



COST Action 723:

Data Exploitation and Modeling for the Upper Troposphere and Lower Stratosphere



Introduction

COST Action 723 will provide value-added quality-controlled datasets of geophysical parameters (e.g., ozone and water vapor) which are believed to be important for the study of radiative, dynamical, and photochemical processes in the upper troposphere / lower stratosphere altitude region (5 km above and below the tropopause).

Hitherto, there has been little information on these geophysical parameters in this region. The Action will contribute toward making the best use of observations, models and assimilation algorithms, and toward the definition of new strategies for future research.

COST723 Structure

- Model and data studies for the UTLS altitude region
- Assimilation as the central tool to consolidate models and observations
- 3 workgroups for the 3 areas: data and measurement techniques, data assimilation, and data interpretation
- Common workshops for all workgroups

Signatories

Belgium	05/08/2003	Netherlands	19/03/2002
Bulgaria	09/09/2002	Norway	13/05/2002
Cyprus	15/07/2002	Poland	11/03/2002
Czech Republic	17/07/2002	Spain	18/04/2002
Denmark	06/03/2002	Sweden	27/03/2002
Finland	18/04/2002	Switzerland	11/07/2002
France	02/10/2002	United Kingdom	13/03/2002
Germany	06/03/2002		
Greece	06/03/2002		
Italy	23/04/2002		

= 17 countries

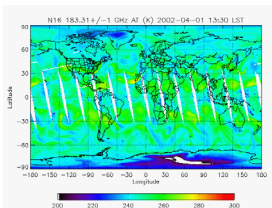
Working Group 1:

Measurement Techniques and Campaigns

- Gather data and make it available to the Action.
- Critically assess the weak links in our measurement capabilities, help to identify new techniques and platforms to strengthen them.
- Improve the use of satellite data by the EO community, help to assess new sensors.
- Evaluate measurement campaigns and help plan and promote new campaigns.

Example 1: RT modeling efforts for improved satellite data usage

The figure shows data (brightness temperatures in Kelvin) from the upper tropospheric humidity channel of the AMSU-B instrument on the NOAA 16 satellite.



In WG 1 this is compared to radiosondes and other satellite instruments.

Example 2: Improved radiosonde calibration techniques



Hygrometer intercomparison campaign LAUTLOS at Sodankylä, February 2004

Data

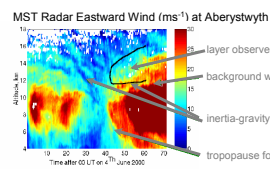
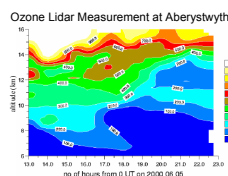
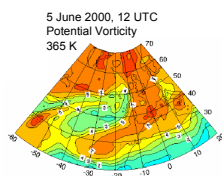
Assimilation

Interpretation

Working Group 3: Assessing the State of the UTLS and Understanding the Relevant Processes

- Assess UTLS climatology (mean state and variability).
- Assess trends where possible.
- Study dynamical processes in the UTLS and their role in global change.
- Quantify anthropogenic impact on the UTLS.

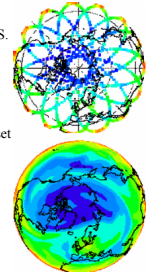
Example: Rossby-wave Breaking Event in June 2000



Working Group 2:

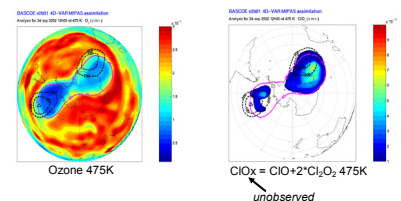
An Assimilated Ozone and Humidity Dataset

- Identify most relevant datasets of atmospheric constituents and other key parameters for UTLS.
- Develop and publish assimilation algorithms.
- Compute assimilated dataset and make it available.
- Quality control of observations and models.
- Analyze benefits of combining nadir and limb sounder information.
- Preliminary studies towards assimilation of instrument radiances from research satellites.



Example: Synergy: different tools & unobserved species

24 Sep 2002 12UTC: Ozone photochemistry BIRA-IASB MIPAS analyses: red (high), blue (low)



COST 723 UTLS Summer school

26 September to 8 October 2005
Cargèse, Corsica



Topics:

- UTLS measurement techniques
- data assimilation
- modelling studies of the UTLS

Format:

- no more than 15 lecturers, 50-60 participants
- main courses + group work
- posters
- computer practice

Audience: researchers + students (school/workshop)

Contact:

www.cost723.org

Working Group 1: Stefan Bühler (sbuehler@uni-bremen.de)

Working Group 2: William Lahoz (wal@met.reading.ac.uk)

Working Group 3: Bernard Legras (legras@lmd.ens.fr)

Poster prepared by Marion Müller (mmueller@awi-potsdam.de)