

Prof. Dr. Ulrich Löhnert

PERSONAL INFORMATION

Born 09.04.1972, Dinslaken, Germany
 Citizenship German

CONTACT

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Research group Exploiting Observations in Meteorology
<https://geomet.uni-koeln.de/forschung/gruppe-loehnert>

There are much too few observations in the lowest 1-2 km of the atmosphere, the so-called atmospheric boundary layer (ABL). We perform research on **new meteorological observation systems** and investigate if and how these can improve our knowledge on the structure of the ABL, e.g. temperature, humidity and winds. Developing such methods can help us shed light on the physical processes in the ABL such as turbulent fluxes or cloud and precipitation formation. Also, we investigate the impact of these observational methods on short-term weather forecasts and high-resolution re-analyses.

EDUCATION

2012 Habilitation at Faculty for Natural Sciences, University of Cologne: "Ground-based remote sensing for weather research and forecasting"
 2003 PhD degree, University of Bonn: "Derivation of cloud liquid water from ground-based active and passive microwave remote sensors"
 1998 Diploma in Meteorology, Thesis: „Bestimmung von Gesamtwasserdampf und Gesamtwolkenwasser anhand von PAMIR-Messungen in Bonn“

PROFESSIONAL CAREER

2020-today Apl professor (as Akademischer Oberrat) at University of Cologne
 2007-2020 Associate professor (as Akademischer Rat/Oberrat) at University of Cologne
 2006-2007 Senior scientist at Institute for Geophysics and Meteorology, University of Cologne
 2008 Visiting scientist Space Science and Engineering Center (SSEC), Madison, WI, USA
 2004-2006 Assistant professor (C1) at Meteorological Institute, Ludwig-Maximilians-University Munich
 2001-2004 Post-Doc at Meteorological Institute, University of Bonn

CURRICULUM VITAE (JANUARY 2026)

2001-2002 Visiting scientist “National Oceanic and Atmospheric Administration / Environmental Technology Laboratory” (NOAA/ETL) in Boulder (DAAD stipend)

COMMUNITY SERVICE AND MEMBERSHIPS

DAOS (2017 – 2024) WWRP (WMO) working group “Data Assimilation and Observing Systems” (DAOS), since 2018 co-chair

PROBE (2019 – 2024) Management Committee und WG co-chair EU COST-action ES18235 PROBE: “PROfiling the atmospheric Boundary layer on the European scale” (www.probe-cost.eu)

ABC/J (2023 – today) University of Cologne representative in Geoverbund ABC/J (www.geoverbund-abcj.de)

CPEX-LAB (2018 – today) Co-director of ABC/J competence center “Cloud and Precipitation Exploration Laboratory” (www.cpex-lab.de)

SUPERVISION SINCE 2012

PostDocs more than 10 in different third-party funded projects

PhD graduation of 8 doctoral students (primary advisor)

Master graduation of 11 master students (primary advisor)

Bachelor graduation of 11 bachelor students (primary advisor)

PUBLICATIONS, SELECTED

93 peer-reviewed publications, 3473 citations, h-Index: 35, as of January 18, 2026 (<https://www.webofscience.com/wos/author/record/C-3303-2013>)

Böck, T., Löffler, M., Marke, T., Pospichal, B., Knist, C., and Löhnert, U.: Instrument uncertainties of network-suitable ground-based microwave radiometers: overview, quantification, and mitigation strategies, *Atmos. Meas. Tech.*, 18, 6251–6270, 2025, <https://doi.org/10.5194/amt-18-6251-2025>

Steinheuer, J., F. Beyrich and **U. Löhnert**: Exploiting the full potential of Doppler lidars: high-resolution wind gust profiling in significant weather, *Q. J. R. Meteorol. Soc.*, e4961, 2025, <https://doi.org/10.1002/qj.4961>

Toporov, M., and **U. Löhnert**, 2025: Monitoring Regional Atmospheric Stability with Hyperspectral Satellite Observations Enhanced with a Potential Network of Ground-Based Microwave Radiometers. *J. Appl. Meteor. Climatol.*, 64, 1411–1429, <https://doi.org/10.1175/JAMC-D-24-0212.1>

Nomokonova, T., Griewank, P.J., **Löhnert, U.**, Miyoshi, T., Necker, T. & Weissmann: Estimating the benefit of Doppler wind lidars for short-term low-level wind ensemble forecasts. *Quarterly Journal of the Royal Meteorological Society*, 1– 19, 2022, <https://doi.org/10.1002/qj.4402>

Turner, D. D. and **U. Löhnert**, 2021: Ground-based temperature and humidity profiling: combining active and passive remote sensors, *Atmos. Meas. Tech.*, 14, 3033-3048, <https://doi.org/10.5194/amt-14-3033-2021>.

Löhnert, U., J. H. Schween, C. Acquistapace, K. Ebell, M. Maahn, M. Barrera-Verdejo, A. Hirsikko, B. Bohn, A. Knaps, E. O'Connor, C. Simmer, A. Wahner, S. Crewell, 2015: JOYCE: Jülich Observatory for Cloud Evolution *Bulletin of the American Meteorological Society*, 96, 1157-1174, [doi:10.1175/BAMS-D-14-00105.1](https://doi.org/10.1175/BAMS-D-14-00105.1).