



Form for Regular Reporting of CIMO Testbeds and Lead Centres

Terms of Reference for CIMO Testbeds and Lead Centres are available under:
<http://www.wmo.int/pages/prog/www/IMOP/Testbeds-and-LC.html>

Name of Testbed / Lead Centre	CIMO testbed for GAW observations of reactive gases and aerosols
Location of Testbed / Lead Centre	Hohenpeißenberg Meteorological Observatory, 980 m a.s.l. on an isolated mountain 40 km north of the Alps Global Atmosphere Watch – Global Station, Germany

Contact Person for the Testbed/Lead Centre	
Courtesy Title	Dr.
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Has contact person changed in last 2 years?	No
If yes, who was the previous contact person?	

Report on Activities
<p>Main activities that TB/LC carried out in the last 2 years for which results are already available:</p> <ul style="list-style-type: none"> publication of data of the International ceilometer intercomparison campaign CeiLinEx2015 (12 ceilometers, 6 types, 3 manufacturers, 1 Raman lidar) carried out in collaboration with the Met. Observatory Lindenberg (Germany) ; doi: https://doi.org/10.5676/DWD/CEILINEX2015, 2017 OH reactivity intercomparison campaign @ Saphir Chamber, Forschungszentrum Jülich/Germany in

April 2016, see publications

- ACTRIS-2 NO_x Side by Side intercomparison Campaign, Hohenpeissenberg/Germany, October 2016, <http://www.actris.eu/Events/Eventsdescriptions/NOxSidebySideIntercomparison.aspx>
- Intercomparison of particle size distributions measured by APS, OPC, SMPS at the Environmental Research Station "Schneefernerhaus" (published in German), appeared in the biannual scientific report of the Schneefernerhaus 2015-2016, S32pp (http://www.schneefernerhaus.de/fileadmin/web_data/bilder/pdf/Wissenschaftliche_Resultate_15_16.final.pdf)

Main activities that TB/LC carried out in the last 2 years for which results will soon be available:

- publication of results of CeiLinEx2015
- publication about an intercomparison campaign between EARLINET aerosol lidar RALPH and an automated depolarization lidar (SigmaSpace MPL), August 2017-March 2018
- publication about ACTRIS-2 NO_x SBS intercomparison campaign, October 2016
- NO₃ reactivity measurements @ MOHP performed by Max-Planck-Institute for Chemistry, 20 July 2017 – 05 August 2017, together with MOHP trace gas measurements
- ACSM intercomparison campaign at SIRTA/Paris/France in March 2016
- Characterisation of CIMS OH reactivity measurements at MOHP from 2015-2017. Results to appear in peer-reviewed publication entitled "A novel semi-direct method to measure OH reactivity by chemical ionisation mass spectrometry (CIMS)"
- Collaud Coen, M. et al.: The topography contribution to the influence of the atmospheric boundary layer at high altitude stations, Atmos. Chem. Phys. Discuss, <https://doi.org/10.5194/acp-2017-692>, 2017
- Englert, J. et al.: Preparation and analysis of zero gases for the measurement of trace VOCs in air monitoring, Atmos. Meas. Tech. Discuss., <https://doi.org/10.5194/amt-2017-412>, 2017
- Pandolfi M. et al., A European aerosol phenomenology-6: Scattering properties of atmospheric aerosol particles from 28 ACTRIS sites, Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2017-826>, 2017
- Yuan, Y. et al.: Adaptive Baseline Finder, a statistical data selection strategy to identify atmospheric CO₂ baseline levels and its application to European elevated mountain stations, Atmos. Meas. Tech. Discuss., <https://doi.org/10.5194/amt-2017-316>, 2017.

Which guidance documents/standard procedures were developed during the last 2 years (please include full reference and web-link if available)?

- GAW Report No. 232, Report of the WMO/GAW Expert Meeting on Nitrogen Oxides and International Workshop on the Nitrogen Cycle, York, United Kingdom, 12 - 14 April 2016, https://library.wmo.int/opac/doc_num.php?explnum_id=3562

Which IOM reports / peer-reviewed publications were published in the last 2 years (please include full reference and web-link if available)?

- Birmili, W. et al.: Long-term observations of tropospheric particle number size distributions and equivalent black carbon mass concentrations in the German Ultrafine Aerosol Network (GUAN), Earth Syst. Sci. Data, 8, 355-382, <https://doi.org/10.5194/essd-8-355-2016>, 2016
- Helmig, D et al.: Reversal of global atmospheric ethane and propane trends largely due to US oil and natural gas production, Nat. Geosci., 9, 490-495, DOI: 10.1038/NCEO2721, 2016
- Mattis, I., D'Amico, G., Baars, H., Amodeo, A., Madonna, F., and Iarlori, M.: EARLINET Single Calculus Chain – technical – Part 2: Calculation of optical products, Atmos. Meas. Tech., 9, 3009-3029, <https://doi.org/10.5194/amt-9-3009-2016>, 2016. <https://www.atmos-meas-tech.net/9/3009/2016/>
- Chipperfield, M. P., et al.: Detecting recovery of the stratospheric ozone layer, Nature, 549, 211, <https://doi.org/10.1038/nature23681>, 2017.

- Fuchs, H. et al.: Comparison of OH reactivity measurements in the atmospheric simulation chamber SAPHIR, Atmos. Meas. Tech, 10, 4023-4053, DOI: 10.5194/amt-10-4023-2017, **2017**
- Novelli, A. et al: Estimating the atmospheric concentration of Criegee intermediates and their possible interference in a FAGE-LIF instrument, Atmos. Chem. Phys., 17, 7807-7826, DOI: 10.5194/acp-17-7807-2017, **2017**
- Schultz M.G., Schröder S., Lyapina O., Cooper O. Galbally I., Petropavlovskikh I., et al.. Tropospheric Ozone Assessment Report: Database and Metrics Data of Global Surface Ozone Observations. Elem Sci Anth.;5:58. DOI: <http://doi.org/10.1525/elementa.244>, **2017**
- Steinbrecht, W. et al.: An update on ozone profile trends for the period 2000 to 2016, Atmos. Chem. Phys., 17, 10675-10690, <https://doi.org/10.5194/acp-17-10675-2017>, **2017**.

**Title(s) of IOM report(s) presently being developed by your Testbed/Lead Centre:
(please specify level of development: draft, ready for review, ...)**

- Measurement guidelines for NMHC measurements, draft
- Measurement guidelines for NOx measurements, draft
- S. Reimann and A. Claude, contribution D3.8: Report On Procedure For QC Of reactive gases, ACTRIS [http://www.actris.eu/Documentation/ACTRIS2IAinH2020\(20152019\)/Deliverables.aspx](http://www.actris.eu/Documentation/ACTRIS2IAinH2020(20152019)/Deliverables.aspx) :

Key-VOC:

- D. R. Worton (NPL) et al.: Protocol for comparison and validation of gas standards developed in WP2, final
- D. R. Worton (NPL) et al. : Report on the evaluation of results of the comparison of gas standards developed in WP2, final
- J. Englert (DWD) et al.: Report on the assessment of the efficiency of different purification methods for VOCs, final
- S. Persijn (VSL) et al.: Report on adsorption of VOC at trace levels on contact surfaces in sampling and dynamic generation systems, final

Has your Testbed/Lead Centre collaborated with one or more CIMO Expert Teams in developing guidance material? Yes

If yes, with which CIMO Expert Team(s)?

- WMO Lidar Qualification Working Group for Meteorology – chair P. Keckhut
- Inter-Programme Expert Team on Observing System Design and Evolution (IPET-OSDE) – chair J. Eyre

Capacity Building and Training Activities

Which capacity building/training activities have been carried out by the Testbed in the last 2 years?

- TOPROF Training Session at EMS, Dublin/Ireland (3 Sept 2017) on automatic lidars and ceilometers
- ACTRIS LiCal training workshop on aerosol lidar data processing, 27th Feb – 3rd Mar 2017, Bucharest, Romania
- Collaboration with Korean GAW stations:
 - Visit of Korean colleagues @ MOHP in May 2017 and November 2017.
 - Visit of MOHP staff @ Anmyeondo in November 2017,
- Lecture at International Workshop on Climate Change Monitoring for Policy Support and Technical Exchange, KMA, in November 2017: *Long term monitoring & quality assurance of trace gases at the*

global GAW station Hohenpeissenberg

Has your testbed developed a twinning activity / special relationship with a companion station/site from a developing country? Yes/No

If yes, with which station/site?

Is your Testbed/Lead Centre making an oral/poster presentation at this year's TECO? Yes (If yes, please specify Title(s) and Author(s) of the presentation(s))

- Margit Pattantyús-Ábrahám: The international ceilometer inter-comparison campaign CeiLinEx2015, CIMO TECO, 27-30 September 2016, Madrid, Spain

Recent Changes in Circumstance

Have there been any recent changes in your Test Bed/Lead Centre's capabilities? If so, please specify:

- Hardware upgrade of the AERONET sun photometer, in order to allow night-time (moon) measurements
- Routine Lidar operations within EARLINET established; Hohenpeissenberg became officially an EARLINET station in 2016
- Routine calibration of DWDs ceilometers (CHM15K Nimbus), in order to provide continuously attenuated backscatter coefficients
- Hohenpeissenberg became officially an ICOS station in 2017
- Routine ACSM measurements since 2017

Have there been any recent changes in your Test Bed/Lead Centre's infrastructure? If so, please specify:

- A new TEOM 1405 (total aerosol mass) was installed in June 2016
- A new MAAP 5012 (total soot mass) was installed in November 2017

Have there been any recent changes in your staffing? If so, please specify, and advise whether replacement staff have the required competencies:

- Temporary staff Dr. Frank Wagner, Dr. Johanna Esser-Gietl, Dr. Michael Elsasser left by 31st December 2016
- Temporary staff Dr. Margit Pattantyús-Ábrahám left by 31st July 2017
- Temporary staff Jennifer Englert left by 31st December 2017
- Technicians Thomas Deromedis, Thomas Musil became permanent staff for ICOS on January 1st 2016
- Engineer Dietmar Weyrauch became permanent staff for ICOS on January 1st 2016
- Scientists Dr. Marcus Schumacher, Dr. Matthias Lindauer, Dr. Frank-Thomas Koch (at Max Planck Institute for Biogeochemistry Jena/Germany) became permanent staff for ICOS on January 1st 2016

All ICOS staff was already on temporary contracts since 2013.

Future Plans	
What are your plans for the next two years?	
<ul style="list-style-type: none">• Tests and validation of new ceilometers with depolarization channel (Lufft CHM15k) from April 2018 onwards• Euramet 16ENV05 MetNO2 Project: Metrology for Nitrogen Dioxide, EMPIR, EU Horizon 2020 project, 2017-2020• ACTRIS-2 OVOC Intercomparison campaign, planned for June 2018	
Is your Testbed/Lead Centre able to continue in the role of a Test Bed/Lead Centre during the coming two years?	Yes

Other relevant information (other activities of special interest to CIMO, etc.)
<ul style="list-style-type: none">• AERONET station• GAW-PFR station• EARLINET station• ICOS station• NDACC station• Dobson Regional Calibration Center for WMO RA VI

January 29th, 2018
Date

Werner THOMAS
Name of Person Filling the Form