

# **Program**

## **Symposium on**

**Advances in the Representation of the Atmospheric State:  
Towards Closing the Gap between Models and Measurements  
Monday, 13 September - Thursday, 16 September 2004**

**1<sup>st</sup> COPS (Convective and Orographically-induced Precipitation Study)**

**Workshop,**

**a Field Program within the**

**Priority Program 1167 “Quantitative Precipitation Forecast”**

**of the German Research Foundation**

**13 September - 14 September 2004**

**3<sup>rd</sup> Workshop of the Lidar Expert Network**

**“Lidar Research Water Vapor and Wind”**

**15 September - 16 September 2004**

**University of Hohenheim**

**Auditorium, Palace of Hohenheim**

**Monday, September 13, 2004**

**10:00-10:15 Inaugural greetings**

**1<sup>st</sup> COPS Workshop**

**10:15-11:15 First session: Introduction and Motivation (Chair: Andreas Behrendt)**

10:15-10:30 PP 1167 “QPF”, Andreas Hense, Meteorological Institute, Bonn University

10:30-10:45 Requirements stemming from QPF user community, Werner Schulz, State Institute for Environmental Protection, Baden-Württemberg, Germany

10:45-11:00 Role and goals of COPS within PP 1167, Volker Wulfmeyer, Institute of Physics and Meteorology (IPM), University of Hohenheim, Germany

11:00-11:15 Characterization of the COPS experimental region - orography, warm season precipitation systems and LM performance, Christoph Kottmeier, Institute of Meteorology and Climate Research (IMK), Karlsruhe, Germany

**11:15-12:00 Second session, Part I: Key Processes (Chair: Hartmut Graßl)**

11:15-11:30 Boundary layer structure and turbulence in heterogeneous terrain, Ken Davis, Pennsylvania State University, USA

11:30-11:45 Orographically-induced initiation of convection, Evelyne Richard, Laboratoire d'Aerologie, Toulouse, France

11:45-12:00 Role of aerosol microphysics and chemistry in cloud formation, Karoline Diehl, Max Planck Institute for Chemistry, Mainz, Germany

**12:00-13:30 Lunch Break**

**13:30-14:15 Second session, Part II: Key Processes (Chair: Hartmut Graßl)**

13:30-13:45 Cloud physics: nice to have in cloud physics modeling, Klaus Dieter Beheng, IMK

13:45-14:00 The precipitation process in NWP: Skills, problems, and data requirements, Erdmann Heise, German Meteorological Service (DWD)

14:00-14:15 Predictability, George Craig, DLR Oberpfaffenhofen, Germany

**14:15-14:45 Coffee Break**

**14:45-16:30 Third session: Experience with and Links to Related International Programs  
(Chair: Herman Russchenberg)**

14:45-14:55 MAP, Hans Volkert, DLR Oberpfaffenhofen, Germany

14:55-15:05 MAP FDP, Matthias Rotach, Meteo-Swiss, Switzerland

15:05-15:20 IHOP, Tammy Weckwerth, National Center for Atmospheric Research (NCAR),  
Boulder, Atmospheric Technology Division (ATD), USA  
CSIP, Alan Blyth, University of Leeds, UK (*cancelled, presentation will be put on  
webpage*)

15:20-15:35 TRACKS, Christoph Kottmeier, IMK, Germany

15:35-15:50 THORPEX, Ulrich Schumann, DLR Oberpfaffenhofen, Germany

15:50-16:05 GEWEX, Hartmut Graßl, Max Planck Institute for Meteorology (MPI-M),  
Hamburg, Germany

16:05-16:30 Discussion

**16:30-17:00 Coffee break**

**17:00-17:30 Plenum discussion (Chair: Volker Wulfmeyer): Science Questions for the  
COPS Science Document**

**17:30-18:30 Break**

**18:30-19:00 Tour of Palace of Hohenheim**

**19:00-20:00 Reception and musical surprise in Palace of Hohenheim**

**20:00 Banquet**

**Tuesday, September 14, 2004**

**1<sup>st</sup> COPS Workshop**

**08:30-10:00 Forth session, Part I: Methods for Reaching the Science Goals (Chair: Ulrich Schumann)**

08:30-08:55 Parameterization (fluxes, convection), Heinke Schlünzen, Meteorological Institute, Hamburg University

08:55-09:20 Data assimilation techniques, first water vapor lidar data assimilation during IHOP\_2002, Stefan Bauer, IPM

09:20-10:00 Key instrumentation I (10 min each):

- NCAR ATD instrumentation, Tammy Weckwerth, NCAR
- NOAA instrumentation: Mike Hardesty, National Oceanic and Atmospheric Administration (NOAA), Boulder, USA
- CNRS instrumentation, Cyrille Flamant, CNRS, Paris, France
- NASA LaRC airborne instrumentation: Syed Ismail, NASA Langley Research Center, Hampton, USA

**10:00-10:30 Coffee Break**

**10:30-11:50 Forth session, Part II: Methods for Reaching the Science Goals (Chair: Ken Davis)**

10:30-11:50 Key instrumentation II (10 min each):

- Falcon Instrumentation and targeted observations during THORPEX, Andreas Dörnbrack, DLR Oberpfaffenhofen
- NASA GSFC ground-based instrumentation: Dave Whiteman, NASA Goddard Space Flight Center (GSFC), Greenbelt, USA
- Cloud radar and mobile instrumentation in The Netherlands: Herman Russchenberg, TU Delft, The Netherlands
- Precipitation radar: Martin Hagen, DLR Oberpfaffenhofen
- Key satellite measurements (MSG, IASI, AIRS), Franz Berger, DWD
- Micro-satellite for precipitation measurements, Maria Schönermark, University of Stuttgart, Germany

- Advanced in-situ measurements, Ulrich Corsmeier, IMK
- Sensor synergy and ground-based passive remote sensing: Susanne Crewell, Meteorological Institute, Ludwig Maximilians University, Munich, Germany
- Supersites: Andreas Behrendt, IPM

**11:50-12:20 Fifth session: Data Issues (Chair: Susanne Crewell)**

11:50-12:05 COPS: Planning, Field Operations, Logistics and Data Management, Richard Dirks, JOSS UCAR, Boulder, USA

12:05-12:20 Data format for real-time data assimilation, Luis Kornblueh, MPI-M

**12:20-13:40 Lunch Break**

**13:40-14:00 Set up of working groups**

- 1) Initiation of convection
- 2) Aerosols and cloud microphysics
- 3) Precipitation processes
- 4) Data assimilation and weather forecast
- [5) Education]

**14:00-15:00 Discussion within working groups**

**15:00-15:30 Coffee Break**

**15:30-16:30 Presentation of results and discussion (Chair: Christoph Kottmeier):**

- Towards the preparation of the COPS Science and Operation Plans
- Funding
- International proposals
- Action items

**Adjourn**

**16:30-17:30 Meeting of COPS International Science Steering Committee (ISSC)**

**Wednesday, September 15, 2004**

**3<sup>rd</sup> Workshop of the Lidar Expert Network “Lidar Research Water Vapor and Wind”**

**10:00-12:00 First session: Scientific Issues and Advances in the WG “Laser Transmitters and Detectors” (chairs: Mike Hardesty, Volker Wulfmeyer)**

**Diode-pumped lasers**

10:00-10:10 High-power, pulsed disk lasers, Adolf Giesen, IFSW Stuttgart, Germany

10:10-10:20 Pulsed high-power lasers based on InnoSlab technology, Dieter Hoffmann, ILT Aachen, Germany

10:20-10:30 Recent developments in rod lasers, Martin Ostermeyer, University of Potsdam, Germany

10:30-10:40 Mixed garnet laser for WALES, Günter Huber, ILP Hamburg, Germany

10:40-10:50 Mini DIAL transmitters, Murray Hamilton, University of Adelaide, Australia

**Frequency converters**

10:50-11:00 Theoretical modeling of high-power lasers, Gerd Wagner, IPM, Germany

11:00-11:10 Theoretical modeling of OPOs, Majid Ebrahim-Zadeh, ICFO, Spain

11:10-11:20 Properties of Raman lasers, Thomas Riesbeck, TU Berlin, Germany

11:20-11:30 Astrium Breadboard Study, Uwe Kummer, EADS Astrium GmbH, Germany

**Receivers**

11:30-11:40 Design of efficient receivers for eye-safe lidar systems, Shane Mayor, NCAR, USA

11:40-11:50 Design of scanning lidar systems, Ulla Wandinger, IfT, Leipzig, Germany

11:50-12:00 Discussion

**12:00-13:30 Lunch Break**

**13:30-15:30 Second session, Part I: WG “Lidar Reference Systems”: Current projects and advanced operational systems (chairs: Dietrich Althausen, Tammy Weckwerth)**

13:30-13:45 Ground-based Raman lidar systems, Dave Whiteman, NASA GSFC, USA

13:45-14:00 NASA LASE system, Syed Ismail, NASA LaRC, USA

14:00-14:15 ADM Airborne Demonstrator, Christian Wührer, EADS Astrium GmbH, Germany

- 14:15-14:30 WALES Demonstrator, Andreas Fix, DLR Oberpfaffenhofen, Germany
- 14:30-14:45 DFG Water Vapor DIAL Reference System, Volker Wulfmeyer, IPM, Germany
- 14:45-15:00 DWD Raman lidar, Alexander Meister, Kayer-Threde GmbH, Germany
- 15:00-15:15 Combined lidar systems, Andreas Behrendt, IPM, Germany
- 15:15-15:30 End-to-end performance models for DIAL systems, Paolo Di Girolamo, UNIBAS, Italy
- 15:30-15:45 Future lidar missions of ESA, Errico Armandillo, ESA ESTEC

**15:45-16:00 Coffee Break**

**16:00-18:00 Third session: WG “Applications”: Closing the gaps in our knowledge (Chairs: Dave Whiteman, Shane Mayor)**

- 16:00-16:15 NOAA lidar systems and applications, Mike Hardesty, NOAA, USA
- 16:15-16:30 Measurements with the Karlsruhe Doppler Lidar, Andreas Wieser, IMK, Germany
- 16:30-16:45 Observation of initiation of convection during IHOP\_2002, Belay Demoz, NASA GSFC, USA
- 16:45-17:00 Airborne DIAL measurements during TROCCINOX and ATReC, Andreas Fix, DLR Oberpfaffenhofen, Germany
- 17:00-17:15 Lidar data assimilation, Stefan Bauer, IPM, Germany
- 17:15-17:30 German QPF program COPS, Volker Wulfmeyer, IPM, Germany
- 17:30-17:45 Requirements Definition Study, Christoph Kiemle, DLR Oberpfaffenhofen, Germany
- 17:45-18:00 Discussion

**18:00-19:00 Break**

**19:00-20:00 Reception and musical surprise in the Palace of Hohenheim**

**20:00 Banquet**

**Thursday, September 16, 2004**

**3<sup>rd</sup> Workshop of the Lidar Expert Network “Lidar Research Water Vapor and Wind”**

**09:00-10:00 Discussion: Extension of Lidar Expert Network activities, international collaboration**

**10:00-10:30 Coffee Break**

**10:30-12:00 Discussion within working groups**

**1) Technique**

- Coordination of laser and detector development programs
- Identification of key technological and science questions
- Preparation of upcoming proposals

**2) Applications**

- Preparation of upcoming proposals (COPS Research Activities, Lindenberg 2005)
- Data assimilation efforts
- Preparation of COPS
- Validation: Intercomparisons, comparisons of data analysis algorithms, calibration/water vapor spectroscopy

**3) WALES 2**

- Preparation of upcoming proposal

**12:00-13:30 Lunch Break**

**13:30-14:30 Draft of concept papers in working groups**

**14:30-15:30 Presentation of results, discussion**

**15:30-16:00 Coffee Break**

**16:00-17:00 Action items**

**17:00 Adjourn**