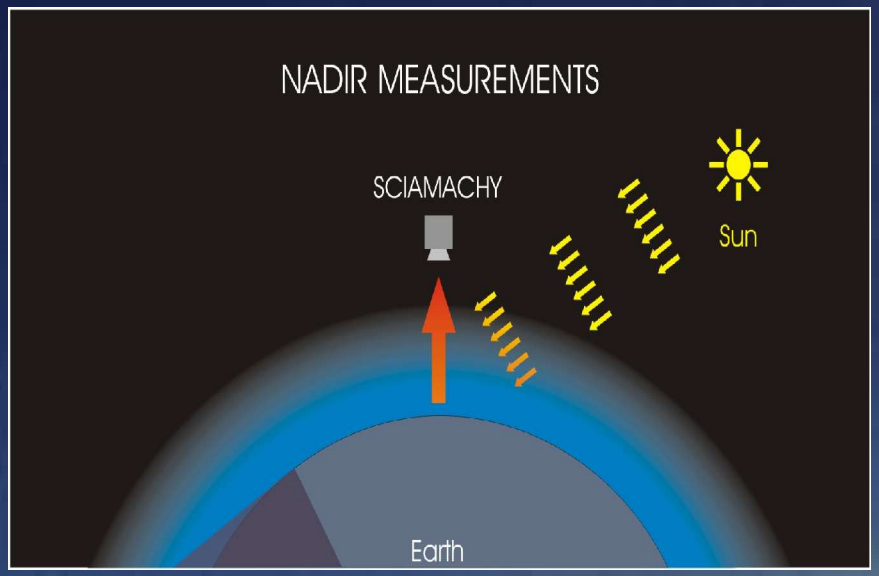
- Satellites instruments provide very important contributions to the global observation of Earth's atmosphere
- SCIAMACHY is a UV/vis/near-IR spectrometer onboard Envisat observing the atmosphere in nadir, limb and occultation geometry

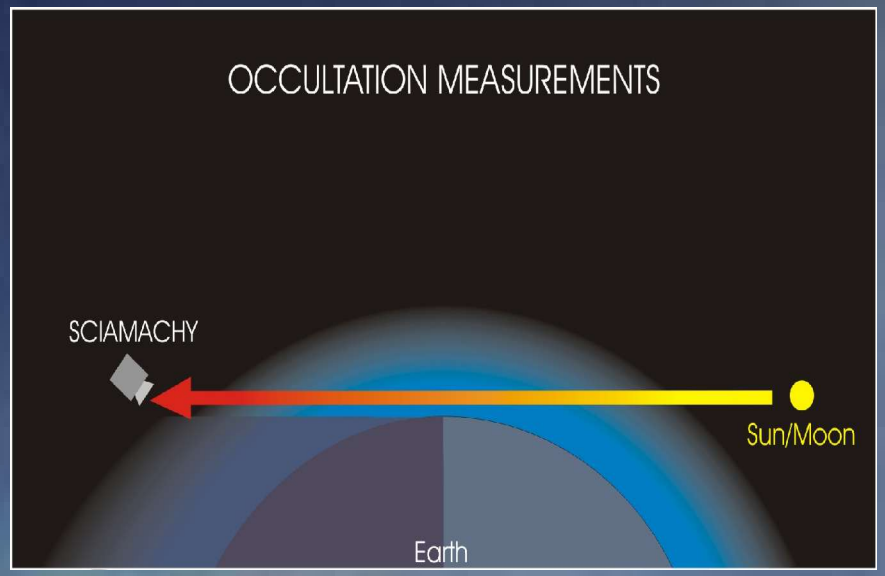
Validation of atmospheric parameters from SCIAMACHY with independent measurements of are a prerequisite for scientific use of SCIAMACHY data

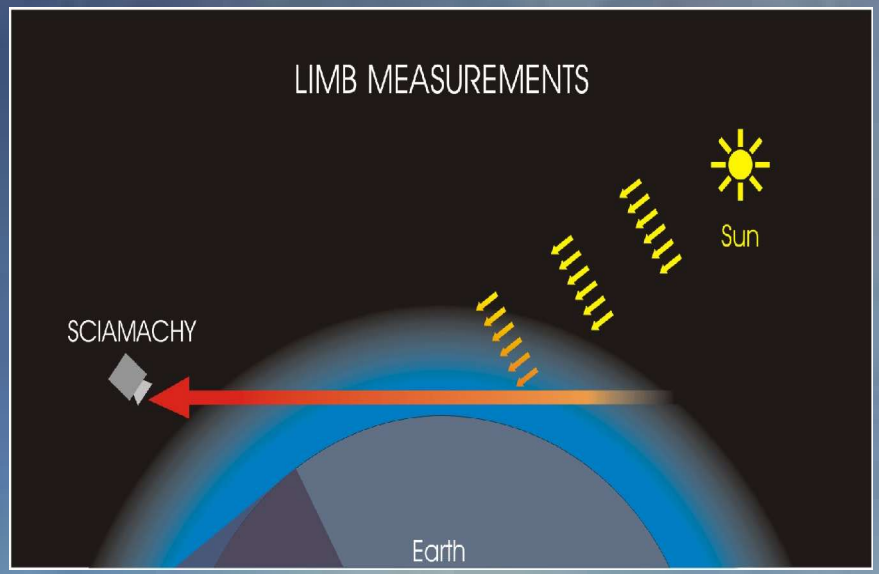
SCIAMACHY-GOME History

05-1985	Stratospheric Ozone hole observed by Farman et al (Nature).
1985–1988	Development and submission of the *SCIAMACHY (Scanning Imaging Absorption Spectrometer for atmospheric CHartographY),* supported by Germany to ESA for the Polar Platform now ENVISAT.
1988	Proposal of SCIA-mini for ERS-2
1989	Descope of *SCIA-mini to GOME (Global Ozone Monitoring Experiment)*
20-04-1995	Launch of ERS-2 with GOME
1997-2000	Selection of GOME-2 for the EUMETSAT/ESA operational series Metop
28.02-2002	Launch of ENVISAT with SCIAMACHY on board.
since 07. 2002	Almost continously measurement of SCIAMACHY
since 07. 2002	Collection of correlative measurements by the validation community

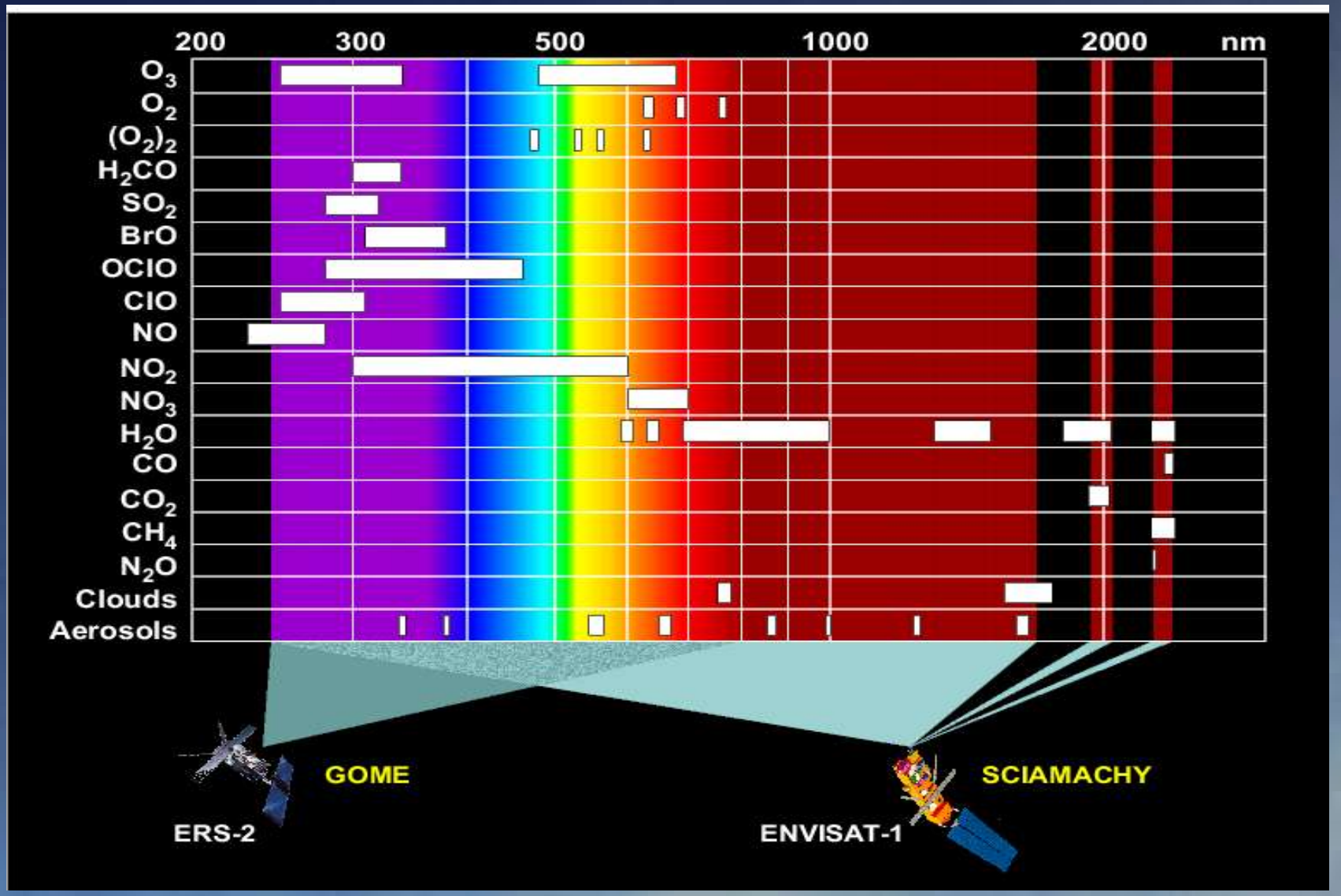
SCIAMACHY measurement modes







SCIAMACHY data products



SCIAMACHY Validation

Aim of Validation:

- Determine quantitative values for accuracy and precision by comparison with independet measurements.

General Requirements:

- Show dependency of data quality from geophysical parameters
- Independent measurement have to cover
  - all latitutde bands
  - all season

Types of independent measurements

- groundbased instrument
- air-borne instruments
- ballon-borne instruments
- comparison with other satellite instruments

Final meeting of the German SCIAMACY validation team (GSVT)

- 18 month of preparation and 28 month of collecting correlative data for the core validatidion of SCIAMACHY by the GSVT are finished.
- More than 60 scientists in 23 individual projects have been funded by DLR.
- A unique dataset with a huge amount of independent measurements for all SCIAMACHY products have been collected
- First validation of operational and scientific products are performed
- Dataset is used for geophysical research

  (ACP special issue "Probing the atmosphere in three dimensions for SCIAMACHY")

The dataset will be used through the lifetime of SCIAMACHY for validation!

Partners in the SCIAMACHY Project

DLR

esa

bmb+f

NIVR

BIRA-IASB

astrium

SRON

OHB SYSTEM
FUCHS GRUPPE

fokker

TNO

Universität Bremen

German Contribution GC-VOS Validation of SCIAMACHY