

PrePEP 2025

Precipitation Processes - Estimation and Prediction

Oral program

Day 4	Thursday 20 March 2025		
Session 4	Seamless Prediction: Data assimilation integrating nowcasting and new observations / blending and probabilistic techniques based on nowcasting and NWP ensembles		
Keynote	8:45-9:15	<p>Nowcasting extreme rainfall over the UK</p> <p>Keynote speaker: Katie Norman (Met Office)</p> <ol style="list-style-type: none"> 1) Katie Norman (Met Office) 2) Matt Clark (Met Office) 3) Ed Pavelin (Met Office) 4) Andrew McNaughton (Met Office) 5) Anna Booton (Met Office) 6) Billie Mackenzie (Met Office) 7) Graeme Kelly (Met Office) 	
Session 1 A/B	<p>From Classical to Integrated Remote Sensing. New observation strategies for clouds and precipitation (multi-frequency, spectral polarimetry, multi-sensor) and new retrieval and estimation techniques (e.g. fusion, Bayesian)</p> <p>Chair 1: Maximilian Maahn, Chair 2: Anton Kötsche</p>		
9	9:15-9:30	<p>Towards smarter weather radar: a simulation study of adaptive scanning strategies for improved precipitation monitoring and forecasting.</p> <ol style="list-style-type: none"> 1) Shafi Sardar* (Delft University of Technology) 2) Marc Schleiss (Delft University of Technology) 	38
10	9:30-9:45	<p>Development and Calibration of a Low-cost AESA Module for Weather Sensing at X-band</p> <ol style="list-style-type: none"> 1) Stefano Turso* (Fraunhofer FHR) 2) Rohan Mohandas (Fraunhofer FHR) 3) Carlos Galvis Salzburg (Fraunhofer FHR) 4) Thomas Bertuch (Fraunhofer FHR) 	73

1	9:45-10:00	<p>Wind drift effect on radar data through analysis of individual drop trajectories using 3D+1 innovative wind product</p> <p>1) Auguste Gires* (Hydrologie Météorologie et Complexité, Ecole nationale des ponts et chaussées, Institut Polytechnique de Paris, Champs-sur-Marne) 2) Chi-Ling Wei (Department of Civil Engineering, National Taiwan University, Taipei) 3) Li-Pen Wang (Department of Civil Engineering, National Taiwan University, Taipei) 4) Daniel Schertzer (Hydrologie Météorologie et Complexité, Ecole nationale des ponts et chaussées, Institut Polytechnique de Paris, Champs-sur-Marne) 5) Ioulia Tchiguirinskaia (Hydrologie Météorologie et Complexité, Ecole nationale des ponts et chaussées, Institut Polytechnique de Paris, Champs-sur-Marne)</p>	61
2	10:00-10:15	<p>Melting Layer and Riming Detection from Vertically Pointing C-band Radar Observations</p> <p>1) Paul Ockenfuß* (Meteorological Institute, Ludwig-Maximilians-Universität in Munich) 2) Michael Frech (Deutscher Wetterdienst) 3) Mathias Gergely (Deutscher Wetterdienst) 4) Stefan Kneifel (Meteorological Institute, Ludwig-Maximilians-Universität in Munich)</p>	90
3	10:15-10:30	<p>Hydrometeor partitioning ratios for polarimetric ground-based and dual-frequency space-borne and radar observations</p> <p>1) Velibor Pejčić* (Institute of Geosciences, Meteorology Section, University of Bonn) 2) Kamil Mroz (National Centre for Earth Observation, University of Leicester) 3) Kai Mühlbauer (Institute of Geosciences, Meteorology Section, University of Bonn) 4) Silke Trömel (Institute of Geosciences, Meteorology Section, University of Bonn)</p>	71
4	10:30-10:45	<p>Development of a microphysical retrieval based on beam-aware columnar vertical profiles: Combining side-looking polarimetry with vertical radar measurements</p> <p>1) Christian Heske* (Institut für Physik der Atmosphäre, Deutsches Zentrum für Luft- und Raumfahrt (DLR e.V.), Oberpfaffenhofen) 2) Florian Ewald (Institut für Physik der Atmosphäre, Deutsches Zentrum für Luft- und Raumfahrt (DLR), Oberpfaffenhofen) 3) Silke Groß (Institut für Physik der Atmosphäre, Deutsches Zentrum für Luft- und Raumfahrt (DLR e.V.), Oberpfaffenhofen) 4) Gregor Köcher (Meteorological Institute, Ludwig-Maximilians-Universität in Munich) 5) Tobias Zinner (Meteorological Institute, Ludwig-Maximilians-Universität in Munich)</p>	114
5	10:45-11:00	<p>What can radars tell us about snowfall microphysics? Insights from a MCMC framework</p> <p>1) Anne-Claire Billault-Roux* (Environmental remote sensing laboratory, EPFL) 2) Alexis Berne (Environmental remote sensing laboratory, EPFL)</p>	28
Coffee break	11:00-11:30		

Session 1 B		From Classical to Integrated Remote Sensing: New retrieval and estimation techniques (e.g. fusion, Bayesian)	
		Chair 1: Raquel Evaristo, Chair 2: Velibor Pejicic	
6	11:30-11:45	A probabilistic AI-based merging of Commercial Microwave Link and Radar QPE 1) Julius Polz* (KIT/IMK-IFU&IMK-ASF) 2) Mst Mahfuja Akter (Institute of Geosciences, Meteorology Section, University of Bonn) 3) Nico Blettner (KIT/IMK-IFU) 4) Christian Chwala (KIT (IMK-IFU)) 5) Luca Glawion (KIT/IMK-IFU) 6) Maximilian Graf (Deutscher Wetterdienst) 7) Harald Kunstmann (KIT and University of Augsburg) 8) Silke Trömel (Institute of Geosciences, Meteorology Section, University of Bonn)	106
7	11:45-12:00	Hydrometeor classification based on cloud radar Doppler spectrum peaks using the PEAKO-peakTree toolkit 1) Teresa Vogl* (Leipzig Institute for Meteorology (LIM), Leipzig University) 2) Martin Radenz (TROPOS) 3) Heike Kalesse-Los (Leipzig Institute for Meteorology (LIM), Leipzig University)	113
8	12:00-12:15	Investigating the Origin of W-Band Radar KDP Signatures Inside and Below the Dendritic Growth Layer 1) Anton Kötsche* (Leipzig Institute for Meteorology (LIM), Leipzig University) 2) Petar Bukovcic (NSSL, Norman, OK, USA) 3) Veronika Ettrichrätz (Leipzig Institute for Meteorology (LIM), Leipzig University)) 4) Heike Kalesse-Los (Leipzig Institute for Meteorology (LIM), Leipzig University) 5) Stefan Kneifel (Meteorological Institute, Ludwig-Maximilians-Universität in Munich, Munich, Germany) 6) Maximilian Maahn (Leipzig Institute for Meteorology (LIM), Leipzig University) 7) Alexander Myagkov (RPG Radiometer Physics GmbH) 8) Davide Ori (Institute of Geophysics and Meteorology, University of Cologne) 9) Alexander Ryzhkov (NSSL, Norman) 10) Leonie von Terzi (Meteorological Institute, Ludwig-Maximilians-Universität in Munich)	22
9	12:15-12:30	Processing of Doppler spectra collected by an airborne cloud radar 1) Ulrike Romatschke* (NSF National Center for Atmospheric Research) 2) Paul Romatschke (University of Colorado, Boulder) 3) Matthew Hayman (NSF National Center for Atmospheric Research) 4) Michael Dixon (NSF National Center for Atmospheric Research)	27

10	12:30-12:45	Quantifying Riming by Combining the Video In Situ Snowfall Sensor with Cloud Radar Observations 1) Maximilian Maahn* (Leipzig Institute for Meteorology (LIM), Leipzig University) 2) Nina Maherndl (Leipzig Institute for Meteorology (LIM), Leipzig University) 3) Nils Pfeifer (Leipzig Institute for Meteorology (LIM), Leipzig University)	108
Lunch break		12:45-14:00	
11	14:00-14:15	Impact of seeder-feeder cloud interaction on precipitation formation over the Swiss plateau: a case study and statistics based on extensive remote-sensing, in situ and model data 1) Dietrich Althausen (TROPOS) 2) Albert Ansmann (TROPOS) 3) Holger Baars (TROPOS) 4) Ronny Engelmann (TROPOS) 5) Veronika Ettrichrätz (Leipzig Institute for Meteorology (LIM), Leipzig University) 6) Christopher Fuchs (ETHZ) 7) Tom Gaudek (TROPOS) 8) Hannes Griesche (TROPOS) 9) Majid Hajipour (TROPOS) 10) Jan Henneberger (ETHZ) 11) Julian Hofer (TROPOS) 12) Heike Kalesse-Los (Leipzig Institute for Meteorology (LIM), Leipzig University) 13) Anton Kötsche (Leipzig Institute for Meteorology (LIM), Leipzig University) 14) Ulrike Lohmann (ETHZ) 15) Max Maahn (Leipzig Institute for Meteorology (LIM), Leipzig University) 16) Nina Maherndl (Leipzig Institute for Meteorology (LIM), Leipzig University) 17) Anna Miller (ETHZ) 18) Kevin Ohneiser* (TROPOS) 19) Nadja Omanovic (ETHZ) 20) Martin Radenz (TROPOS) 21) Fabiola Ramelli (ETHZ) 22) Willi Schimmel (TROPOS) 23) Patric Seifert (TROPOS) 24) Fabian Senf (TROPOS) 25) Annett Skupin (TROPOS) 26) Robert Spirig (ETHZ) 27) Teresa Vogl (Leipzig Institute for Meteorology (LIM), Leipzig University) 28) Huiying Zhang (ETHZ)	24
12	14:15-14:30	The role of rain evaporation for the energy and radiation budget of the trades 1) Nina Robbins-Blanch* (University of Hamburg) 2) Florian Poydenot (University of Hamburg) 3) Claudia Acquistapace (University of Cologne) 4) Sabrina Schnitt (University of Cologne) 5) Raphaela Vogel (University of Hamburg)	45
13	14:30-14:45	Exploring Total Column Water Vapor retrievals from Satellite-Based Near-Infrared Measurements in Pre-Convective Environments 1) Cintia Carbajal Henken* (Freie Universität Berlin) 2) Jan El Kassar (Freie Universität Berlin) 3) Rene Preusker (Freie Universität Berlin)	21

Session 2 A		Enhancing Process Understanding: New observations for modeling and parameterization development		
		Chair 1: Patric Seifert, Chair 2: Sudha Yadav		
	1	14:45-15:00	A statistical evaluation of cloud microphysics schemes in a numerical weather prediction model with polarimetric radar observations 1) Gregor Köcher* (Meteorologisches Institut, Ludwig-Maximilians-Universität München) 2) Florian Ewald (Institut für Physik der Atmosphäre, Deutsches Zentrum für Luft- und Raumfahrt (DLR), Oberpfaffenhofen) 3) Christian Heske (Institut für Physik der Atmosphäre, Deutsches Zentrum für Luft- und Raumfahrt (DLR), Oberpfaffenhofen) 4) Tobias Zinner (Meteorologisches Institut, Ludwig-Maximilians-Universität München)	91
	2	15:00-15:15	Comparing raindrop size distributions from the two-moment microphysics scheme of the ICON-RUC model with disdrometer observations 1) Sophie Löbel* (Deutscher Wetterdienst) 2) Nikolaos Antonoglou (Deutscher Wetterdienst) 3) Ulrich Blahak (Deutscher Wetterdienst) 4) Axel Seifert (Deutscher Wetterdienst) 5) Alberto de Lozar (Deutscher Wetterdienst)	26
	3	15:15-15:30	How important is turbulence for the formation of snow aggregation and riming in Arctic clouds? 1) Stefan Kneifel* (Meteorologisches Institut, Ludwig-Maximilians-Universität München) 2) Giovanni Chellini (LSCE/IPSL)	30
Coffee break		15:30-16:00		
	4	16:00-16:15	A detailed climatology of quasi-vertical profiles (QVPs) under stratiform conditions with identification and analysis of different microphysical processes (MPPs) 1) Tobias Scharbach* (Institute of Geosciences, Meteorology Section, University of Bonn) 2) Silke Trömel (Institute of Geosciences, Meteorology Section, University of Bonn)	31
	5	16:15-16:30	Laboratory studies upon the fragmentation of ice particles due to collision 1) Pierre Grzegorzcyk (Johannes Gutenberg University of Mainz) 2) Subir K. Mitra (Johannes Gutenberg University of Mainz) 3) Miklós Szakáll* (Johannes Gutenberg University of Mainz) 4) Alexander Theis (Johannes Gutenberg University of Mainz) 5) Sudha Yadav (Johannes Gutenberg University of Mainz)	43

6	16:30-16:45	<p>The relationship between cloud thermodynamic structure and the properties of precipitation from cloud radar and disdrometer observations</p> <p>1) Tom Gaudek* (TROPOS) 2) Johannes Bühl (Hochschule Harz, TROPOS) 3) Kevin Ohneiser (TROPOS) 4) Martin Radenz (TROPOS) 5) Patric Seifert (TROPOS)</p>	51
7	16:45-17:00	<p>ROTOR - Constraining the role of warm rain processes for cloud amount and cloud organization in the trades</p> <p>1) Raphaela Vogel* (University of Hamburg) 2) Clara Bayley (Max Planck Institute for Meteorology, Hamburg) 3) Nils Niebaum (University of Hamburg) 4) Florian Poydenot (University of Hamburg) 5) Nina Robbins-Blanch (University of Hamburg) 6) Mampi Sarkar (University of Houston)</p>	53
8	17:00-17:15	<p>Ground-Based Observations of Secondary Ice Production: A Case Study Showing Droplet Fragmentation during Refreezing Rain</p> <p>1) Nils Pfeifer* (Leipzig Institute for Meteorology (LIM), Leipzig University) 2) Maximilian Maahn (Leipzig Institute for Meteorology (LIM), Leipzig University) 3) Dmitri Moisseev (Institute for Atmospheric and Earth System Research/Physics, Faculty of Science, University of Helsinki, Helsinki) 4) Bernd Mom (Institute for Atmospheric and Earth System Research/Physics, Faculty of Science, University of Helsinki, Helsinki)</p>	55
9	17:15-17:30	<p>DISDRODB: a global data base of raindrop size distribution observations</p> <p>1) Gionata Ghiggi* (EPFL) 2) Alexis Berne (Environmental remote sensing laboratory, EPFL) 3) Anne-Claire Billault-Roux (EPFL) 4) Kim Candolfi (EPFL) 5) Leo Pillac-Mage (EPFL) 6) Tim Raupach (UNSW) 7) Marc Schleiss (Delft University of Technology) 8) Remko Uijlenhoet (Delft University of Technology) 9) Christine Unal (Delft University of Technology)</p>	58