General Observation Period (GOP) 2007

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GOP Outline

- The general observation period (GOP) covers one full year (2007). In this period we will gather a comprehensive data set suitable for testing hypotheses and new modeling techniques developed within the SPP. The Intense Observation Period (IOP) is embedded in the GOP.

- The GOP philosophy includes optimized exploitation of existing instrumentation within Germany and the neighboring countries. Therefore routine measurements normally not available to the scientific community will be acquired from various sources. In addition, institutions will be supported to run existing instrumentation during the GOP period.

- The area chosen for the GOP will cover central Europe with increasing focus towards the IOP site to provide long-term information in that area.

- In order to collect the best possible information about the atmospheric state a strict quality control has to be applied. For efficient dissemination the data will be archived in a data base for use within the SPP.

- An important topic for optimal exploitation of the GOP data is the creation of an optimal evaluation environment. Therefore also techniques to bring observations and model forecasts are currently developed. For that purpose also forward operators which transfer the model output to observation space are developed. See for example Poster by Pfeifer et al. about a polarimetric radar operator

GOP Ingredients
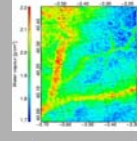
The data envisaged for the GOP will include for example in situ rain observations routinely performed by several water management authority in Germany. Areal information on precipitation is observed within the German Weather Radar Network (see Poster by Yen et al.). Although volume scans are operationally taken these data haven't been archived by DWD in the past and will be of high interest for SPP. Quality and consistency control will play a major role for the GOP and is already prepared for satellite observations by MERIS, MODIS and MSG. Other potential data sources are the atmospheric observatories like Lindenberg or Cabauw.
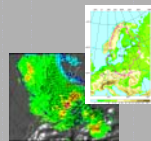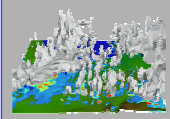
| Ground-based	Satellite	Lokal-Modell
CLIWA-NET, VERTIKATOR, BBC2, CLOUDNET	MODIS, MERIS, MSG, AMSR, SSMIS, AMSU, CLOUDSAT	One year of +36h forecast model results matched to high resolution time series and satellite overpasses

Ground-based Data Sets

In Situ Precipitation

- DWD rain gauge network
  - daily sums: ~1300
  - 1 min resolution
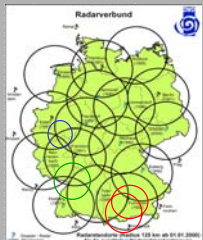 - online transmission

- gauges from federal and local water authorities
  - Baden-Württenberg,..
  - Aggerverband, Erftverband....
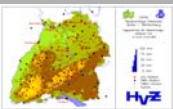
Weather radar

- DWD network: 16 C-Band
- Polarimetric research radars
  - POLDIRAD (DLR)
  - Hohenpeissenberg (DWD)
- X-Band radar (UBonn)
- C-Band radar (FZ Karlsruhe)
- COPS supersite
- operational radars in France, The Netherlands,...

### Atmospheric Observatories

- Core sites (Lindenberg, Cabauw, Chilbolton, Palaisseau) in co-operation with EU-Project Cloudnet
- COPS supersite
- Minor sites (IFU-FZK, Schneefernerhaus, Bonn, Hohenpeissenberg, Munich Alpine Testbed MUTE,Bern..)

Networks

- GPS network for integrated water vapor
- Conventional lightning detection system (BLIDS)
- VHF network in Northern Germany for cloud-to-ground (GC) and in-cloud (IC) discharges
- VLF lightning dectection system in Southern Germany for GC and IC
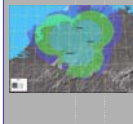
Possible auxilliary Observations

- Precipitation estimation via attenuation using trans-mission of microwave links (mobile communication)
- aerosol and water vapour from coordinated lidar observations
- AMDAR (Aircraft Meteorological Data Reporting)
- detailed atmospheric column obervations with the mobile ARM profiler (cloud radar, microwave radiometer, lidar, radiation..)
- Cooperation with EUCOS (EUMETNET Composite Observing System)
- ...

Satellite Observations

- **Meteosat Second Generation**
  SEVIRI, GERB
- **ENVISAT**
  MERIS, AATSR, MWR, MIPAS, SCIAMACHY
- **METOP**
  IASI, GRAS, AVHRR, AMSU-A, MHS, HIRS
- **A-Train**:
  Aqua (MODIS, AMSU/HSB, AMSR, AIRS, CERES)
  CloudSat (94 GHz Radar)
  CALIPSO (Lidar, IIR)
  PARASOL (POLDER)
  Aura (MLS)

MSG 03.03.2005

Available products:
- cloud cover, integrated water vapour
- cloud top pressure and height
- cloud droplet number concentration, geometric thickness
- cloud optical thickness, effective radius
- liquid water path
- precipitation index

see also Poster by Schröder et al.

Preparation of GOP

- **Establishment of the Data Base**
  - coordination with DWD and data owners
  - coordination with COPS campaign data
  - clarification of set-up and funding
- **Quality control of the Observations**
  - rain gauge estimates (UniBonn)
  - radar and satellite observations (QUEST)
  - joint efforts of data owners
- **Tailoring model output to data available from GOP**
  - definition of model domain, horizontal resolution, lateral boundary conditions, Initial conditions,..
  - preparation of special model output
    - times series in model time step resolution at selected stations
    - selected 3D-fields at asynoptic times for satellite/radar comparisons
- **Model evaluation using GOP Observations**
  - observation-to-model and model-to-observation approach
  - representativity of spatial and temporal scales (aggregation/probability)

All potential GOP participants should contact the meteorological Institute Munich (crewell@meteo.physik.uni-muenchen.de) to coordinate the activities