

# WMO-CIMO Testbed for GAW observations of reactive gases and aerosols, Hohenpeissenberg Meteorological Observatory

## Report 2014-2016

### Major work/output w.r.t. remote sensing methods and technologies

- International ceilometer intercomparison campaign at the Met. Observatory Lindenberg (Germany) between June and September 2015, see <http://ceilinex2015.de>. Focus on:
  - Characterization of instruments from different manufacturers w.r.t. to aerosol profiling, cloud base height, PBL height.
  - Intercomparison of backscatter signals of different cloud types, identifying the best-suited calibration method for different instruments
  - Analysis of instrumental drawbacks e.g., changing window transmission during routine operations, saturation of signals, artifacts of electronics, firmware versions
- Algorithm development for routine ceilometer calibration within E-PROFILE/EUMETNET and TO-PROF (COST ES1303) for generating the attenuated backscatter profile from instrumental raw data of different instruments. Focus on:
  - Paving the way for routine and harmonized ceilometer operations (data exchange and retrieval) in Europe
  - Quantitative results under differing aerosol loading scenarios e.g., volcanic ash conditions, Saharan dust events, biomass burning events, background concentrations
- Start of routine operations as EARLINET station using a Raman Lidar (Polly-XT) for aerosol profiling in 10/2015
- Foster the linkage between lidar instruments and ceilometers on a global scale by
  - regularly updating the global instruments data base
  - enhancing the interactive capabilities of its visualization under [www.dwd.de/ceilomap](http://www.dwd.de/ceilomap) (trajectories, overlay of cloud parameters, overlay of aerosol maps)

### Coming soon:

- Organization and implementation of Lidar intercomparison campaign (Polly-XT Lidar versus Raymetrics depolarization Lidar versus the POLIS instrument of Univ. Munich) at MOHp in September 2016. Focus on polarization measurements of instruments versus the reference instrument POLIS, in order to quantify errors induced by uncorrected/undetected polarization effects

### Main written contributions

- M. Weber et al. (2015) Global Climate, Atmospheric Composition] Stratospheric Ozone, [in “State of the Climate in 2014”], Bulletin of the American Meteorological Society, 96, S44-S46, 2015. DOI: 10.1175/2015BAMSStateoftheClimate.1
- M. Sicard et al. (2015) EARLINET: potential operationality of a research network, Atmos. Meas. Tech., 8, 4587-4613, doi:10.5194/amt-8-4587-2015

- G. Pappalardo et al. (2014) EARLINET: towards an advanced sustainable European aerosol lidar network, Atmos. Meas. Tech., 7, 2389-2409, doi:10.5194/amt-7-2389-2014
- [https://www.wmo.int/pages/prog/arep/gaw/ozone\\_2014/documents/Full\\_report\\_2014\\_Ozone\\_Assessment.pdf](https://www.wmo.int/pages/prog/arep/gaw/ozone_2014/documents/Full_report_2014_Ozone_Assessment.pdf)  
(W. Steinbrecht as lead author of chapter 2)