

BALTEX – Cloud Liquid Water Network: CLIWA-NET

Key Action

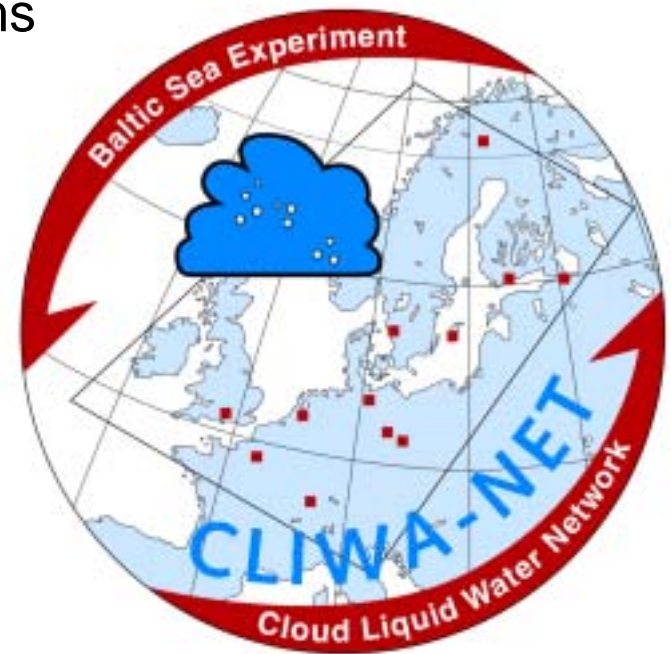
- 2. Global Change, Climate and Biodiversity
- 2.4 European component of the global observing system
- 2.4.1 Better exploitation of existing data and adaptation of existing observing systems

Project Duration

March 2000 – February 2003

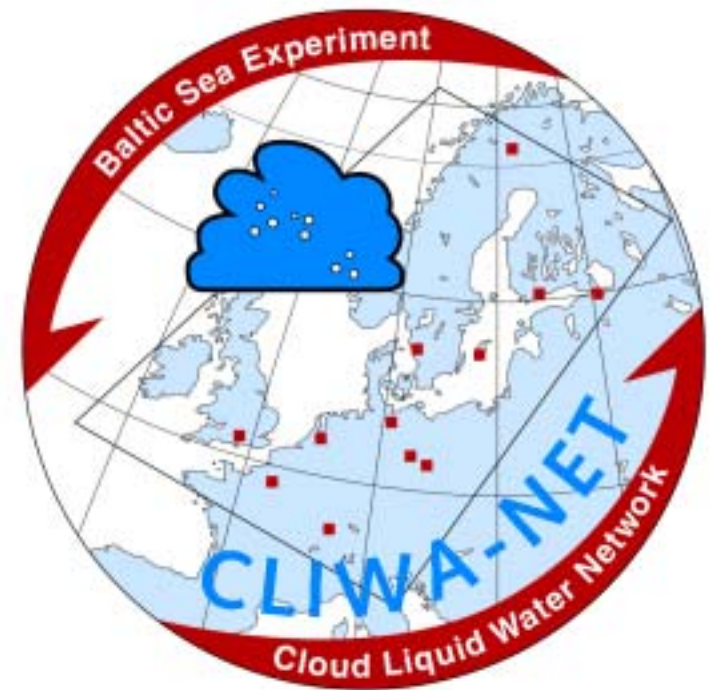
Project Coordination

André van Lammeren, KNMI
Susanne Crewell, University Bonn
Arnout Feijt, KNMI



CLIWA-NET: Objectives

- Prototype of a European cloud observation network (validation system for future satellites)
 - focus on liquid water
 - icing conditions
- Evaluation and improvement of cloud parameterizations (NWP + climate models)
- Design of a *low-cost* microwave radiometer for operational cloud liquid water observations



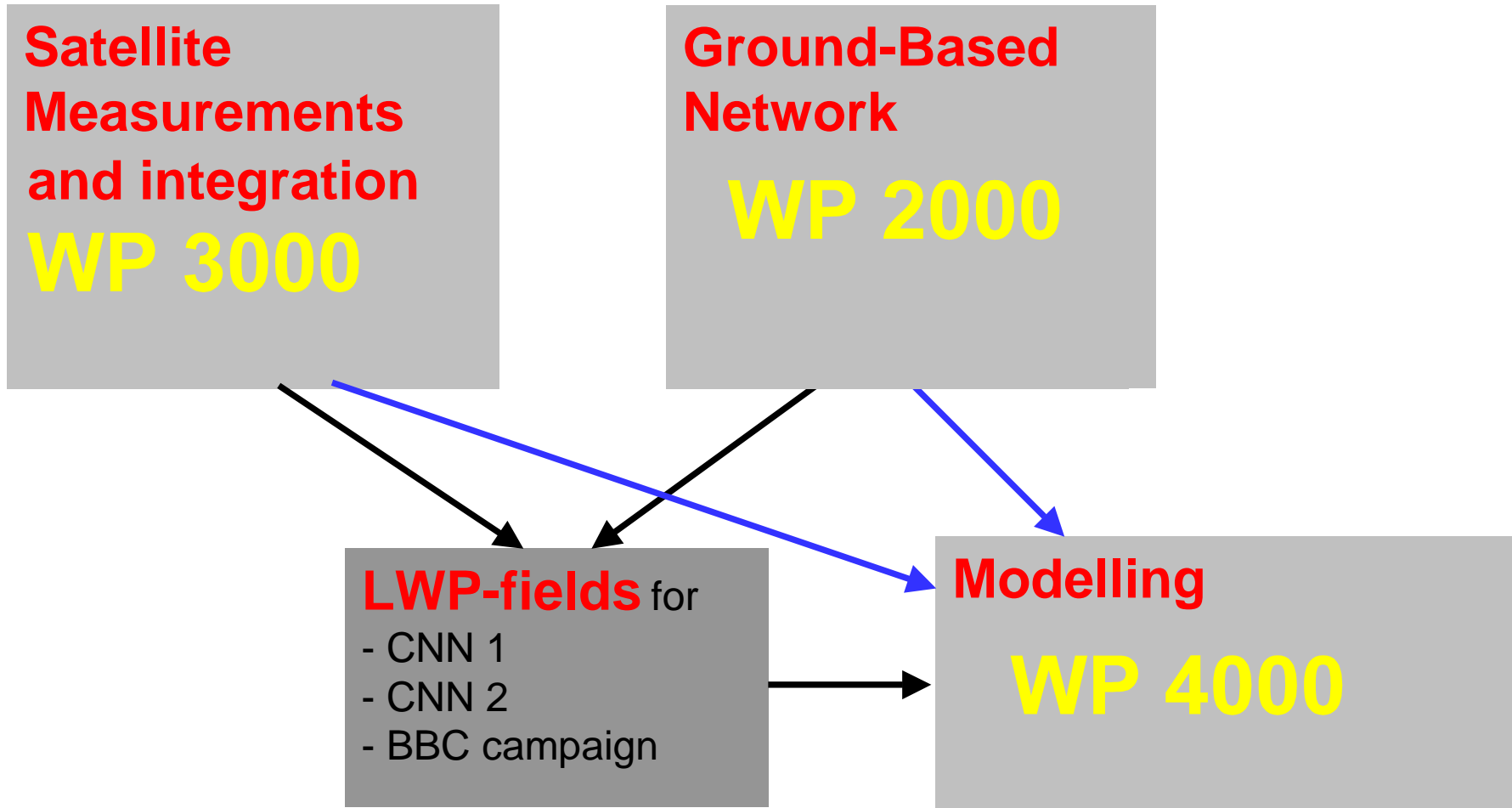
CLIWA-NET Partner

KNMI	Royal Dutch Meteorological Institute, De Bilt, The Netherlands
UBonn	Meteorological Institute, University Bonn, Germany
RAL	Rutherford Appleton Laboratory, Chilbolton, UK
Chalmers	Chalmers University of Technology, Gothenburg, Sweden
UBern	Institute of Applied Physics, University of Bern, Switzerland
CETP	Centre des Environnements Terrestre et Planetaires, Velizy, France
HUT	Helsinki University of Technology, Helsinki, Finland
RPG	Radiometer Physics GmbH, Meckenheim, Germany
SMHI	Rosby Center, Swedish Hydrological and Meteorological Institute
IFM	Institute for Marine Research, Kiel, Germany
GKSS	GKSS Research Center, Geesthacht, Germany
DWD	Deutscher Wetterdienst, Potsdam, Germany

Subcontractor:

ECMWF	European Center for Medium Range Weather Forecast, Reading, UK
IRE	Institute for Radioengineering, Moskwa, Russia

CLIWA-NET Structure



WP 2000: Ground-based Network

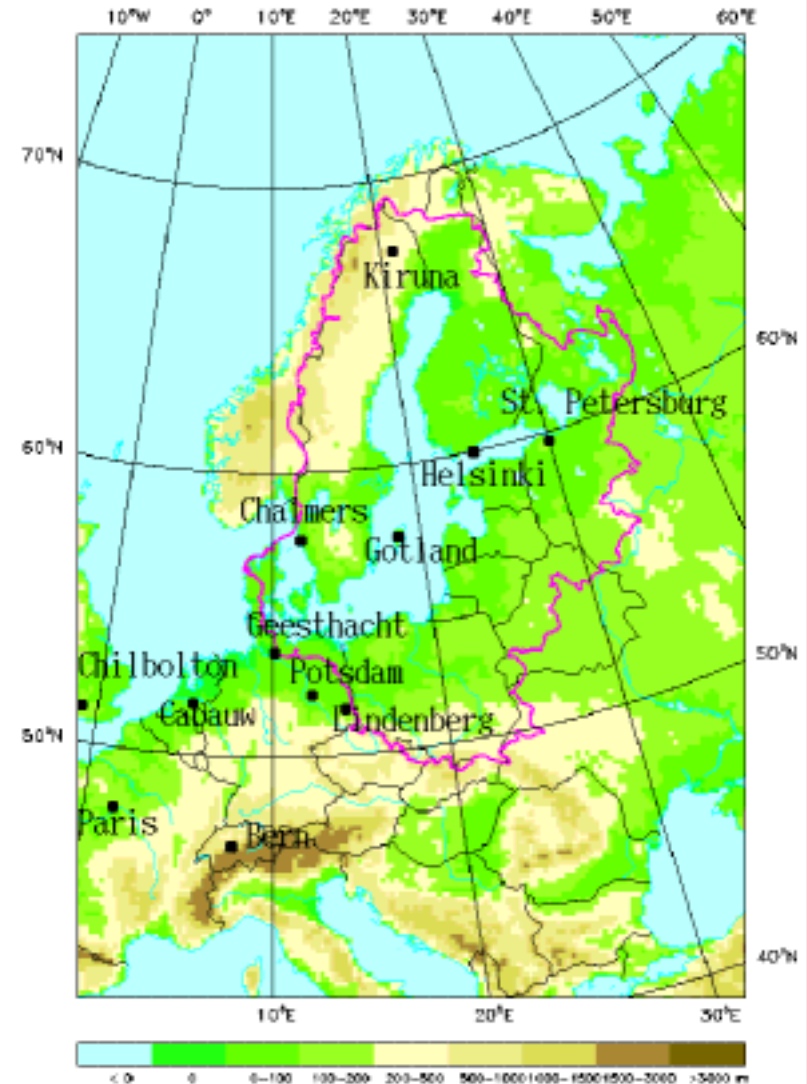
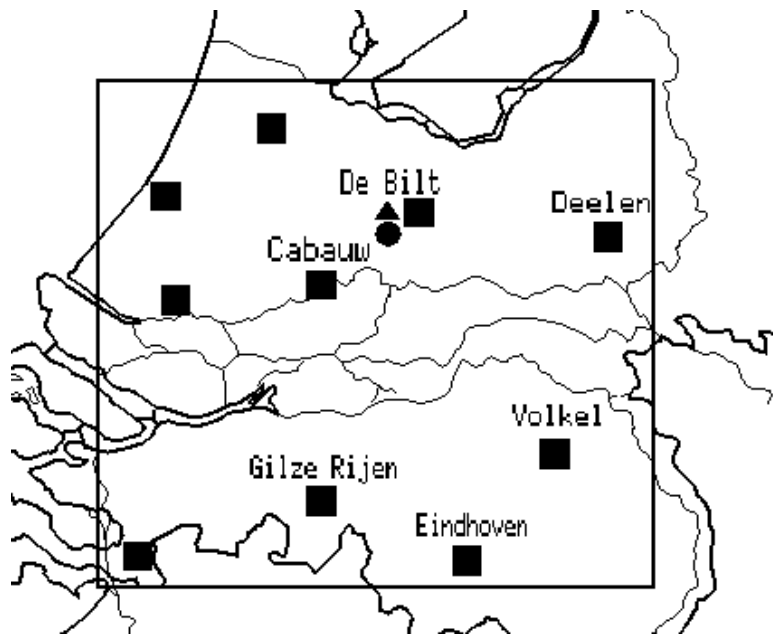
- **WP 2100:** Product definition
UBonn, SMHI, GKSS
- **WP 2200:** Enhanced observation period **CNN I**
- **WP 2300:** Enhanced observation period **CNN II**
- **WP 2400:** Baltex Bridge Campaign **BBC**
UBonn, KNMI, CETP, HUT, DWD, Chalmers,
UBern, SMHI, GKSS, RAL
- **WP 2500:** Cloud Processes
UBonn, KNMI, GKSS
- **WP 2600:** Design of low-cost radiometer
RPG, UBonn

Measurement Periods and Stations

CNN I August/September 2000

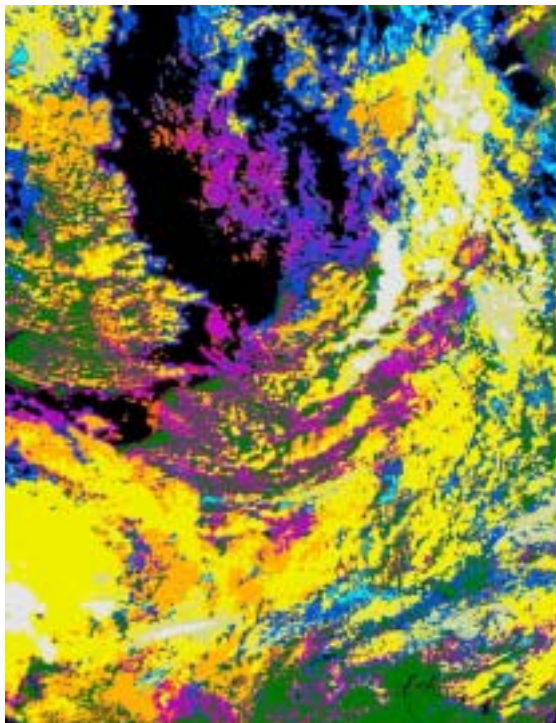
CNN II April/May 2001

BBC August/September 2001

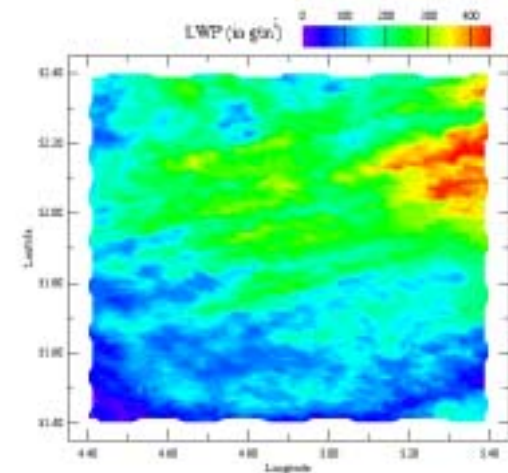


WP 3000: Satellites and Integration

- **WP 3100:** Macroscopic cloud properties
SMHI, KNMI
- **WP 3200:** Vertically integrated liquid water
IfM Kiel, KNMI, SMHI



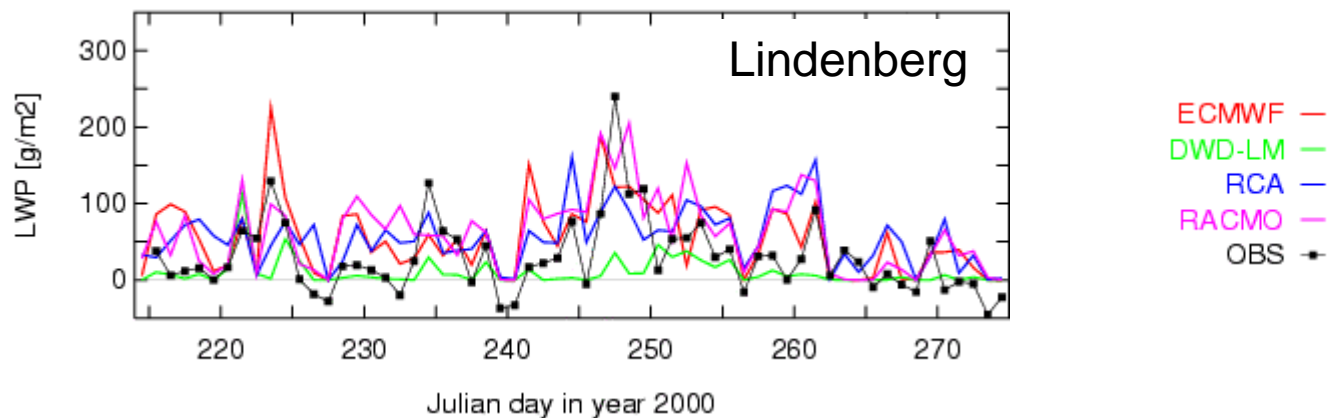
LWP 13 Aug 2001



Madrid, 16 December 2002

WP 4000: Model Evaluation Improvement

- **WP 4100:** Model evaluation of cloud parameters
KNMI, SMHI, *DWD*
- **WP 4200:** Horizontal Resolution
University of Bonn, *DWD*
- **WP 4300:** Parameterisation of cloud processes
KNMI, SMHI, *DWD*



Conclusions

- large measurement program executed extremely cost effectively
- modeling and measurement community very effectively linked
- all scientific goals met or even exceeded (?)

Future: BBC2 in May 2003, FP6