

 **2022**  
**ERAD**

## Program 29<sup>th</sup> August - 2<sup>nd</sup> September 2022

All plenary sessions take place in SALA 1

<b>MONDAY</b>		<b>08:15 - 08:40</b>	<b>WELCOME</b>
		<b>08:40 - 09:00</b>	<b>ERAD SURVIVAL GUIDE</b>
		09:00 - 10:20	INT - INTERNATIONAL COOPERATION
	SALA 1	11:15 - 12:30	RSP - RADAR SIGNAL AND DOPPLER PROCESSING ORO - OROGRAPHIC PRECIPITATION
	SALA 2	11:15 - 12:30	
	14:15 - 15:45	NWP - RADAR IN NUMERICAL WEATHER PREDICTION	
	16:30 - 18:45	QPN - NOWCASTING OF PRECIPITATION	
	<b>18:45</b>	<b>ICE BREAKER (PALACINEMA)</b>	
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<b>TUESDAY</b>		08:30 - 10:30	HSC - HAIL AND SEVERE CONVECTION
		11:15 - 12:40	SNO - SNOWFALL
	SALA 1	14:15 - 15:45	HYD- HYDROLOGICAL APPLICATIONS TEC - PHASED-ARRAY AND EMERGING TECHNOLOGIES
	SALA 2	14:15 - 15:45	
		16:30 - 18:45	POSTER SESSION & INDUSTRY EXHIBITION (online)
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<b>WEDNESDAY</b>		08:30 - 10:30	MIC1 - MICROPHYSICS
	SALA 1	11:15 - 13:00	MIC2 - MICROPHYSICS NCT - NOWCASTING OF CONVECTION AND THUNDERSTORMS
	SALA 2	11:15 - 13:00	
		<b>19:00</b>	<b>SOCIAL EXCURSION</b> <b>SOCIAL DINNER (BLU RESTAURANT, LOCARNO)</b>
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<b>THURSDAY</b>		08:30 - 10:30	POSTER SESSION & INDUSTRY EXHIBITION (online)
		11:15 - 12:40	CLI - CLIMATOLOGICAL STUDIES
	SALA 1	14:15 - 15:45	CAM - HARDWARE, CALIBRATION AND MONITORING AIN - ARTIFICIAL INTELLIGENCE
	SALA 2	14:15 - 15:45	
		16:30 - 18:30	POL - POLARIMETRY
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<b>FRIDAY</b>	SALA 1	08:30 - 10:15	QPE - QUANTITATIVE PRECIPITATION ESTIMATION CLU - CLUTTER, INTERFERENCES, INSECTS AND THE LIKE
	SALA 2	08:30 - 10:15	
		11:00 - 13:00	FAS - FREQUENCY-DIVERSITY, AIRBORNE AND SPACEBORNE
		<b>13:00 - 13:30</b>	<b>CLOSURE</b>

08:15 ————— 08:40

**WELCOME**

Bertrand Calpini (Deputy Director, MeteoSwiss)

Claudia Binder (Dean ENAC, EPFL)

Moderated by Alexis Berne and Urs Germann (Chairmen of ERAD2022)

08:40 ————— 09:00

**ERAD2022 Survival Guide**

9:00 ————— 9:35

**INT - INTERNATIONAL COOPERATION**

Chair: Remko Uijlenhoet

**INT.T1 - OPERA5 – news from the renewal of the production lines**

Von Lerber Annakaisa, Nicolas Gaussiat, Günther Haase, Stefan Klink, Hidde Leijnse, Vera Meyer, Christoph Müller, Markus Peura, Milka Radojevic, Klaus Stephan, Lukas Tüchler, Barbara Vodarić Šurija and Elena Saltikoff  
*Finnish Meteorological Institute, Helsinki, Finland*

**INT.T2 - Impact based forecasting using radar networks: the high added value of OPERA network for emergency management in times of climate change adaptation**

Sempere Torres Daniel, Marc Berenguer and Shinju Park  
*Centre of Applied Research in Hydrometeorology (CRAHI), Universitat Politècnica de Catalunya (UPC)*

**INT.T3 - WMO Operational Weather Radar Best Practices Guide preparations and status**

Michelson Daniel, Thomas Kane, Hiroshi Yamauchi, Bernard Urban, Mark Curtis, Blake McGuire, Thomas Einfalt, Benjamin Rohrdantz, Donald Rinderknecht and Pekka Rossi  
*Environment and Climate Change, Canada*

9:35 ————— 9:50

**INT.T4 - European-wide historic precipitation accumulations based on the OPERA rainfall rate composites collected during 2013-2022**

Park Shinju, Marc Berenguer and Daniel Sempere-Torres  
*Centre of Applied Research in Hydrometeorology, Universitat Politècnica de Catalunya, Spain*

9:50 ————— 10:05

**INT.T5 - EURADCLIM: The European climatological high-resolution gauge-adjusted radar rainfall dataset**

Overeem Aart, Hidde Leijnse, Else van den Besselaar, Gerard van der Schrier, Emiel van der Plas, Jan Fokke Meirink, Hylke de Vries, Geert Lenderink and Lotte de Vos  
*Royal Netherlands Meteorological Institute (KNMI), Netherlands*

10:05 ————— 10:20

**INT.T6 - Coherent RFI monitoring in the EUMETNET OPERA radar network**

Meyer Vera Katharina, Lukas Tüchler and Annakaisa von Lerber  
*Zentralanstalt für Meteorologie und Geodynamik (ZAMG), Austria*

Triplet

10:20 ————— 11:15

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**COFFEE BREAK**

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||| **RSP - RADAR SIGNAL AND DOPPLER PROCESSING - SALA 1**  
Chair: Luca Baldini

11:15 ————— 11:30

**RSP.T1 - Progressive Pulse Compression: A Promising Solution to the Blind Range Challenge for Solid-State Weather Radars**  
Salazar Cesar, Boonleng Cheong, Robert Palmer, David Schwartzman and Alexander Ryzhkov  
*University of Oklahoma - Advanced Radar Research Center*

11:30 ————— 11:45

**RSP.T2 - Correction of Dual-PRF Velocity for Operational S-band Doppler Weather Radar**  
Park Soyeon, Sung-Hwa Jung and Kwang-Ho Kim  
*Weather Radar Center, Korea Meteorological Administration, South Korea*

11:45 ————— 12:00

**RSP.T3 - Region-based Recursive Doppler Dealiasing (R2D2)–An Operational Algorithm for Difficult Doppler Velocity Retrievals**  
James Curtis, Monika Feldmann, Marco Boscacci, Daniel Leuenberger, Marco Gabella, Urs Germann, Daniel Wolfensberger and Alexis Berne  
*Embry-Riddle Aeronautical University, United States*

12:00 ————— 12:15

**RSP.T4 - Jensen–Shannon Distance-based Filter and Unsupervised Evaluation Metrics for Polarimetric Weather Radar Processing**  
Una Christine, Cheng Chen and Albert Oude Nijhuis  
*Delft University of Technology, Netherlands*

12:15 ————— 12:30

**RSP.T5 - Improved spectral processing for a Ka/Ku-band cloud radar system**  
Ding Han, Haoran Li and Liping Liu  
*Nanjing University of Information Science and Technology, China*

||| **ORO - OROGRAPHIC PRECIPITATION - SALA 2**  
Chair: Martin Hagen

11:15 ————— 11:30

**ORO.T1 - Orographic Flow Influence on Precipitation During an Atmospheric River Event at Davis, Antarctica**  
Gehring Josué, Alexis Berne, Étienne Vignon, Anne-Claire Billault-Roux, Alfonso Ferrone, Alain Protat and Simon P. Alexander  
*Environmental Remote Sensing Laboratory, École Polytechnique Fédérale de Lausanne, Switzerland and Federal Office of Meteorology and Climatology MeteoSwiss, Switzerland*

11:30 ————— 11:45

**ORO.T2 - Surface rainfall estimates in mountainous areas inferred from radar volume scans and NWP precipitation profiles**  
Le Bastard Tony, Fatima Karbou, Nicolas Gaussiat and Olivier Caumont  
*Météo-France, France*

11:45	12:00	<p><b>ORO.T3 - The altitudinal effect of the radar-gauge errors over Switzerland</b>  <u>Ghaemi Esmail</u>, Marco Gabella, Ulrich Foelsche, Ioannis Sideris and Daniele Nerini  <i>University of Graz, Austria</i></p>
12:00	12:15	<p><b>ORO.T4 - Analysis of X-Band Dual Polarization Radar Observations over Multiple Complex Terrain Regions</b>  <u>Derin Yagmur</u>, Yagmur Derin, Pierre-Emmanuel Kirstetter, Ioannis Kalogiros, Marios Anagnostou, Emmanouil N. Anagnostou and Jonathan J. Gourley  <i>University of Oklahoma, United States</i></p>
12:15	12:30	<p><b>ORO.T5 - Development of Multi-Radar Multi-Sensor (MRMS) Machine Learning QPE for Complex Terrain</b>  <u>Osborne Andrew</u>, Jian Zhang, Micheal Simpson, Stephen Cocks and Kenneth Howard  <i>CIWRO, United States</i></p>
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12:30	14:15	<p><b>LUNCH</b></p> <hr/>
<p><b>NWP - RADAR IN NUMERICAL WEATHER PREDICTION</b>  <b>Chair: Lesley De Cruz</b></p>		
14:15	14:45	<p><b>NWP.T1 - Current status of SINFONY - the combination of Nowcasting and Numerical Weather Prediction on the convective scale at DWD</b>  <u>Blahak Ulrich</u>  <i>Deutscher Wetterdienst (DWD), Germany</i></p>
Triplet		<p><b>NWP.T2 - Assimilating 3D radar information at convective scales at DWD</b>  <u>Stephan Klaus</u>, Ulrich Blahak, Kobra Khosravian, Lisa Neef, Klaus Vobig, Alberto De Lozar, Roland Potthast, Christoph Schraff and Christian Welzbacher  <i>Deutscher Wetterdienst (DWD), Germany</i></p>
		<p><b>NWP.T3 - Assimilation of Nowcast Objects in the Regional Forecast Model ICON-LAM</b>  <u>Neef Lisa</u>, Christian Welzbacher, Ulrich Blahak and Roland Potthast  <i>Deutscher Wetterdienst (DWD), Germany</i></p>
	14:45	15:00
15:00	15:15	<p><b>NWP.T5 - Use of dual-polarization signatures in supercell storms for the evaluation of Meso-NH ICE3 and LIMA microphysics schemes</b>  <u>Augros Clotilde</u>, Olivier Caumont, Cloé David, Natalia Parisotto Sinhori, Didier Ricard and Benoît Vié  <i>CNRM, Université de Toulouse, Météo-France, CNRS, Toulouse, France</i></p>

15:15 ————— 15:30

**NWP.T6 - An ensemble selection strategy to improve probabilistic precipitation forecasts using LEMA (Localized Ensemble Mosaic Assimilation).**

Lee Meng-Tze, Man-Kong Yau, Andrés Pérez Hortal, Dominik Jacques and Isztar Zawadzki  
*Mcgill University, Canada*

15:30 ————— 15:45

**NWP.T7 - Assimilating Retrieved Water Vapor and Radar Data From NCAR S-PolKa: Performance and Validation Using Real Cases**

Chung Kao-Shen, Phuong-Nghi Do, Pay-Liam Lin, Ching-Yin Ke and Scott M Ellis  
*Dept. of Atmospheric Sciences, National Central University, Taiwan*

15:45 ————— 16:30

**COFFEE BREAK**

**QPN - NOWCASTING OF PRECIPITATION**

Chair: Marc Berenguer

16:30 ————— 17:00

Triplet

**QPN.T1 - Advancing nowcasting science and operations with free and open-source software: the pysteps success story**

Nerini Daniele, Seppo Pulkkinen, Andres A. Perez Hortal, Ruben Imhoff, Lesley De Cruz, Carlos Velasco-Forero, Loris Foresti and Alan Seed  
*Federal Office of Meteorology and Climatology MeteoSwiss, Switzerland*

**QPN.T2 - Extending skillful lead times with a scale-dependent blending of ensemble rainfall nowcasts and NWP in pysteps**

Imhoff Ruben, Lesley De Cruz, Wout Dewettinck, Carlos Velasco-Forero, Daniele Nerini, Michiel Van Ginderachter, Edouard Goudenhoofd, Claudia Brauer, Klaas-Jan van Heeringen, Remko Uijlenhoet and Albrecht Weerts  
*Deltares, Netherlands*

**QPN.T3 - Project IMA: Belgium's Seamless Prediction System**

De Cruz Lesley, Alex Deckmyn, Daan Degrauwe, Idir Dehmous, Laurent Delobbe, Wout Dewettinck, Edouard Goudenhoofd, Ruben Imhoff, Maarten Reyniers, Geert Smet, Piet Termonia, Joris Van den Bergh, Michiel Van Ginderachter and Stéphane Vannitsem  
*Vrije Universiteit Brussel, Belgium*

17:00 ————— 17:15

**QPN.T4 - Lagrangian Convolutional Neural Network for Radar-Based Precipitation Nowcasting**

Ritvanen Jenna, Bent Harnist, Seppo Pulkkinen, Miguel Aldana, Terhi Mäkinen and V. Chandrasekar  
*Finnish Meteorological Institute, Helsinki, Finland*

17:15 ————— 17:30

**QPN.T5 - NowPrecip: Localized precipitation nowcasting in the complex topography of Switzerland**

Sideris Ioannis, Urs Germann, Loris Foresti, Daniele Nerini, Marco Boscacci, Matteo Buzzi and Lorenzo Clementi  
*Federal Office of Meteorology and Climatology MeteoSwiss, Switzerland*

## Monday 29<sup>th</sup> August 2022

17:30	_____	17:45	<b>QPN.T6 - STEPS as a service - A new generation of operational nowcasting for the Australian continent</b> <u>Curtis Mark</u> , Alan Seed, Carlos Velasco and Jayaram Pudashine <i>Bureau of Meteorology, Australia</i>
17:45	_____	18:00	<b>QPN.T7 - Blending rainfall nowcasting with radar data and high-resolution numerical weather prediction model over Italy</b> <u>Poli Virginia</u> , Renzo Bechini, Chiara Cardinali, Roberto Cremonini and Pier Paolo Alberoni <i>Agenzia regionale per la prevenzione, l'ambiente e l'energia dell' Emilia-Romagna (Arpae), Struttura IdroMeteoClima, Italy</i>
18:00	_____	18:30	<b>QPN.T8 - On the generation of stochastic simulations of rainfall in space and time</b> <u>Seed Alan</u> <i>Griffith University, Australia</i>
18:30	_____	18:45	<b>Weather Forecast, Stefano Zanini</b>
		<b>18:45</b>	<hr/> <b>ICE BREAKER (PALACINEMA)</b> <hr/>

Lecture

**Tuesday 30<sup>th</sup> August 2022**

**HSC - HAIL AND SEVERE CONVECTION**

Chair: Rebecca Gugerli

08:30	_____	09:00	<b>Keynote</b>	<p><b>HSC.T1 - Two Paradigms for Radar-Based Hail-Size Estimation: Problems and Possibilities</b>  <u>Kumjian Matthew</u>  <i>Department of Meteorology and Atmospheric Science, The Pennsylvania State University, United States</i></p>
9:00	_____	9:30		<b>Triplet</b>
			<p><b>HSC.T3 - ZDR-column detection and the vertical structure of polarimetric variables in relation to hail probability and size in Switzerland.</b>  <u>Martin Aregger</u>, Christoph von Matt, Olivia Martius, Urs Germann and Alessandro Hering  <i>Institute of Geography and Oeschger Centre for Climate Change Research, University of Bern, Switzerland</i></p>	
			<p><b>HSC.T4 - Drone-based hail size estimation within a hail swath of a large supercell in Switzerland</b>  <u>Martin Lainer</u>, Killian Brennan, Samuel Monhart, Daniel Wolfensberger, Alessandro Hering and Zaira Schauwecker  <i>Federal Office of Meteorology and Climatology MeteoSwiss, Switzerland</i></p>	
9:30	_____	9:45		<p><b>HSC.T5 - Fine-scale DOW radar observations of hurricane boundary layers</b>  <u>Karen Kosiba</u> and Josh Wurman  <i>Flexible Array of Radars and Mesonets, University of Illinois, United States</i></p>
9:45	_____	10:00		<p><b>HSC.T6 - A hail bearing supercell radar analysis in the Mediterranean basin</b>  <u>Mario Montopoli</u>, Errico Picciotti, Luca Baldini, Saverio Di Fabio, Frank Silvio Marzano, Marcello Miglietta, Alessandro Tiesi, Simone Mazzà and Gianfranco Vulpiani  <i>National Research Council of Italy, Institute of Atmospheric Sciences and Climate (CNR-ISAC), Italy</i></p>
10:00	_____	10:15		<p><b>HSC.T7 - Australia's new operational hail analysis system: HailCORE</b>  <u>Joshua Soderholm</u>, Alain Protat, Valentin Louf, Mark Curtis, Dean Narramore and Darryl Pidcock  <i>Bureau of Meteorology, Australia</i></p>
10:15	_____	10:30		<p><b>HSC.T8 - Polarimetric scattering coefficient library of rough hailstones obtained with a commercial electromagnetic solver</b>  <u>Djordje Mirkovic</u> and Dusan Zrnic  <i>Cooperative Institute for Severe and High-Impact Weather Research and Operations, United States</i></p>



**Tuesday 30<sup>th</sup> August 2022**

**10:30** \_\_\_\_\_ **11:15**

**COFFEE BREAK**

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**SNO - SNOWFALL**

**Chair: GyuWon Lee**

**11:15** \_\_\_\_\_ **11:30**

**SNO.T1 - Radar-Based Snowfall Estimate: Which Reflectivity-Snow Water Equivalent Rate Relationship to Use?**

Ali Tokay, Charles Helms, David Wolff and Patrick Gatlin  
*UMBC-NASA/GSFC, United States*

**11:30** \_\_\_\_\_ **11:45**

**SNO.T2 - Polarimetric radar QPE in heavy snow**

Petar Bukovcic, Alexander Ryzhkov and Dusan Zrnica  
*The University of Oklahoma / NOAA, National Severe Storms Laboratory, United States*

**11:45** \_\_\_\_\_ **12:00**

**SNO.T3 - A synergy of polarimetric and dual-frequency radar observations of winter storms for estimating ice water content**

Mariko Oue, Alexander Ryzhkov, Sergey Matrosov and Pavlos Kollias  
*Stony Brook University, United States*

**12:00** \_\_\_\_\_ **12:15**

**SNO.T4 - Cross-validation of microwave snowfall products over the continental United States**

Kamil Mroz, Alessandro Battaglia, Mario Montopoli, Giulia Panegrossi, Luca Baldini and Pierre Kirstetter  
*National Centre for Earth Observation, United Kingdom*

**12:15** \_\_\_\_\_ **12:30**

**SNO.T5 - The Anatomy and Physics of a Snowsquall**

Matthew Kumjian, Kelly Lombardo, Karl Schneider, Mariko Oue and Pavlos Kollias  
*Department of Meteorology and Atmospheric Science, The Pennsylvania State University, United States*

**12:30** \_\_\_\_\_ **12:40**

**IN MEMORIAM FRANK MARZANO**

**12:40** \_\_\_\_\_ **14:15**

**LUNCH**

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**HYD - HYDROLOGICAL APPLICATIONS - SALA 1**

**Chair: Daniel Sempere Torres**

**14:15** \_\_\_\_\_ **14:30**

**HYD.T1 - On the benefit of using radar-based QPE for landslide early warning at regional scale**

Marc Berenguer, Daniel Sempere-Torres and Shinju Park  
*Centre of Applied Research in Hydrometeorology, Universitat Politècnica de Catalunya (CRAHI-UPC), Spain*

**Tuesday 30<sup>th</sup> August 2022**

- 14:30 ————— 14:45      **HYD.T2 - A flash flood warning system for ungauged basins in the tropical context of La Reunion island**  
Pierre Javelle, Didier Organde, Julie Demargne, Philippe Cantet, Maxime Jay-Allemand, Anthony Roulenq, David Villani, Florent Baby and Pierre-André Garambois  
*INRAE, France*
- 14:45 ————— 15:00      **HYD.T3 - Radar nowcasting in Auckland, New Zealand: A catchment focused study**  
Luke Sutherland-Stacey, John Nicol, Beatriz Reboredo Viso and Brook Keats  
*Weather Radar New Zealand*
- 15:00 ————— 15:15      **HYD.T4 - Swabian MOSES 2021: A hydro-meteorological measurement campaign**  
Jan Handwerker and The Swabian Moses Team Swabian Moses Team  
*Karlsruhe Institute of Technology, Institute of Meteorology and Climate Research, Germany*
- 15:15 ————— 15:30      **HYD.T5 - Accounting for Subbasin Precipitation Variability in Flood Characterization**  
Pierre-Emmanuel Kirstetter, Shruti Upadhyaya, Devon Woods, Manabendra Saharia and Jorge Duarte  
*University of Oklahoma, United States*
- 15:30 ————— 15:45      **HYD.T6 - Radar-based ensemble rainfall forecasts to enhance flood forecasts and warnings in Australia**  
Carlos Velasco-Forero, Justin Robinson, Jayaram Pudashine and Alan Seed  
*Bureau of Meteorology, Australia*
- |||      **TEC - PHASED-ARREY AND EMERGING TECHNOLOGIES - SALA 2**  
Chair: Joshua Wurman
- 14:15 ————— 14:30      **TEC.T1 - Examining the Benefits of a Future Operational Phased Array Radar Network in the United States using Rapid-Scan Radar Observations and Numerical Simulations**  
David Bodine, Brandon Cohen, Connor Pearson, Laura Shedd, Mark Yearly, Tian-You Yu, Anthony Reinhart, Jeff Snyder, Sebastian Torres and Howard Bluestein  
*University of Oklahoma, United States*
- 14:30 ————— 14:45      **TEC.T2 - Precipitation observations by multi-parameter phased array weather radar (MP-PAWR)**  
Nobuhiro Takahashi and Hiroshi Hanado  
*ISEE Nagoya University, Japan*
- 14:45 ————— 15:00      **TEC.T3 - Development in Progress on C-band Phased Array Weather Radar with Comb Beam Transmission**  
Eiichi Yoshikawa, Tomoo Ushio, Hiroshi Kikuchi and Shigeharu Shimamura  
*Japan Aerospace Exploration Agency, Japan*



**Tuesday 30<sup>th</sup> August 2022**

15:00	_____	15:15	<b>TEC.T4 - Science Applications of Phased Array Radars</b> <i>Pavlos Kollias, Robert D. Palmer and David J. Bodine</i> <i>Stony Brook University, United States</i>
15:15	_____	15:30	<b>TEC.T5 - Doppler spectra and microphysical retrievals from a G-band radar</b> <i>Ben Courtier, Alessandro Battaglia, Kamil Mroz, Chris Westbrook,</i> <i>Karina McCusker, Peter Huggard, Hui Wang and Chris Walden</i> <i>University of Leicester, United Kingdom</i>
15:30	_____	15:45	<b>TEC.T6 - Observations of Severe Convection with a Passive Multistatic Radar Network</b> <i>Samuel Emmerson, Robert Palmer, David Bodine and Patrick Skinner</i> <i>Advanced Radar Research Center/University of Oklahoma, United States</i>
<b>15:45</b>	_____	<b>16:30</b>	<hr/> <b>COFFEE BREAK</b> <hr/>
16:30	_____	18:45	<b>POSTER (all sessions) &amp; INDUSTRY EXHIBITION (online in gather.town)</b>

**Wednesday 31<sup>th</sup> August 2022**

**MIC1 - MICROPHYSICS 1**

Chair: Dmitri Moisseev

Time	Topic	Speaker(s)	Institution
08:30 — 09:00	<b>MIC1.T1 - A scaling law for the raindrop size distribution: approaching its 30th Anniversary but still going strong!</b>	<u>Remko Uijlenhoet</u>	<i>Delft University of Technology, Netherlands</i>
9:00 — 9:30	<b>MIC1.T2 -Aggregation in Arctic shallow mixed-phase clouds is enhanced by dendritic growth and absent close to the melting level: evidence from long-term remote sensing observations in Ny-Ålesund</b>	<u>Giovanni Chellini</u> , Rosa Gierens, Theresa Kiszler, Vera Schemann and Stefan Kneifel	<i>Institute for Geophysics and Meteorology, University of Cologne, Germany</i>
	<b>MIC1.T3 - Dynamical and microphysical process in the layer around -15°C</b>	<u>Gyuwon Lee</u> and Bo-young Ye	<i>Department of Atmospheric Sciences, Center for Atmospheric REMote sensing (CARE), Kyungpook National University, South Korea</i>
	<b>MIC1.T4 - Novel view on the Dendritic Growth Zone by combining triple-frequency radar and spectral Polarimetry</b>	<u>Leonie von Terzi</u> , Jose Dias-Neto, Alexander Myagkov, Davide Ori and Stefan Kneifel	<i>Institute for Geophysics and Meteorology, University of Cologne, Germany</i>
	<b>MIC1.T5 - Dual-frequency spectral radar retrieval of snowfall microphysics: a deep-learning based approach</b>	<u>Anne-Claire Billault-Roux</u> , Gionata Ghiggi, Louis Jaffaux, Audrey Martini, Nicolas Viltard and Alexis Berne	<i>Environmental Remote Sensing Laboratory, École Polytechnique Fédérale de Lausanne, Switzerland</i>
9:30 — 9:45	<b>MIC1.T6 - Investigating micro-physical processes in Arctic mixed-phase clouds using cloud radar Doppler spectrum skewness</b>	<u>Rosa Gierens</u> , Stefan Kneifel, Matthew Shupe, Kerstin Ebell and Ulrich Löhnert	<i>Institute for Geophysics and Meteorology, University of Cologne, Germany</i>
9:45 — 10:00	<b>MIC1.T7 - Melting of graupel and hail: A vertical wind tunnel study</b>	<u>Miklos Szakall</u> , Alexander Theis, Subir Mitra, Karoline Diehl and Stephan Borrmann	<i>University of Mainz, Institute for Atmospheric Physics, Germany</i>
10:00 — 10:15	<b>MIC1.T8 - New insights on the prevalence of drizzle in marine stratocumulus clouds observed from millimeter-wavelength radar</b>	<u>Zeen Zhu</u> , Pavlos Kollias, Edward Luke, Fan Yang, Katia Lamer and Jason Barr	<i>Brookhaven National Laboratory, United States</i>
10:15 — 10:30			

Lectures

Triplet

10:30 ————— 11:15

**COFFEE BREAK**

**MIC2 - MICROPHYSICS 2 - SALA 1**  
Chair: Stefan Kneifel

11:15 ————— 11:30

**MIC2.T1 - Influence of Kelvin-Helmholtz wave on ice microphysical processes as revealed by polarimetric radars and vertically pointing radars**  
Kwonil Kim, Chia-Lun Tsai and Gyuwon Lee  
*Department of Atmospheric Sciences, Center for Atmospheric REmote sensing (CARE), Kyungpook National University, South Korea*

11:30 ————— 11:45

**MIC2.T2 - Studying differences in snowfall microphysics with surface observations at GPM ground validation sites**  
Annakaisa von Lerber, Dmitri Moisseev, Claire Pettersen, Mark Kulie, David Hudak and Peter Rodriguez  
*Finnish Meteorological Institute, Helsinki, Finland*

11:45 ————— 12:00

**MIC2.T3 - Evaluation of state-of-the-art polarimetry-based ice microphysical retrievals using ground-based radar and in-situ airborne measurements**  
Armin Blanke, Andrew Heymsfield, Manuel Moser, Christiane Voigt and Silke Trömel  
*Institute for Geosciences, Department of Meteorology, University of Bonn, Bonn, Germany*

12:00 ————— 12:15

**MIC2.T4 - CloudBOSS: A Bayesian warm rain microphysics scheme designed for observational constraint and uncertainty quantification**  
Marcus van Lier-Walqui, Hugh Morrison, Sean Santos and Karly Reimel  
*Columbia University Center for Climate Systems Research at NASA/GISS, United States*

12:15 ————— 12:30

**MIC2.T5 - Variability of mesoscale cloud and precipitation structures during near-freezing surface conditions using ground-based radar observations from WINTRE-MIX**  
Katja Friedrich, Justin Minder, Joshua Wurman, Karen Kosiba, Jeffrey French, David Kingsmill, Andrew Winters, Nicholas Bassill, Julie Thériault and John Gyakum  
*University of Colorado at Boulder, United States*

12:30 ————— 12:45

**MIC2.T6 - Simultaneous observation of vertically pointing Ka Band radar and horizontally looking X Band radar in SAIL**  
Chandra V Chandrasekar and Sounak Biswas  
*Colorado State University, United States*

12:45 ————— 13:00

**MIC2.T7 - Investigation of Microphysics and Precipitation for Atlantic Coast-Threatening Snowstorms (IMPACTS): Remote Sensing and microphysics results from recent deployments**  
Lynn McMurdie, Gerald Heymsfield, John Yorks, Joseph Finlon and Victoria McDonald  
*Atmospheric Sciences, University of Washington, United States*

**Wednesday 31<sup>th</sup> August 2022**

**NCT - NOWCASTING OF CONVECTION AND THUNDERSTORMS  
- SALA 2**

**Chair: Ulrich Blahak**

11:15	11:30	<b>NCT.T1 - Lightning-jumps, ZDR-columns and an improved cell severity ranking for automatic thunderstorm warnings in the Alpine area</b> <u>Alessandro Hering</u> , Luca Nisi, Marco Boscacci, Lorenzo Clementi, Luca Panziera and Urs Germann <i>Federal Office of Meteorology and Climatology MeteoSwiss, Switzerland</i>
11:30	11:45	<b>NCT.T2 - SWIRL: the Australian operational 3D wind analysis and nowcasting service and its validation</b> <u>Alain Protat</u> , Valentin Louf, Jordan Brook and Joshua Soderholm <i>Bureau of Meteorology, Australia</i>
11:45	12:00	<b>NCT.T3 - 3D Convective/Stratiform Echo Type Classification and Convectivity from Radar Reflectivity</b> <u>Michael Dixon</u> and Ulrike Romatschke <i>National Center for Atmospheric Research, United States</i>
12:00	12:15	<b>NCT.T4 - Object-based Nowcasting at DWD using KONRAD3D, HYMEC, and Lightning Data</b> <u>Lukas Josipovic</u> , Manuel Werner and Ulrich Blahak <i>Deutscher Wetterdienst (DWD), Germany</i>
12:15	12:30	<b>NCT.T5 - Combination of object-based probabilistic nowcasting and NWP ensemble of convective cells from KONRAD3D</b> <u>Isabel Urbich</u> , Rafael Posada, Gregor Pante and Manuel Werner <i>Deutscher Wetterdienst (DWD), Germany</i>
12:30	12:45	<b>NCT.T6 - Results from a Climatology of Polarimetric Radar Features in Supercells</b> <u>Michael French</u> , Darrel Kingfield, Kristofer S. Tuftedal and Jacob Segall <i>Stony Brook University, United States</i>
12:45	13:00	<b>NCT.T7 - Exploring the polarimetric capabilities of the S-band Mwanza radar in Tanzania, Africa: Towards an Early Warning system in Lake Victoria Basin</b> <u>Anna del Moral</u> , Rita D Roberts, Tammy M Weckwerth and James W Wilson <i>National Center for Atmospheric Research, United States</i>
<b>13:00</b>	<b>14:15</b>	<hr/> <b>LUNCH</b> <hr/>

**SOCIAL EXCURSION**

**19:00** **SOCIAL DINNER (BLU RESTAURANT, LOCARNO)**  
**Saluto di benvenuto del Consigliere di Stato Manuele Bertoli**  
**(welcome address by a member of the local government)**

**Thursday 1<sup>st</sup> September 2022**

**CLI - CLIMATOLOGICAL STUDIES**

Chair: Matthew Kumijan

08:30	10:30	<b>POSTER (all sessions) &amp; INDUSTRY EXHIBITION (online in gather.town)</b>
11:15	11:45	<b>CLI.T1 - Trends in Australian hail probability examined using an updated hail proxy and radar data</b> <i>Timothy Raupach, Joshua Soderholm, Rob Warren and Steven Sherwood</i> <i>UNSW Sydney and ARC Centre of Excellence for Climate Extremes, Australia</i>
11:45	12:00	<b>CLI.T2 - Using a catalogue of radar-based heavy rainfall events (CatRaRE) in Germany for assessing the impact of current precipitation events</b> <i>Katharina Lengfeld, Ewelina Walawender, Tanja Winterrath and Elmar Weigl</i> <i>Deutscher Wetterdienst (DWD), Germany</i>
12:00	12:15	<b>CLI.T3 - Extreme rainfall event classification in the tropical Andes by using observations of an X-band radar</b> <i>Gabriela Urgilés, Johanna Orellana-Alvear, Jörg Bendix and Rolando Célleri</i> <i>Departamento de Recursos Hídricos y Ciencias Ambientales, Universidad de Cuenca, Cuenca, Ecuador</i>
12:15	12:30	<b>CLI.T4 - Climatology of the vertical profiles of polarimetric radar variables and retrieved microphysical parameters in continental / tropical MCSs and landfalling hurricanes</b> <i>Jiaxi Hu and Alexander Ryzhkov</i> <i>CIWRO/NSSL, United States</i>
<b>12:30</b>	<b>12:40</b>	<b>IN MEMORIAM JÜRGE JOSS</b>
<b>12:40</b>	<b>14:15</b>	<b>LUNCH</b>

Keynote

**CAM - HARDWARE, CALIBRATION AND MONITORING - SALA 1**

Chair: Jordi Figueras i Ventura

14:15	14:30	<b>CAM.T1 - Reconciling the differences between radar and rain gauges, both are correct, but radar is usually more representative</b> <i>Anthony Illingworth and Robert Thompson</i> <i>University of Reading, United Kingdom</i>
14:30	14:45	<b>CAM.T2 - Short journey into the best practices of monitoring and calibration of the weather radar receiver at MeteoSwiss during the last 25 years</b> <i>Marco Boscacci, Marco Gabella, Lorenzo Clementi, Maurizio Sartori and Urs Germann</i> <i>Federal Office of Meteorology and Climatology MeteoSwiss, Switzerland</i>

## Thursday 1<sup>st</sup> September 2022

- 14:45 ————— 15:00      **CAM.T3 - Monitoring of radar reflectivity on nationwide s-band weather radar network using ground clutter, self consistency and intercomparison**  
Jeong-Eun Lee, Soohyun Kwon and Sung-Hwa Jung  
*Weather Radar Center, Korea Meteorological Administration, South Korea*
- 15:00 ————— 15:15      **CAM.T4 - Estimation of transmitted differential phase on dual polarization radars**  
Dusan Zrnic, Valery Melnikov and David Schvartzman  
*National Severe Storms Laboratory/NOAA, United States*
- 15:15 ————— 15:30      **CAM.T5 - A systematic approach to untangling C-band radar errors utilizing a network of dual frequency vertically profiling radars.**  
John Nicol, Luke Sutherland-Stacey and Beatriz Reboredo Viso  
*Weather Radar New Zealand*
- 15:30 ————— 15:45      **CAM.T6 - Calibration of differential reflectivity using dry aggregated snow**  
Jiaxi Hu, John Krause and Alexander Ryzhkov  
*CIWRO/NSSL, United States*

### ||| **AIN - ARTIFICIAL INTELLIGENCE - SALA 2**

**Chair: Daniele Nerini**

- 14:15 ————— 14:30      **AIN.T1 - Using machine learning to improve multi-wavelength spaceborne radar precipitation retrievals**  
Stephen Nesbitt, Alfonso Ladino Rincon, Randy Chase, Greg McFarquhar, Robert Rauber and Larry Di Girolamo  
*University of Illinois Urbana-Champaign, United States*
- 14:30 ————— 14:45      **AIN.T2 - Spatial Reflectivity-Based Hail Storm Detection using Deep Learning**  
Vincent Forcadell, Clotilde Augros, Kevin Dedieu and Olivier Caumont  
*CNRM, Université de Toulouse, Météo-France, CNRS, Toulouse, France*
- 14:45 ————— 15:00      **AIN.T3 - Improving Nowcasting of Convective Development by Incorporating Polarimetric Radar Variables into a Deep Learning Model**  
Xiang Pan, Yinghui Lu, Kun Zhao, Hao Huang, Mingjun Wang and Haonan Chen  
*Key Laboratory of Mesoscale Severe Weather/MOE and School of Atmospheric Sciences, Nanjing University, Nanjing, China*
- 15:00 ————— 15:15      **AIN.T4 - Nowcasting thunderstorm hazards with neural networks from multi-source data**  
Jussi Leinonen, Ulrich Hamann and Urs Germann  
*Federal Office of Meteorology and Climatology MeteoSwiss, Switzerland*
- 15:15 ————— 15:30      **AIN.T5 - Precipitation nowcasting by the combination of generative and transformer deep learning models**  
Gabriele Franch, Virginia Poli, Chiara Cardinali, Marco Cristoforetti and Pier Paolo Alberoni  
*Fondazione Bruno Kessler, Italy*



## Thursday 1<sup>st</sup> September 2022

15:30	15:45	<p><b>AIN.T6 - A guide to radar nowcasting using machine learning</b>  <a href="#">Haonan Chen</a> and <a href="#">V. Chandrasekar</a>  <i>Colorado State University, United States</i></p>
15:45	16:30	<p><b>COFFEE BREAK</b></p>
<p><b>POL - POLARIMETRY</b>  <b>Chair: Annakaisa von Lerber</b></p>		
16:30	16:45	<p><b>POL.T1 - Refraction of radar beams in precipitation</b>  <a href="#">Valery Melnikov</a>  <i>CIWRO, United States</i></p>
16:45	17:00	<p><b>POL.T2 - An Improved KDP Computation for the Radar Data Quality Assurance of DWD Weather Radars</b>  <a href="#">Tobias Bergmann</a> and <a href="#">Manuel Werner</a>  <i>Deutscher Wetterdienst (DWD), Germany</i></p>
17:00	17:15	<p><b>POL.T3 - Retrieving the Median Volume Diameter of Raindrops with a Polarimetric Cloud Radar</b>  <a href="#">Christine Unal</a> and <a href="#">Yannick van den Brule</a>  <i>Delft University of Technology, Netherlands</i></p>
17:15	17:30	<p><b>POL.T4 - PIA-<math>\Phi</math>DP relationship in the melting layer of precipitation observed at X-band</b>  <a href="#">Anil Kumar Khanal</a>, <a href="#">Guy Delrieu</a>, <a href="#">Frédéric Cazenave</a> and <a href="#">Brice Boudevillain</a>  <i>Institute for Geoscience and Environmental Research, France</i></p>
17:30	17:45	<p><b>POL.T5 - Use of dual-pol observations, NWP output and crowd-sourced reports to improve the hydrometeors classification at ground level in Belgium</b>  <a href="#">Sylvain Watelet</a>, <a href="#">Laurent Delobbe</a> and <a href="#">Maarten Reyniers</a>  <i>Royal Meteorological Institute of Belgium</i></p>
17:45	18:00	<p><b>POL.T6 - Multi-wavelength depolarization signatures of snowflakes</b>  <a href="#">Dmitri Moisseev</a>, <a href="#">Maximilian Maahn</a>, <a href="#">Annakaisa von Lerber</a> and <a href="#">Jani Tyynelä</a>  <i>University of Helsinki, Finland</i></p>
18:00	18:30	<p><b>POL.T7 - Dual-polarization applications</b>  <a href="#">Alexander Ryzhkov</a>  <i>University of Oklahoma, United States</i></p>

**QPE - ARTIFICIAL INTELLIGENCE - SALA 1**

Chair: Hidde Leijnse

- |       |       |       |  |
|-------|-------|-------|--|
| 08:30 | _____ | 08:45 | <b>QPE.T1 - Estimation and analysis of extreme rainfall in Belgium during the July 2021 flood event.</b><br><u>Edouard Goudenhoofdt</u> , Laurent Delobbe and Michel Journee<br><i>Royal Meteorological Institute of Belgium</i>   |
| 08:45 | _____ | 09:00 | <b>QPE.T2 - A radar-based quantitative precipitation estimation algorithm to address near-surface vertical gradients of precipitation in warm-rain processes: the flood in western Germany on 14 July 2021</b><br><u>Ju-Yu Chen</u> , Ricardo Reinoso-Rondinel, Silke Trömel, Clemens Simmer and Alexander Ryzhkov<br><i>Institute for Geosciences, Department of Meteorology, University of Bonn, Germany</i> |
| 09:00 | _____ | 09:15 | <b>QPE.T3 - Using a random forest approach to improve the quantitative precipitation estimation from the dual-polarized weather radar network in Switzerland</b><br><u>Rebecca Gugerli</u> , Daniel Wolfensberger, Marco Gabella, Marco Boscacci,<br><i>Environmental Remote Sensing Laboratory, École Polytechnique Fédérale de Lausanne, Switzerland</i>   |
| 09:15 | _____ | 09:30 | <b>QPE.T4 - Using quality information for merging radar and rain gauge data</b><br><u>Hidde Leijnse</u> and Aart Overeem<br><i>Royal Netherlands Meteorological Institute (KNMI), Netherlands</i>  |
| 09:30 | _____ | 09:45 | <b>QPE.T5 - Generalized sensitivity analysis of attenuation in precipitation at X-Band frequency using the Mountain Reference Technique</b><br><u>Guy Delrieu</u> , Frederic Cazenave, Anil Kumar Khanal, Brice Boudevillain, Nan Yu and Nicolas Gaussiat<br><i>Institute for Geosicnecs and Environmental Reserch, France</i>   |
| 09:45 | _____ | 10:00 | <b>QPE.T6 - Added value of multi-year X-band weather radar observations at urban scales</b><br><u>Finn Burgemeister</u> , Marco Clemens and Felix Ament<br><i>Meteorological Institute, Center for Earth System Research and Sustainability (CEN), Universität Hamburg, Germany</i>  |
| 10:00 | _____ | 10:15 | <b>QPE.T7 - Tropical rainfall monitoring with commercial microwave links in Sri Lanka</b><br><u>Aart Overeem</u> , Bas Walraven, Karlijn Schoenmaker, Hidde Leijnse, Thomas C. van Leth, Linda Bogerd, Jan Priebe, Daniele Tricarico, Arjan Droste and Remko Uijlenhoet<br><i>Royal Netherlands Meteorological Institute, Netherlands</i>  |

**CLU - CLUTTER, INTERFERENCES, INSECTS AND THE LIKE - SALA 2**  
Chair: Daniel Michelson

08:30	08:45	<b>CLU.T1 - Analysis of insect concentrations using weather radars: Weather radar echoes classification</b> <u>Samuel Kwakye</u> , Johannes Quaas and Heike Kalesse-Los <i>Universität Leipzig, Germany</i>
08:45	09:00	<b>CLU.T2 - SEMAFOR project: remote sensing of avifauna using the French meteorological radar network</b> <u>Thibault Désert</u> , Jordi Figueras i Ventura, Baptiste Schmid, Vincent Delcourt, Camille Assali, Nicolas Gaussiat and Cécile Bon <i>Météo-France, France</i>
09:00	09:15	<b>CLU.T3 - Mobile Radar Observations in Wildfires</b> <u>Joshua Wurman</u> and Karen Kosiba <i>Flexible Array of Radars and Mesonets, University of Illinois, United States</i>
09:15	09:30	<b>CLU.T4 - Polarimetric signatures of wildfire smoke plumes from the 2019/2020 Black Summer in Australia</b> <u>Adrien Guyot</u> , Hamish McGowan, Joshua Soderholm and Alain Protat <i>Bureau of Meteorology, Australia</i>
09:30	09:45	<b>CLU.T5 - Regression Ground Clutter Filtering to Improve Radar Signal Statistics: Application to Experimental Data</b> <u>John Hubbert</u> , Ulrike Romatschke, G. Meymaris and Mike Dixon <i>NCAR, United States</i>
09:45	10:00	<b>CLU.T6 - Assessing and mitigating the radar - radar interference in the German C-band weather radar network</b> <u>Michael Frech</u> , Cornelius Hald, Bertram Lange and Benjamin Rohrdantz <i>Deutscher Wetterdienst (DWD), Germany</i>
10:00	10:15	<b>CLU.T7 - RFI in X-band weather radars: a procedure to identify interfering sources during in field measurements</b> <u>Mattia Vaccarone</u> , V. Chandrasekar, Renzo Bechini, Roberto Cremonini, Davide Di Marzio, Francesco Spadafora and Andrew Benn <i>Colorado State University - Arpa Piemonte, Dipartimento Rischi Fisici e Tecnologici</i>

**10:15** ————— **11:00**

**COFFEE BREAK**

**FAS - FREQUENCY-DIVERSITY, AIRBORNE AND SPACEBORNE**  
Chair: Steven Nesbitt

11:00 ————— 11:30

Lecture

**FAS.T1 - Radar measurements of wind and rainfall from space**  
Anthony Illingworth  
*University of Illinois Urbana-Champaign, United States*

## Friday 2<sup>nd</sup> September 2022

11:30	_____	11:45	<b>FAS.T2 - Doppler velocity measurements from space</b> <u>Katia Lamer</u> , Pavlos Kollias, Alessandro Battaglia, Bernat P. Treserras and Scott A. Braun <i>Brookhaven National Laboratory, United States</i>
11:45	_____	12:00	<b>FAS.T3 - Vertical Velocity Derived from Airborne Doppler Radar Measurements During IMPACTS</b> <u>Gerald Heymsfield</u> , Matthew McLinden, Peter Pantina, Charles Helms and Lihua Li <i>NASA Goddard Space Flight Center, United States</i>
12:00	_____	12:15	<b>FAS.T4 - Deepening our understanding of (shallow) precipitation observations retrieved by conical-scanning radiometers</b> <u>Linda Bogerd</u> , Hidde Leijnse, Aart Overeem and Remko Uijlenhoet <i>Wageningen University &amp; Research, Netherlands</i>
12:15	_____	12:30	<b>FAS.T5 - Validation of the spaceborne radar module within the RTTOV-SCATT radiative transfer model</b> <u>Mary Borderies</u> , Rohit Mangla, Philippe Chambon and Alan Geer <i>CNRM, Université de Toulouse, Météo-France &amp; CNRS, Toulouse, France</i>
12:30	_____	12:45	<b>FAS.T6 - Highly supercooled riming and unusual triple-frequency radar signatures over Antarctica</b> <u>Frederic Tridon</u> , Israel Silber, Alessandro Battaglia, Stefan Kneifel, Ann Fridlind, Petros Kalogeras and Ranvir Dhillon <i>Politecnico di Torino, Italy</i>
12:45	_____	13:00	<b>FAS.T7 - Impact of second-trip echoes for space-borne high-pulse-repetition-frequency nadir-looking W-band cloud radars</b> <u>Alessandro Battaglia</u> <i>Politecnico di Torino, Italy</i>
13:00	_____	13:30	<b>CLOSURE</b>
13:30	_____	14:30	<b>LUNCH</b>

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**AIN  
ARTIFICIAL INTELLIGENCE**

*AIN.P12 - Withdrawn*

**AIN.P1 - Quantitative Precipitation Estimation using Weather Radar and Rain Gauge Data Fusion with Machine Learning**

Cesar Beneti, Fernanda Verdelho, Leonardo Calvetti, Roberto Calheiros, Marco Antonio Zanata Alves and Luiz Eduardo Soares de Oliveira  
*SIMEPAR - Parana Technology and Environmental Monitoring System, Brazil*

**AIN.P2 - Melting layer monitoring with a micro rain radar using a neural network**

Finn Burgemeister, Piet Markmann and Gerhard Peters  
*Meteorological Institute, Center for Earth System Research and Sustainability (CEN), Universität Hamburg, Germany*

**AIN.P3 - Radar-rain gauge Cumulated Quantitative Precipitation Estimation with deep convolutional neural network**

Chiara Cardinali, Gabriele Franch, Virginia Poli, Marco Cristoforetti and Pier Paolo Alberoni  
*Arpa Emilia-Romagna, Struttura IdroMeteoClima, Italy*

**AIN.P4 - Precipitation Nowcasting by Deep Physics-Constrained Neural Networks**

Matej Choma, Jakub Bartel and Petr Šimánek  
*Arpa Emilia-Romagna, Struttura IdroMeteoClima, Italy*

**AIN.P5 - Application of CNN to improve deterministic optical flow nowcasting at DWD**

Ulrich Friedrich  
*Deutscher Wetterdienst (DWD), Germany*

**AIN.P6 - Precipitation nowcasting with autoregressive deep learning models**

Yann Yasser Haddad, Gionata Ghiggi, Monika Feldmann, Pierre Vandergheynst and Alexis Berne  
*Environmental Remote Sensing Laboratory, École Polytechnique Fédérale de Lausanne, Switzerland*

**AIN.P7 - A neural network to detect wind turbine contamination using I/Q data**

Nawal Husnoo, Tim Darlington, Sebastian Torres and David Warde  
*Met Office, United Kingdom*

**AIN.P8 - Weather Radar Velocity Unfolding Using Convolutional Neural Networks**

Hyeri Kim, Tian-You Yu and Boonleng Cheong  
*Advanced Radar Research Center, University of Oklahoma, United States*

**AIN.P9 - Polarimetric retrieval of raindrop size distribution parameters using machine learning**

Gyuwon Lee, Kyuhee Shin, Joon Jin Song, Kwonil Kim and Wonbae Bang  
*Department of Atmospheric Sciences, Center for Atmospheric REmote sensing (CARE), Kyungpook National University, South Korea*

## Poster sessions

### **AIN.P10 - Top-Down hierarchical clustering of polarised x-band doppler radar observations for hydrometeor and aerocological classification**

Maryna Lukach, Ryan R. Neely III, Thomas Dally, Jonathan Crosier, David Dufton, Freya Addison, Lindsay Bennett, Christopher Hassall, William Evans, Elizabeth Duncan, William E. Kunin and Jason W Chapman  
*National Centre for Atmospheric Science and the School of Earth and Environment, University of Leeds, United Kingdom*

### **AIN.P11 - Machine learning for prediction of convective hazards and impacts - the TAMIR project**

Seppo Pulkkinen, Tero Niemi, Heikki Myllykoski, Annakaisa von Lerber, Miikka Leinonen and Tiia Renlund  
*Finnish Meteorological Institute, Helsinki, Finland*

### **AIN.P13 - Nowcasting of severe thunderstorms with ensemble deep learning on CAPPI images over Ligurian area in Northern Italy**

Marco Tizzi, Sabrina Guastavino, Michele Piana, Federico Cassola, Antonio Iengo, Enrico Solazzo, Davide Sacchetti and Federico Benvenuto  
*Agenzia Regionale per la Protezione dell'Ambiente Ligure - ARPAL, Italy*

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## **CLI CLIMATOLOGICAL STUDIES**

### **CLI.P1 - Documentation of heavy rain events with an event data base**

Alrun Jasper-Tönnies, Philipp Bühler, Thomas Einfalt, Katharina Lengfeld and Markus Jessen  
*hydro & meteo GmbH, Germany*

### **CLI.P2 - Spatial analysis of the variability in the short-term rainfall time structure**

Marek Kašpar, Vojtěch Bližňák, Filip Hulec and Miloslav Müller  
*Institute of Atmospheric Physics CAS, Czechia*

### **CLI.P3 - A 20 years climatology of storm tracks by joint analysis of Vertical Maximum Intensities, lightning and hailpads over north-eastern Italy**

Arturo Pucillo  
*ARPA FVG - OSMER, Italy*

### **CLI.P4 - Classification of parent convective systems of tornadoes by using radar reflectivity**

Koji Sassa and Kotarou Fujii  
*Kochi University, Japan*

### **CLI.P5 - Changing patterns of heavy rainfall events across an urban area (Milan, Italy)**

Herminia Torelló, Francesco Marra and Nadav Peleg  
*Institute of Earth Surface Dynamics, University of Lausanne, Switzerland*

### **CLI.P6 - A first insight into the hail distribution over Germany**

Tabea Wilke, Katharina Lengfeld, Markus Schultze and Joshua Soderholm  
*Deutscher Wetterdienst (DWD), Germany*

## Poster sessions

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### CLU CLUTTER, INTERFERENCES, INSECTS AND THE LIKE

#### CLU.P1 - Withdrawn

#### CLU.P2 - An Algorithm for Suppressing Radio Frequency Interference in Weather Radars

Roberto Costantini  
*INVAP S. E., Argentina*

#### CLU.P3 - Use of doppler radar to monitoring products from Popocatépetl volcano to Mexico City

Hugo Delgado Granados, Eric B. Tellez, Agustín García, Gerardo Galguera and Adolfo Magaldi  
*Instituto de Geofísica, UNAM, Mexico*

#### CLU.P4 - A concept for potential cohabitation of wind turbines and radar

Thomas Einfalt, Markus Jessen and Inga Frerk  
*hydro & meteo GmbH, Germany*

#### CLU.P5 - The influence of wind turbines on weather radar data in Germany

Pascal Graf and Willi Schmid  
*Meteotest AG, Switzerland*

#### CLU.P6 - A New Bandstop Regression Filter with Application to SZ Phase Coding

John Hubbert  
*NCAR, United States*

#### CLU.P7 - Studying the presence of insects using cloud radar and video in-situ observations

Heike Kalesse-Los, Maximilian Maahn, Richard Engelhardt and Dmitri Moisseev  
*Leipzig Institute for Meteorology, University of Leipzig, Germany*

#### CLU.P8 - High temporal resolved x-band weather radar returns from a windmill scatterer

Martin Lainer, Jordi Figueras i Ventura, Zaira Schauwecker, Marco Gabella and Jacopo Grazioli  
*Federal Office of Meteorology and Climatology MeteoSwiss, Switzerland*

#### CLU.P9 - Anomaly Detection and Removal at the FMI

Markus Peura  
*Finnish Meteorological Institute, Helsinki, Finland*

#### CLU.P10 - Performance analysis of the Argentinian Meteorological Radar Radio Frequency Interference filter

Federico Renolfi, Daniel Vela Diaz and Roberto Costantini  
*INVAP, Argentina*

#### CLU.P11 - On the interference of weather radar data by wind turbines: evaluation of the restored meteorological information

Tanja Sauter, Kathleen Helmert, Patrick Tracksdorf, Michael Frech, Uwe Köster, Ulrike Blank and Gerd Teschke  
*Deutscher Wetterdienst (DWD), Germany*



## Poster sessions

### **CLU.P12 - The DWD RF-interference mitigation**

Maximilian Schaper, Michael Frech and David Michaelis  
*Deutscher Wetterdienst (DWD), Germany*

### **CLU.P13 - Wind Turbine Clutter Detection in real-time Weather Radar Signals – Developments for the DWD C-Band Weather Radar Network**

Matthias Toussaint, Simon Gerhards, Patrick Tracksdorf and Johannes Vieten  
*GAMIC GmbH, Germany*

### **CLU.P14 - Advanced Signal Processing for Weather Radars**

Matthias Toussaint, and Johannes Vieten  
*GAMIC GmbH, Germany*

### **CLU.P15 - Analysis Of Spectral And Polarimetric Observations Recorded By A X-Band Weather Radar From A Wind Turbine Scatterer**

Daniel Wolfensberger, Marco Gabella, Martin Lainer, Jacopo Grazioli, Jordi Figueras i Ventura and Urs Germann  
*Federal Office of Meteorology and Climatology MeteoSwiss, Switzerland*

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## **FAS FREQUENCY-DIVERSITY, AIRBORNE AND SPACEBORNE**

### **FAS.P1 - Evaluation of GPM DPR products through a country-wide network of disdrometers over Italy**

Elisa Adirosi, Federico Porcù, Mario Montopoli, Luca Baldini, Alessandro Bracci, Vincenzo Capozzi, Clizia Annella, Giorgio Budillon, Edoardo Bucchignani, Alessandra Lucia Zollo, Orietta Cazzuli, Giulio Camisani, Renzo Bechini, Roberto Cremonini, Andrea Antonini, Alberto Ortolani, Samantha Melani, Paolo Valisa and Simone Scapin  
*National Research Council of Italy, Institute of Atmospheric Sciences and Climate (CNR-ISAC), Italy*

### **FAS.P2 - The Potential of the W-band polarization diversity Doppler radar envisaged for the WIVERN mission for sampling tropical cyclones**

Alessandro Battaglia, Frederic Tridon, Paolo Martire and Anthony Illingworth  
*Politecnico di Torino, Italy*

### **FAS.P3 - GPM DPR Hydrometeor Classification Module**

V Chandrasekar and Minda Le  
*Colorado State University, United States*

### **FAS.P4 - A new Dual-Frequency-based Hydrometeor Classification Approach for the Global Precipitation Measurements Core-Satellite**

Velibor Pejčic, Kai Mühlbauer and Silke Trömel  
*Institute for Geosciences, Department of Meteorology, University of Bonn, Germany*

### **FAS.P5 - Scientific products derived from airborne W-band radar observations**

Ulrike Romatschke, Mike Dixon and Jothiram Vivekanandan  
*National Center for Atmospheric Research, United States*

## Poster sessions

### **FAS.P6 - Calibration of space-borne conically scanning radars**

Filippo Emilio Scarsi, Alessandro Battaglia and Kamil Mroz

*Politecnico di Torino, Italy*

### **FAS.P7 - GRaWAC: G-band Radar for Water vapor profiling and Arctic Clouds**

Sabrina Schnitt, Mario Mech, Thomas Rose, Vera Schemann and Susanne Crewell

*University of Cologne, Germany*

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## **HSC HAIL AND SEVERE CONVECTION**

### **HSC.P1 - Off-shore and in-land hail detection through radar and satellite**

Andrea Antonini, Sante Laviola, Samantha Melani, Aldo Sonnini, Giulio Monte, Alberto Ortolani and Vincenzo Levizzani

*LaMMA Consortium, Italy*

### **HSC.P2 - Automatic Hail reporting in METAR messages for aircraft safety**

Martin Aregger, Loris Foresti, Jordi Figueras i Ventura and Alessandro Hering

*Institute of Geography and Oeschger Centre for Climate Change Research,  
University of Bern, Switzerland*

### **HSC.P3 - Preliminary results from the PRECIP 2022 field campaign**

Michael Bell and Kristen Rasmussen

*Colorado State University, United States*

### **HSC.P4 - Rapid-scan, polarimetric Doppler-radar observations of the life cycle of an anticyclonic tornado in a cyclonically-rotating supercell**

Howard Bluestein, Jake Margraf, Samuel Emmerson, Trey Greenwood, David Bodine, Boonleng Cheong and Tian You Yu

*School of Meteorology/University of Oklahoma, United States*

### **HSC.P5 - Observation System Simulation Experiments for Microburst Demonstration Test using WISSDOM-AiR**

Youn Choi, Kwang-Ho Kim, Sung-Hwa Jung, Yu-Chieng Liou and Yung-Lin Teng

*Weather Radar Center, Korea Meteorological Administration, South Korea*

### **HSC.P6 - Exploring Tornado Debris Signature Hypotheses Using Radar Simulations and Large-Eddy Simulations**

Rachael Cross, David Bodine, Robert Palmer, Casey Griffin, Boonleng Cheong, Sebastian Torres, Caleb Fulton, Javier Lujan and Takashi Maruyama

*University of Oklahoma School of Meteorology, United States*

### **HSC.P7 - Forecasting the weather to assist ATC and ATM operations**

Laura Esbrí, Tomeu Rigo, Maria Carmen Llasat, Riccardo Biondi, Rosa Claudia Torcasio, Stefano Federico, Olga Gluchshenko, Markus Kerschbaum, Martina Lagasio, Vincenzo Mazzarella, Marco-Michael Temme, Massimo Milelli, Eugenio Realini and Antonio Parodi

*Department of Applied Physics, University of Barcelona, Spain*

## **Poster sessions**

### **HSC.P8 - T- and M-DATING – detection and tracking of thunderstorms and mesocyclones**

Monika Feldmann, Marco Gabella and Alexis Berne

*Environmental Remote Sensing Laboratory, École Polytechnique Fédérale de Lausanne, Switzerland*

### **HSC.P9 - Relationships between changes in tornado wind field and tornadic debris signature structure with variations in terrain and land cover**

Jana Houser, Howard Bluestein, Zachary Wienhoff and Kyle Thiem

*Ohio University, United States*

### **HSC.P10 - Dual-wavelength polarimetric analysis of a severe hailstorm in Vienna, Austria**

Vinzent Klaus, Rudolf Kaltenböck and Harald Rieder

*University of Natural Resources and Life Sciences, Vienna, Austria*

### **HSC.P11 - The summer 2021 Switzerland hailstorms: new climatological extremes**

Jérôme Kopp, Katharina Schröer, Olivia Martius, Cornelia Schwierz, Urs Germann and Alessandro Hering

*Institute of Geography and Oeschger Centre for Climate Change Research, University of Bern, Switzerland*

### **HSC.P12 - Radar deployments in The PERiLS (Propagation, Evolution and Rotation in Linear Storms) Southeastern Tornado Study**

Karen Kosiba, Josh Wurman, Jeff Trapp, Steve Nesbitt and Matt Parker

*Flexible Array of Radars and Mesonets, University of Illinois, United States*

### **HSC.P13 - An arguable influence of terrain on intensity of supercells based on two-dimensional radar reflectivity data**

Robert Kvak, Ľuboslav Okon, Ladislav Méri, Vojtěch Bližňák and Marek Kašpar

*Charles University in Prague, Faculty of Science, Department of Physical Geography and Geoecology, Czechia*

### **HSC.P14 - A novel multi-sensor technique for the optimal detection of hailstorms**

Sante Laviola, Anna Fornasiero, Miria Celano, Federico Vermi, Giulio Monte, Pier Paolo Alberoni and Vincenzo Levizzani

*CNR-ISAC, Italy*

### **HSC.P15 - Citizen weather reports at RMIB and their use for radar-based hail detection verification**

Maarten Reyniers, Laurent Delobbe and Sylvain Watelet

*Royal Meteorological Institute of Belgium*

### **HSC.P16 - Space-time variation of large hail-producing mesoscale convective systems over a complex terrain of the Indian subcontinent as revealed by the integrated TRMM and GPM observations**

Partha Roy, T. Narayana Rao and Sanjay Sharma

*National Atmospheric Research Laboratory, Department of Space, Govt. of India*

## Poster sessions

### **HSC.P17 - Radar characteristics of derecho producing mesoscale convective systems in the Czech Republic**

David Rýva

*Czech Hydrometeorological Institute, Czechia*

### **HSC.P18 - Severe convective storms analysed by combined measurements of Ka-band cloud profiler and X-band weather radar**

Zbyněk Sokol and Jana Popová

*Institute of Atmospheric Physics of the Czech Academy of Sciences, Czechia*

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## **CAM HARDWARE, CALIBRATION AND MONITORING**

### **CAM.P1 - The interaction of data quality monitoring and operational surveillance of weather radar networks**

Hassan Al Sakka and André Weipert

*Leonardo Germany GmbH, Germany*

### **CAM.P2 - Quantifying the pedestal levelling error with the solar monitoring method**

Patricia Altube Vázquez and Ferran Fabró Tapia

*Servei Meteorològic de Catalunya, Spain*

### **CAM.P3 - Estimating wet antenna losses with help of solar scans made at all weather conditions with a Ka-band cloud radar**

Matthias Bauer-Pfundstein

*Metek GmbH, Germany*

### **CAM.P4 - Monitoring the Quality of Quality-controlled Radar Moments**

Annette Boehm, Manuel Werner and Michael Frech

*Deutscher Wetterdienst (DWD), Germany*

### **CAM.P5 - Monitoring Bright Ground Clutter Targets in the Canadian Weather Radar Network**

Norman Donaldson and Daniel Michelson

*Environment and Climate Change Canada*

### **CAM.P6 - Linear and circular polarization using phase shifter at the DWD Hohenpeißenberg research radar**

Michael Frech, Cornelius Hald and Mathias Gergely

*Deutscher Wetterdienst (DWD), Germany*

### **CAM.P7 - Experiences of one-month synchronous measurements with two different cloud radars**

Jan Handwerker and Thomas Renkhoff

*Karlsruhe Institute of Technology, Institute of Meteorology and Climate Research, Germany*

### **CAM.P8 - Comparison of Solid state vs Magnetron C-band Weather radar**

Jan Hrach and Michal Najman

*Meteopress, Czechia*

## Poster sessions

### **CAM.P9 - Comparison of Radar Reflectivity from Disdrometers and Weather Radars of Hungarian Measuring Network**

Imre Kálmán, Marianna Hadvári and Péter Németh  
*Hungarian Meteorological Service, Hungary*

### **CAM.P10 - Quality approval for mobile X-band radar measurements**

Melissa Latt and Jan Handwerker  
*Karlsruhe Institute of Technology, Germany*

### **CAM.P11 - Study of historical “monitoring signals” to support maintenance**

Mercedes Maruri, Aurelio Diaz de Arcaya, Jose Antonio Aranda  
and Santiago Gaztelumendi  
*Tecnalia - Meteo & Climate Area / University of the Basque Country UPV/EHU, Spain*

### **CAM.P12 - Monitoring of radar data quality in the Czech Weather Radar Network**

Petr Novák and Hana Kyznarová  
*Czech Hydrometeorological Institute, Czechia*

### **CAM.P13 - Development of integrated radar monitoring system for easy viewing of radar system condition**

Jin-woo Park, Ji-Young Gu, Sun-Jin Mo and Seungwoo Lee  
*Weather Radar Center, Korea Meteorological Administration, Seoul,  
Republic of Korea, South Korea*

### **CAM.P14 - Calibration of the radar differential reflectivity using quasi-vertical profiles**

Daniel Sanchez-Rivas and Miguel Angel Rico-Ramirez  
*Weather Radar Center, Korea Meteorological Administration, Seoul,  
University of Bristol, United Kingdom*

### **CAM.P15 - Advanced Target Generation Applications: From Point Targets to Complex Time-Varying Doppler-RCS Patterns**

Marc Schneebeli and Andreas Leuenberger  
*Palindrome Remote Sensing, Switzerland*

### **CAM.P16 - Testing the “dry snow” technique to calibrate ZDR observations of supercells from disparate X-band radars**

Robin Tanamachi  
*PalinPurdue University, United States*

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## HYD HYDROLOGICAL APPLICATIONS

### **HYD.P1 - BRAIN and Its Hydrological Application**

Hideyuki Kamimera  
*National Research Institute for Earth Science and Disaster Resilience, Japan*

### **HYD.P2 - Towards nationwide post-processing of ensemble nowcasts to support flood warnings in small catchments**

Jan Bondy, Christian Berndt, Markus Schultze and Ulrich Blahak  
*Deutscher Wetterdienst (DWD), Germany*

## Poster sessions

### **HYD.P3 - Synergistic precipitation observations in an urban environment**

Finn Burgemeister, David Hafezi Racht, Marco Clemens and Felix Ament  
*Meteorological Institute, Center for Earth System Research and Sustainability (CEN),  
Universität Hamburg, Germany*

### **HYD.P4 - Modelling soil erosion under extreme rainfall using a radar-runoff-nowcasting-system**

Rossano Ciampalini, Ascanio Rosi, Samuele Segoni, Andrea Antonini, Alberto Ortolani, Francesca Caparrini and Sandro Moretti  
*Department of Earth Sciences, University of Florence, Florence, Italy*

### **HYD.P5 - Increasing the resilience of Greater Paris to space-time variability of heavy rainfalls: a cloud-based platform for the ENPC X-band radar**

Guillaume Drouen, Ioulia Tchiguirinskaia and Daniel Schertzer  
*Ecole des Ponts ParisTech, Hydrology Meteorology & Complexity (HM&Co), France*

### **HYD.P6 - Improving radar rainfall estimation for flood risk using Monte Carlo ensemble simulation**

Amy Green  
*Newcastle University, United Kingdom*

### **HYD.P7 - Polarimetric signature of extreme rain events in high spatial resolution radar data in Switzerland**

Adrien Liernur, Marco Gabella, Urs Germann, Frédéric Jordan, Raphaël Mutzner and Alexis Berne  
*Environmental Remote Sensing Laboratory, École Polytechnique Fédérale de Lausanne, Switzerland*

### **HYD.P8 - Hydrometeorological analysis and forecasting of a 3d flash-flood-triggering desert rainstorm**

Efrat Morin, Yair Rinat, Francesco Marra, Moshe Armon, Asher Metzger, Yoav Levi, Pavel Khain, Elyakom Vadislavsky and Marcelo Rosensaft  
*Hebrew University of Jerusalem, Israel*

### **HYD.P9 - Seamless prediction using radar data, nowcasting and numerical weather prediction models, to enhance hydrological operational forecasting**

Maria Laura Poletti, Francesco Silvestro, Martina Lagasio, Flavio Pignone and Antonio Parodi  
*CIMA Research Foundation, Italy*

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## **MIC1 MICROPHYSICS**

### **MIC1.P1 - Evaluation of vertical variability of precipitation through Micro Rain Radar measurements in Rome**

Elisa Adirosi, Luca Baldini and Ali Tokay  
*National Research Council of Italy, Institute of Atmospheric Sciences and Climate (CNR-ISAC), Italy*

## Poster sessions

### **MIC1.P2 - Improving Radar-Based Precipitation Type Classifications at the UK Met Office**

Steven Best

*Met Office, United Kingdom*

### **MIC1.P3 - On comparing 94 GHz satellite measurements with a Micro Rain Radar and disdrometer observations in an Antarctic site**

Alessandro Bracci, Kaori Sato, Luca Baldini, Federico Porcù and Hajime Okamoto  
*National Research Council of Italy, Institute of Atmospheric Sciences and Climate (CNR-ISAC), 00133 Rome, Italy*

### **MIC1.P4 - Clouds blowing in the wind: momentum transport in cloudy boundary layers observed from collocated wind lidar and cloud radars and simulated with DALES**

José Dias Neto, Louise Nuijens, Natalie Theeuwes, Fredrik Jansson and Pier Siebesma

*Delft University of Technology, Netherlands*

### **MIC1.P5 - Comparison of windprofiler and a micro-rain radar precipitation observations**

Albert Garcia-Benadí, Joan Bech, Mireia Udina, Bernard Campistron and Alexandre Paci

*Department of Applied Physics - Meteorology, University of Barcelona, Spain*

### **MIC1.P6 - Sensitivity analysis of $\mu$ - $\Lambda$ relationship in stratiform rain**

Christos Gatidis, Marc Schleiss and Christine Unal

*Department of Geoscience and Remote Sensing, Delft University of Technology, Netherlands*

### **MIC1.P7 - DISDRODB: a global data base of raindrop size distribution observations**

Gionata Ghiggi, Kim Candolfi, Saverio Guzzo, Christine Unal, Marc Schleiss, Remko Uijlenhoet, Tim Raupach and Alexis Berne

*Environmental Remote Sensing Laboratory, École Polytechnique Fédérale de Lausanne, Switzerland*

### **MIC1.P8 - Where are rainfall drops measured by a radar falling in a multifractal turbulent wind field?**

Auguste Gires, Ioulia Tchiguirinskaia and Daniel Schertzer

*Hydrologie Météorologie et Complexité (HM&Co), École des Ponts ParisTech, France*

### **MIC1.P9 - Evaluation of melting layers detected via DWD's C-Band radar and MRR**

Cornelius Hald, Annette Böhm and Michael Frech

*Deutscher Wetterdienst (DWD), Germany*

### **MIC1.P10 - Characteristics of Raindrop Size Distribution observed in Southern China in different weather scenarios using 2-D video disdrometer**

Jeffery Jin and Ying Wa Chan

*Hong Kong Observatory*



## Poster sessions

### **MIC1.P11 - Deriving the Full 4-pi Steradian Single Scattering Properties from Quadrature Nodes for Complex Hydrometeors**

Kwo-Sen Kuo and Ines Fenni

*University of Maryland, United States*

### **MIC1.P12 - Analysis of Dynamic and Microphysical Characteristics of Different Precipitation Types Derived from Volumetric Dual-Polarimetric Radar Observations**

Gyuwon Lee, Choeng-Lyong Lee, Wonbae Bang and Chia-Lun Tsai

*Department of Astronomy and Atmospheric Sciences, Kyungpook National University, Daegu, Korea, South Korea*

### **MIC1.P13 - Performance improvement of Spectral Bin Model through optimization of microphysics scheme in Pyeongchang region**

Gyuwon Lee, Wonbae Bang, Jacob Carlin, Kwonil Kim, Alexander Ryzhkov and Guosheng Liu

*Department of Atmospheric Sciences, Center for Atmospheric REmote sensing (CARE), Kyungpook National University, South Korea*

### **MIC1.P14 - Supercooled liquid water and secondary ice production in Kelvin–Helmholtz instability as revealed by radar Doppler spectra observations**

Haoran Li, Alexei Korolev and Dmitri Moisseev

*Chinese Academy of Meteorological Sciences, China*

### **MIC1.P15 - Microphysical features of typhoon and non-typhoon rainfall observed in Taiwan, an island in the northwestern Pacific**

Pay-Liam Lin, Jayalakshmi Janapati, Balaji Kumar Seela, Meng-Tze Lee and Everette Joseph

*Department of Atmospheric Sciences, Institute of Atmospheric Physics, National Central University, Taiwan*

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## **MIC2 MICROPHYSICS**

### **MIC2.P1 - Raindrop Size Distributions of North Indian Ocean Tropical Cyclones Observed at the Coastal and Inland Stations in South India**

Pay-Liam Lin, Balaji Kumar Seela, Jayalakshmi Janapati, Chirikandath Kalath Unnikrishnan, Jui Le Loh, Wei-Yu Chang, Utpal Kumar, K. Krishna Reddy, Dong-In Lee and Mannem Venkatrami Reddy

*Institute of Earth Sciences, Academia Sinica, Taipei 11529, Taiwan*

### **MIC2.P2 - Rain Drop Size Distribution and Microphysics Characteristics of Precipitation in Different Seasons in Taiwan**

Pay-Liam Lin

*National Central University, Taiwan*

### **MIC2.P3 - The Dynamics and Microphysics of High-Latitude Clouds during the COMBLE Field Experiment**

Zackary Mages, Pavlos Kollias, Zeen Zhu and Edward Luke

*Stony Brook University, United States*



## **Poster sessions**

**MIC2.P4 - A PICASSO case-study: Can we reproduce accurate observations using in-situ measured PSDs and scattering from particle models in the ARTS database?**

[Karina McCusker](#), Chris Westbrook, Chris J. Walden, Jonathan Crosier, Sebastian O'Shea and Richard Cotton  
*University of Reading, United Kingdom*

**MIC2.P5 - The link between rain and ice microphysics across the melting layer**

[Kamil Mroz](#), Alessandro Battaglia, Stefan Kneifel, Leonie von Terzi, Davide Ori and Markus Karrer  
*National Centre for Earth Observation, United Kingdom*

**MIC2.P6 - Mixed-phase cloud characteristics over a tropical site using cloud radar**

[Meenu R Nair](#), Madhu Chandra R Kalapureddy and Sukhanya Patra  
*Indian Institute of Tropical Meteorology, India*

**MIC2.P7 - Towards a database of scattering properties of ensemble rather than individual ice and snow particles**

[Davide Ori](#), Markus Karrer, Leonie von Terzi and Stefan Kneifel  
*University of Cologne, Germany*

**MIC2.P8 - Utility of ground based cloud radar to observe turbulence on cloud droplets to raindrop transition**

[Sukanya Patra](#), Madhu Chandra Kalapureddy and Meenu R Nair  
*Indian Institute of Tropical Metrology, India*

**MIC2.P9 - Cloud radar perspective on tropical cumulus congests cloud and its role on the rainfall**

[Sukanya Patra](#), Madhu Chandra Kalapureddy and Meenu R Nair  
*Indian Institute of Tropical Metrology, India*

**MIC2.P10 - Microphysical Processes in Embedded Convective Cells in Landfalling Tropical Cyclone NIVAR using X-band dual polarization radar**

[Abhijeet Kumar](#), T Narayana Rao, Rama Rao Nidamanuri and Basivi Radhakrishna  
*National Atmospheric Research Laboratory, Gadanki, India, India*

**MIC2.P11 - Precipitation type analysis using a hydrometeor classification of high-resolution radar data – details on the algorithm developed and used at Deutscher Wetterdienst**

[Markus Schultze](#), Jörg Steinert and Tim Böhme  
*Deutscher Wetterdienst (DWD), Germany*

**MIC2.P12 - X-band radar technology and new multifractal drop size distribution model**

[Ioulia Tchiguirinskaia](#) and Daniel Schertzer  
*Ecole des Ponts ParisTech, Hydrology Meteorology & Complexity (HM&Co), France*

## Poster sessions

### **MIC2.P13 - Retrieval of ice microphysics using polarimetric and dual-wavelength radar observations – a sensitivity study**

Eleni Tetoni, Florian Ewald, Martin Hagen, Gregor Köcher, Tobias Zinner, Christoph Knotz, Bernhard Mayer and Silke Groß  
*German Aerospace Center (DLR), Germany*

### **MIC2.P14 - Analysis of charge structure in a typical deep convection using C-band polarimetric radar and LF-band three-dimensional lightning mapper**

Akihito Umehara, Satoru Yoshida, Syugo Hayashi, Nobuhiro Nagumo, Hiroshi Yamauchi and Eiichi Yoshikawa  
*Meteorological Research Institute, Japan*

### **MIC2.P15 - Tracking isolated thunderstorms in Houston TX with polarimetric radar and the lightning mapping array**

Marcus van Lier-Walqui, Kelcy Brunner, Eric Bruning, Toshi Matsui, Takamichi Iguchi, Daniel Hernandez-Deckers and Ann Fridlind  
*Columbia University Center for Climate Systems Research at NASA/GISS, United States*

### **MIC2.P16 - Fall velocity of melting snow particles examined in ensembles**

Annakaisa von Lerber and Dmitri Moisseev  
*Finnish Meteorological Institute, Helsinki, Finland*

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## **NCT NOWCASTING OF CONVECTION AND THUNDERSTORMS**

### **NCT.P1 - Automatic reporting of convection in METAR messages for aircraft safety**

Simone Balmelli, Loris Foresti, Mervyn Bibby, Pieter du Preez, Néstor Tarin Burriel and Urs Germann  
*Federal Office of Meteorology and Climatology MeteoSwiss, Switzerland*

### **NCT.P2 - Thunderstorms characterization improvements combining NWCSAF-RDT estimated parameters with measurements from weather radar**

Valentina Campana, Miria Celano, Roberto Cremonini, Pier Paolo Alberoni, Silvia Puca and Pietro Giordano  
*ARPA Piemonte, Italy*

### **NCT.P3 - Meteorological Algorithm Requirements for Disaster Early Warning and Decision Support**

Mehmet Emre Ciftcibasi, Yucel Ozdemir, Ergenekon Hassoy and Murat Basaran  
*RST Inc., Türkiye*

### **NCT.P4 - Improving automatic thunderstorm warnings at DWD**

Michael Debertshäuser, Paul James and Manuel Werner  
*Deutscher Wetterdienst (DWD), Germany*

### **NCT.P6 - Applying RaNDeVIL to severe weather nowcasting to assist air traffic controllers**

Laura Esbrí, Tomeu Rigo and Maria Carmen Llasat  
*Department of Applied Physics, University of Barcelona, Spain*



## **Poster sessions**

### **NCT.P7 - A synergetic approach to study differential reflectivity (ZDR) columns for precipitation**

Raquel Evaristo, Ricardo Reinoso-Rondinel, Ju-Yu Chen and Silke Trömel  
*University of Bonn, Germany*

### **NCT.P8 - Convection Detection for Automatic METAR Reports Based on Radar, Lightning and Model Data**

Robert Feger  
*Deutscher Wetterdienst (DWD), Germany*

### **NCT.P9 - Detection of Hail Pre-Signal using the 3-Dimensional Radar and Temperature data**

Woomi Jung, Myoungjae Son, Mi-Kyung Suk and Ik-Hyun Cho  
*Weather Radar Center, South Korea*

### **NCT.P10 - C-band weather radar comparison of the 24th June 2021 tornado event seen by Austrian, Czech and Slovakian radar network**

Rudolf Kaltenboeck, Marián Jurašek and Petr Novak  
*Austro Control, Austria*

### **NCT.P11 - Define and validate adverse weather areas for air traffic management based on weather radar data**

Rudolf Kaltenboeck, Markus Kerschbaum and Martin Steinheimer  
*Austro Control, Austria*

### **NCT.P12 - Using Dual-Polarization Radars to Nowcast Severe Weather Events**

Charles Kuster, Jacob Carlin, Randy Bowers, Terry Schuur, Todd Lindley, Jason Furtado and Jeffrey Snyder  
*Cooperative Institute for Severe and High-Impact Weather Research and Operations, United States*

### **NCT.P13 - Improvements to Severe Storm Nowcasting in the Czech Hydrometeorological Institute**

Hana Kyznarová and Petr Novák  
*Czech Hydrometeorological Institute, Czechia*

### **NCT.P14 - The relationship between ZDR arcs and storm-relative helicity in simulated tornadic and non-tornadic thunderstorms**

Allison LaFleur and Robin Tanamachi  
*Purdue University, United States*

### **NCT.P15 - How hail fallout affects the accuracy of automated ZDR arc identification: Preliminary Results**

Allison LaFleur and Robin Tanamachi  
*Purdue University, United States*

### **NCT.P16 - Mesocyclone detection at Météo-France**

Tony Le Bastard, Clotilde Augros, Jean Imbert and Nicolas Gaussiat  
*Météo-France, France*

## Poster sessions

**NCT.P17 - Severe convective storm environments of northwestern Italy: differences between coastal and inland areas**

Enrico Solazzo, Francesco Battaglioli, Antonio Iengo and Davide Sacchetti  
*Agenzia Regionale per la Protezione dell'Ambiente Ligure (ARPAL), Italy*

**NCT.P18 - Recent improvements of KONRAD3D, DWD's scheme for detection, tracking, and nowcasting of convective cells**

Manuel Werner, Robert Feger and Lukas Josipovic  
*Deutscher Wetterdienst (DWD), Germany*

**NCT.P19 - Lake Victoria Thunderstorms: Radar-Observed Initiation and Storm Evolution Modes**

James Wilson and Rita Roberts  
*National Center for atmospheric Research, Boulder, Colorado U.S.A*

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**QPN  
NOWCASTING  
OF PRECIPITATION**

**QPN.P1 - Development of Radar-Based Nowcasting for Intense Precipitation in the Tropics**

Erik Becker, Hidde Leijnse and Remko Uijlenhoet  
*Centre for Climate Research Singapore; Wageningen University & Research, Singapore*

**QPN.P2 - Combining object-based cell tracking and optical flow to improve nowcasting of quasi-stationary rainfall**

Christian Berndt, Markus Schultze and Manuel Werner  
*Deutscher Wetterdienst (DWD), Germany*

**QPN.P3 - Blending of precipitation probability forecasts: weather radar advection and NWP models**

Enric Casellas, Aitor Atencia, Jordi Mercader, Jordi Moré, Tomeu Rigo, Abdel Sairouni and Santi Segalà  
*Meteorological Service of Catalonia, Spain*

**QPN.P4 - A precipitation phase nowcasting system: weather radar data, NWP forecasts and meteorological observations**

Enric Casellas, Joan Bech, Josep Ramon Miró, Abdel Sairouni, Tomeu Rigo, Nicolau Pineda, Jordi Moré and Roger Veciana  
*Meteorological Service of Catalonia, Spain*

**QPN.P5 - Metamodeling using GOES-R satellite data for short-term forecasting of precipitation through ConvLSTM model**

Otávio Feitosa, Leonardo Calvetti, Fabrício Härter, Laiz Mello, Vinicio Santos and Lucas Marten  
*National Institute for Space Research (INPE), Brazil*

**QPN.P6 - Study of optical-flow techniques for precipitation nowcasting based on Radar data in Basque Country**

Santiago Gaztelumendi, Aurelio Diaz de Arcaya and Ivan R. Gelpi  
*Tecnalia - Meteo & Climate / Basque Meteorology Agency, Spain*

## Poster sessions

### **QPN.P7 - Predicting precipitation growth and decay with weather radar rainfall measurements**

Chen Li, Miguel Rico-Ramirez, Weiru Liu and Dawei Han  
*Department of Civil Engineering, University of Bristol, United Kingdom*

### **QPN.P8 - A Study on the Motion Vector Calculation of Radar Images Using Optical Flow and Radial Basis Function (RBF)**

Sun-Jin Mo, Ji-Young Gu, Jin-Woo Park and Seungwoo Lee  
*Weather Radar Center, Korea Meteorological Administration, South Korea*

### **QPN.P9 - Evaluation of a deep learning algorithm in radar-based precipitation nowcasting**

Ahmed Abdelhalim Ismail Mohamed, Miguel Rico-Ramirez and Dawei Han  
*University of Bristol, United Kingdom*

### **QPN.P10 - Wind field retrieval and quantitative evaluation from the Italian radar mosaic**

Mario Montopoli, Luca Baldini, Elisa Adirosi, Emilio Guerriero and Gianfranco Vulpiani  
*National Research Council of Italy, Institute of Atmospheric Sciences and Climate (CNR-ISAC), Italy*

### **QPN.P11 - The Operational Finnish Meteorological Institute Probabilistic Precipitation Nowcasting System**

Tuuli Perttula, Petteri Karsisto and Harri Hohti  
*Finnish Meteorological Institute, Helsinki, Finland*

### **QPN.P12 - INTENSE -- The New Seamlessly Combined Precipitation Ensemble Forecasting System at DWD**

Martin Rempel, Markus Schultze and Ulrich Blahak  
*Deutscher Wetterdienst (DWD), Germany*

### **QPN.P13 - Calibration and Temporal Forecast Consistency in an Adaptive Blending of Probabilistic Precipitation Forecasts**

Martin Rempel, Peter Schaumann, Reinhold Hess, Ulrich Blahak and Volker Schmidt  
*Deutscher Wetterdienst (DWD), Germany*

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## **ORO OROGRAPHIC PRECIPITATION**

### **ORO.P1 - Three-Dimensional Variational Multi-Doppler Wind Retrieval over complex terrain**

Ting-Yu Cha, Michael Bell and Wen-Chau Lee  
*Colorado State University, United States*

### **ORO.P2 - Precipitation microphysics analysis during winter storms in a inner valley of the Pyrenees using a K-band Doppler radar and disdrometer data**

Sergi Gonzalez, Joan Bech, Albert Garcia-Benadí, Mireia Udina, Bernat Codina, Laura Traperó, Alexandre Paci and Jean-François Georgis  
*Agencia Estatal de Meteorología, Spain*

## Poster sessions

**ORO.P3 - Studying orography-influenced riming and secondary ice production and their effects on precipitation rates using radar polarimetry and radar Doppler spectra**

Heike Kalesse-Los, Maximilian Maahn, Anton Kötsche and Isabelle Steinke  
*Leipzig Institute for Meteorology, University of Leipzig, Germany*

**ORO.P4 - The Role of the Argentine Mountains on the Discrete Propagation of a Mesoscale Convective System**

Kelly Lombardo and Matthew Kumjian  
*The Pennsylvania State University, United States*

**ORO.P5 - Supercells in complex territory: a comparison with similar cases in other geographic environments**

Tomeu Rigo, Oriol Rodríguez, Joan Bech and Carme Farnell  
*Servei Meteorològic de Catalunya, Spain*

**ORO.P6 - The analysis of an orographically strong wind case under clear-air condition during ICE-POP 2018**

Chia-Lun Tsai, Kwonil Kim, Yu-Chieng Liou, Jung-Hoon Kim, Yonghee Lee and Gyuwon Lee  
*Center for Atmospheric REmote sensing, Kyungpook National University, South Korea*

**ORO.P7 - LACy X band meteorological radar 2022 observations of cyclonic rains in La Réunion**

Joël Van Baelen, Ambinintsoa Volatiana Ramanamahefa, Guillaume Lesage, Marc-Antoine Mant and Olivier Bousquet  
*Laboratoire de l'Atmosphère et des Cyclones (LACy), Saint Denis, La Réunion, France*

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**TEC  
PHASED-ARRAY AND  
EMERGING TECHNOLOGIES**

**TEC.P1 - Use of X-band Dual Polarisation Phased Array Weather Radar for detection of inclement weather in Hong Kong**

Ying Wa Chan  
*Hong Kong Observatory, Hong Kong*

**TEC.P2 - A Calibration Method of Phased Array Radar Using Metal Ball Mounted on Unmanned Aerial Vehicle**

Haojun Chen, Hao Xue, Chunguang Yin, Haizhen Mu and Henglin Hu  
*Shanghai Meteorological Information and Technology Support Center, Joint Laboratory of Phased Array Weather Radar, China*

**TEC.P3 - Design Criteria for Precipitation Measurement Systems based on Satellite Downlink Monitoring**

Filippo Giannetti, Fabiola Sapienza, Vincenzo Lottici, Marco Moretti, Giacomo Bacci, Luca Baldini, Luca Facheris, Attilio Vaccaro and Alberto Ortolani  
*Department of Information Engineering, University of Pisa, Italy*

**TEC.P4 - Airborne Phased Array Radar (APAR): The Next Generation of Airborne Polarimetric Doppler Weather Radar**

Wenchau Lee, Everette Joseph and Krista Laursen  
*NCAR, United States*



## Poster sessions

**TEC.P5 - Polarimetric phased-array mobile radar observations to understand the rapid evolution of precipitation structures within a United States east coast winter storm**

Erin Leghart, Kristofer S. Tuftedal, Edward Luke, Pavlos Kollias and Brian Colle  
*Stony Brook University, United States*

**TEC.P6 - Phased Array Radar Observation Operator Sampling of a Downdraft with Melting Hail**

Aimee Matland-Dixon, Pierre Kirstetter, Robert Palmer, Alexander Ryzhkov and Jacob Carlin  
*School of Meteorology, Advanced Radar Research Center, University of Oklahoma, United States*

**TEC.P7 - Novel measurements of G-band Doppler spectra in cloud ice**

Karina McCusker, Chris Westbrook, Alessandro Battaglia, Benjamin M. Courtier, Kamil Mroz, Peter G. Huggard, Hui Wang and Chris J. Walden  
*University of Reading, Reading, United Kingdom*

**TEC.P8 - The Horus Digital Phased Array Radar Program at the University of Oklahoma – Status Update and Initial Weather Observations**

Robert Palmer, David Schwartzman, David Bodine, Boonleng Cheong, Caleb Fulton, Pierre Kirstetter, Jorge Salazar, Hjlati Sigmarsson, Mark Yearly and Tian Yu  
*ARRC / University of Oklahoma, United States*

**TEC.P9 - Understanding what your radar can and can't do: A framework for testing proof-of-concept weather radars**

Sebastian Torres, Christopher Curtis and Stephen Gregg  
*University of Oklahoma, United States*

**TEC.P10 - Polarimetric Quality and Stability of Calibration of the SKYLER-II Phased-Array Radar System**

Kristofer S. Tuftedal, Edward P. Luke, Mariko Oue and Pavlos Kollias  
*Stony Brook University, United States*

**TEC.P11 - Pulse Compression for Solid State Weather Radars**

Dietmar Veerkamp, Matthias Toussaint and Johannes Vieten  
*GAMIC GmbH, Germany*

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**POL  
POLARIMETRY**

**POL.P1 - One-Dimensional Simulations of Downburst Generation with a Coupled Forward Polarimetric Radar Operator**

Jacob Carlin and Alexander Ryzhkov  
*Cooperative Institute for Severe and High-Impact Weather Research and Operations, University of Oklahoma, United States*

**POL.P2 - Impacts of Vertical Nonuniform Beam Filling on the Observability of Secondary Ice Production Due to Sublimation**

Jacob Carlin, Edwin Dunnavan, Alexander Ryzhkov and Mariko Oue  
*Cooperative Institute for Severe and High-Impact Weather Research and Operations, University of Oklahoma, United States*



## **Poster sessions**

### **POL.P3 - Improved Dual Polarization Radar Retrievals of Bulk Ice Microphysical Parameters**

Edwin Dunnavan, Petar Bukovcic, Alexander Ryzhkov, Jacob Carlin and Jiaxi Hu  
*Cooperative Institute for Severe and High-Impact Weather Research and Operations (CIWRO), NOAA/NSSL, United States*

### **POL.P4 - Dual-polarization X-band radar data at vertical incidence, and what it teaches us**

Frederic Fabry, Veronique Meunier, Raman Krishnamoorthy and Alamelu Kilambi  
*McGill University, Canada*

### **POL.P5 - Hydrometeor classification performance evaluation**

Jordi Figueras i Ventura and Nicolas Gaussiat  
*Météo-France, France*

### **POL.P6 - Identification of bright band echoes using operational s-band dual-polarization radar**

Jeong-Eun Lee and Soohyun Kwon  
*Weather Radar Center, Korea Meteorological Administration, South Korea*

### **POL.P7 - Quality Control Technique Based on Observational Characteristics in Dual-Polarization Measurements**

Young-A Oh, Hae-Lim Kim and Mi-Kyung Suk  
*Weather Radar Center, Korea Meteorological Administration, South Korea*

### **POL.P8 - A new polarimetric method for the melting layer detection and determination of its height**

Alexander Ryzhkov and John Krause  
*University of Oklahoma, United States*

### **POL.P9 - Analysis of polarimetric spectral densities in severe thunderstorms for the identification of lightning-induced signatures**

David Schwartzman, Eric Bruning, Tian-You Yu, Vanna Chmielewski, David Bodine and Howard Bluestein  
*Advanced Radar Research Center, University of Oklahoma, United States*

### **POL.P10 - Calibration of multi-parameter phased array weather radar (MP-PAWR)**

Nobuhiro Takahashi  
*Advanced Radar Research Center, University of Oklahoma, United States*

### **POL.P11 - Verification of a Hydrometeor Classification scheme with the Ruisdael cloud radar at Cabauw**

Sibbo van der Veen, Hidde Leijnse, Aart Overeem and Christine Unal  
*Royal Netherlands Meteorological Institute (KNMI), Netherlands*



## Poster sessions

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### **QPE1 QUANTITATIVE PRECIPITATION ESTIMATION**

#### **QPE1.P1 - Polarimetric Radar Rainfall Retrieval in Eastern São Paulo**

Roberto Calheiros, Ana Held, Gerhard Held, Cristiano Eichholz and Raniele Pinheiro

*Meteorological Research Institute, UNESP, Bauru, Brazil - retired since 2011*

#### **QPE1.P2 - Correction of rainfall-induced attenuation at C-band in Southeastern South America with S-band cross-validation**

Candela Casanovas, Paola Salio, Victoria Galligani and Cesar Beneti

*CIMA-UBA (CONICET), Argentina*

#### **QPE1.P3 - Evaluation of High-Resolution Precipitation Estimates Using Electromagnetic Wave Rain Gauge(EWRG)**

Jeongho Choi, Sanghun Lim and Myoungsun Han

*Chosun College of Science & Technology, South Korea*

#### **QPE1.P4 - Improvement of automatic rain gauge checks relevant to radar data adjustment**

Claudia Fennig, Thomas Einfalt and Markus Jessen

*hydro & meteo GmbH, Germany*

#### **QPE1.P5 - Improvements to DWD's QPE within SINFONY**

Matthias Gottschalk, Thomas Hengstebeck and Ulrich Blahak

*Deutscher Wetterdienst (DWD), Germany*

#### **QPE1.P6 - Effects of radar data resolution on the analysis of extreme events**

Markus Jessen and Thomas Einfalt

*Deutscher Wetterdienst (DWD), Germany*

#### **QPE1.P7 - Guiding the Improvement of the Global Precipitation Measurement Mission with Radar Networks**

Pierre Kirstetter, David B. Wolff, Yagmur Derin, Dominique Faure, Nicolas Gaussiat, Veljko Petkovic, Joël Van Baelen, Olivier Bousquet and Jonathan J. Gourley

*University of Oklahoma & National Severe Storms Laboratory, United States*

#### **QPE1.P8 - Probabilistic Quantitative Precipitation Estimation with Ground- and Space-based Radars**

Pierre Kirstetter, Micheal Simpson, Jian Zhang, Jonathan J. Gourley, Steven Martinaitis and Nathaniel Indik

*University of Oklahoma & National Severe Storms Laboratory, United States*

#### **QPE1.P9 - Supporting Weather Radar Observations with the Vaisala FD70**

Dirk Klugmann, Lasse Kauppinen, Robinson Wallace and Jordan Santillo

*Vaisala Oyj, Finland*

#### **QPE1.P10 - Challenges and potential use of high-resolution X-band weather radar data in agriculture in northeast Germany**

Alice Künzel, Kai Mühlbauer, Christian Hohmann, Velibor Pejčić, Daniel Spengler and Sibylle Itzerott

*Helmholtz Centre Potsdam – GFZ German Research Centre for Geosciences, Germany*

## Poster sessions

### **QPE1.P11 - Detection of beam blocking using a long term statistical characteristics of dual-polarization observation**

Gyuwon Lee, DaeHyung Lee, Choeng-Lyong Lee, Geunsu Lyu, Wonbae Bang, Hong-Mok Park and Alexander Ryzhkov

*Department of Astronomy and Atmospheric Sciences, Kyungpook National University, Daegu, South Korea*

### **QPE1.P12 - Radar QPE for the Netherlands**

Hidde Leijnse and Aart Overeem

*Royal Netherlands Meteorological Institute (KNMI), Netherlands*

### **QPE1.P13 - Automatic Objective Evaluation of Radar Products in the Operational Production context at Environment and Climate Change Canada**

Ahmed Mahidjiba, Meriem Kacimi, Rabah Hachelaf, Yacine Bouzid, Ilyass Hajji, Sudesh Boodoo, Janti Reid and Corinne Simard

*Environment and Climate Change Canada, Government of Canada*

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## **QPE2 QUANTITATIVE PRECIPITATION ESTIMATION**

### **QPE2.P1 - Anomalous electromagnetic wave propagation and rainfall estimates with microwave links**

Malte Neuper and Jan Handwerker

*Karlsruhe Institute of Technology, Institute of Water and River Basin Management - Chair of Hydrology, Germany*

### **QPE2.P2 - Half-hourly evaluation of GPM-IMERG precipitation products using rain-gauge data in Catalonia**

Eric Peinó, Joan Bech and Mireia Udina

*Universitat de Barcelona, Spain*

### **QPE2.P3 - The assessment and validation of radar QPE for local government in the Auckland region, New Zealand**

Beatriz Reboredo, Luke Sutherland-Stacey and John Nicol

*Weather Radar New Zealand*

### **QPE2.P4 - Evaluation of Radar-derived Polarimetric Rainfall Estimates for Extreme Rainfall Cases**

Bong-Chul Seo, Witold Krajewski, James Smith and Alexander Ryzhkov

*University of Iowa, United States*

### **QPE2.P5 - VPR correction methods for MF radars**

Shaik Allabakash, Figueras I Ventura Jordi and Gaussiat Nicolas

*Météo-France, France*

### **QPE2.P6 - Quantitative rainfall estimation method for X-band dual polarization radars in Korea**

Jae In Song, Sanghun Lim and Kyusoo Chong

*Korea Institute of Civil Engineering and Building Technology, South Korea*

## Poster sessions

### **QPE2.P7 - Australia-wide high resolution precipitation data: What is possible?**

Alexander Strehz, Thomas Einfalt, Dan Zhang, Joost Brombacher and Lucas Ellerbroek  
*hydro & meteo GmbH, Germany*

### **QPE2.P8 - Quality control algorithms for precipitation data from private meteorological stations using weather radar data**

Jan Szturc, Katarzyna Ośródk, Magdalena Pasierb and Anna Jurczyk  
*Institute of Meteorology and Water Management - National Research Institute, Poland*

### **QPE2.P9 - Fusion of multiple precipitation sensors in Skåne, Sweden**

Remco van de Beek and Jonas Olsson  
*SMHI, Sweden*

### **QPE2.P10 - Comparison of the radar profiling algorithms for S-band radar by simulation : consequence of the hypothesis of constant scaled drop concentration (Nw) over range**

Nan Yu and Nicolas Gaussiat  
*Météo-France, France*

### **QPE2.P11 - A dual-pol VPR correction for operational radar QPE**

Jian Zhang and Wolfgang Hanft  
*NOAA, National Severe Storms Lab, United States*

### **QPE2.P12 - Addressing data quality issues for gap-filling solid-state polarimetric X-band radars**

Pengfei Zhang, Alexander Ryzhkov, Robert Stafford and Michael Knight  
*University of Oklahoma, United States*

### **QPE2.P13 - Rainfall estimation using specific attenuation with a new alpha optimization method**

Pengfei Zhang, Alexander Ryzhkov and Stephen Cocks  
*University of Oklahoma, United States*

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## **NWP RADAR IN NUMERICAL WEATHER PREDICTION**

### **NWP.P1 - Observed and simulated dual polarization signatures in supercell storms over France and potential application for nowcasting**

Clotilde Augros, David Cloé, Benoît Vié and Vincent Forcadell  
*CNRM, Université de Toulouse, Météo-France, CNRS, Toulouse*

### **NWP.P2 - Evaluation of high-resolution NWP-based precipitation reanalyses with adjusted radar-derived precipitation**

Vojtěch Bližňák and Petr Zacharov  
*Institute of Atmospheric Physics CAS, Czechia*

### **NWP.P3 - A comparison study on the radar radial velocity forward model for the KIAPS data assimilation system**

In-Hae Cho and Jeon-Ho Kang  
*InKIAPS(Korea Institute of Atmospheric Prediction Systems), South Korea*

## Poster sessions

### **NWP.P4 - Verification of precipitation and cloud simulation of KIM using radar measurements**

[Sujeong Cho](#) and Eun-Hee Lee

*Korea Institute of Atmospheric Prediction System, South Korea*

### **NWP.P5 - Development of LETKF-based radar data assimilation methods for high-resolution forecasting over Korea**

[Dayoung Choi](#), Adam Clayton, Kwangjae Sung, Jeon-Ho Kang and In-Hyuk Kwon

*Korea Institute of Atmospheric Prediction System, South Korea*

### **NWP.P6 - Study of radar data assimilation for precipitation nowcasting in Basque Country**

[Santiago Gaztelumendi](#), Ivan R. Gelpi and Aurelio Diaz de Arcaya

*Tecnalia - Meteo & Climate / Basque Meteorology Agency, Spain*

### **NWP.P7 - Convective cloud microphysics in numerical weather prediction models and dual-wavelength polarimetric radar observations**

[Gregor Köcher](#), Tobias Zinner, Christoph Knote, Eleni Tetoni, Florian Ewald, Martin Hagen and Bernhard Mayer

*Ludwig Maximilians University, Germany*

### **NWP.P8 - The ICON/COSMO polarimetric radar forward operator EMVORADO and its application for model evaluation**

[Jana Mendrok](#), Prabhakar Shrestha, Velibor Pejicic, Jacob Carlin, Jeffrey Snyder, Silke Trömel and Ulrich Blahak

*Deutscher Wetterdienst (DWD), Germany*

### **NWP.P9 - Assimilation of Advanced Remote Sensing Data to Improve Numerical Model Prediction**

[Ki-Hong Min](#) and Miranti Indri Hastuti

*Kyungpook National University, South Korea*

### **NWP.P10 - Intercomparing radar data assimilation systems for ICE-POP 2018 snowfall cases**

[Ki-Hong Min](#), Ji-Won Lee, Kao-Shen Chung, Cheng-rong You and Gyuwon Lee

*Kyungpook National University, South Korea*

### **NWP.P11 - Polarimetry-based hydrometeor classification from synthetic and measured radar observations for the evaluation of hydrometeor mixtures in numerical weather prediction models**

[Velibor Pejicic](#), Jana Mendrok, Ulrich Blahak and Silke Trömel

*Institute for Geosciences, Department of Meteorology, University of Bonn, Germany*

### **NWP.P12 - Operational assimilation of radar reflectivity and radial wind volumes in the COSMO model at Arpae-SIMC**

[Virginia Poli](#), Thomas Gastaldo, Chiara Marsigli, Davide Cesari and Pier Paolo Alberoni

*Arpae Emilia-Romagna, Struttura IdroMeteoClima, Italy*

## Poster sessions

### **NWP.P13 - Characterisation of rainfall estimates and forecast skill of NWP model regions in Australia**

Jayaram Pudashine, Carlos Velasco-Forero, Mark Curtis and Alan Seed  
*Bureau of Meteorology, Australia*

### **NWP.P14 - Estimator-based assimilation of dual-polarimetric radar observations in Germany**

Lucas Reimann, Clemens Simmer, Silke Trömel and Roland Potthast  
*Institute for Geoscience, Department of Meteorology, University of Bonn, Germany*

### **NWP.P15 - A method for information gain in the process of weather radar data assimilation into WRF model**

Luca Rovai, Andrea Antonini, Riccardo Benedetti, Luca Fibbi, Samantha Melani, Alberto Ortolani and Bernardo Gozzini  
*LaMMA Consortium, CNR-IBE, Italy*

### **NWP.P16 - Polarimetric retrievals of ice water content (IWC), total number concentration (Nt) and mean volume diameter (Dm) for improved parametrizations**

Tobias Scharbach and Silke Trömel  
*University of Bonn, Germany*

### **NWP.P17 - A change in methodology for Latent Heat Nudging at DWD**

Klaus Stephan  
*Deutscher Wetterdienst (DWD), Germany*

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## **NET RADAR IN NUMERICAL WEATHER PREDICTION**

*NET.P8 - Withdrawn*

### **NET.P1 - A Variational Interpolation Method for Gridding Weather Radar Data**

Jordan Brook, Alain Protat, Joshua Soderholm, Robert Warren and Hamish McGowan  
*University of Queensland, Australia*

### **NET.P2 - The new Lombardia X-band radar network**

Orietta Cazzuli, Gian Paolo Minardi, Michele Calabrese, Antioco Vargiu, Edoardo Peroni, Giulio Camisani and Enrico Solazzo  
*ARPA Lombardia, Italy*

### **NET.P3 - Towards a single global standard for polar weather radar data representation with FM301 – CfRadial2**

Mark Curtis, Michael Dixon, Heather Grams, Blake McGuire and Daniel Michelson  
*Bureau of Meteorology, Australia*

### **NET.P4 - Analysis and Discussion of the 2021 WMO Joint Expert Team on Operational Weather Radars (JET-OWR) Weather Radar Survey Results**

Sinéad Duffy, Richard Stedronsky, Blake McGuire and Pekka Utela  
*Met Éireann, Ireland*



## Poster sessions

### **NET.P5 - Centralisation in mainland France of the weather radar data processing system for the French overseas territories**

Dominique Faure, Axel Deloncle, Isabelle Sanchez, Sylvain Chaumont, Jean Millet, Valérie Vogt, Béatrice Fradon and Nicolas Gaussiat  
*Météo-France, France*

### **NET.P6 - Exploring efficient use of X-band Dual-Polarization Radar Network in the Korean Peninsula**

Ji-Young Gu, Jin-Woo Park, Sun-Jin Mo and Seungwoo Lee  
*Weather Radar Center, Korea Meteorological Administration, South Korea*

### **NET.P7 - Multi-Radar Multi-Sensor System (MRMS)**

Kenneth Howard and Jian Zhang  
*NOAA/NSSL, United States*

### **NET.P9 - Radar-based tracking of convective cell lifecycles using the Multisensor Agile Adaptive Sampling (MAAS) framework**

Pavlos Kollias, Bernat P. Treserras, Edward P. Luke, Kristofer S. Tuftedal, Mariko Oue, Katia Lamer and Zackary Mages  
*Stony Brook University, United States*

### **NET.P10 - Replacement of the Canadian Weather Radar Network – an Update**

Qian Li, Sylvain Laramée, Peter Leibiuk, Sorin Pinzariu, Steven Brady and Alvin Au Duong  
*Canadian Weather Radar Replacement Program, Environment and Climate Change Canada*

### **NET.P11 - Analysis of data of a recent disdrometer network to improve the quality of the radar products at the coast**

Mercedes Maruri, Monica Barturen and Santiago Gaztelumendi  
*Tecnalia - Meteo & Climate Area / University of the Basque Country, Spain*

### **NET.P12 - The FARM (Flexible Array of Radars and Mesonets)**

Joshua Wurman, Karen Kosiba, Jeff Trapp and Steve Nesbitt  
*Flexible Array of Radars and Mesonets, University of Illinois, United States*

### **NET.P13 - Quickly Deployable/Adaptable S-band radar network integrated with bistatic network**

Joshua Wurman and Karen Kosiba  
*Flexible Array of Radars and Mesonets, University of Illinois, United States*

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### **RSP RADAR SIGNAL AND DOPPLER PROCESSING**

### **RSP.P1 - A new approach for addressing correlation coefficient estimator bias at low signal-to-noise ration**

Christopher Curtis  
*CIWRO/NSSL, United States*



## **Poster sessions**

### **RSP.P2 - An adaptive range-averaging to improve the quality of radar variable estimates at low-to-moderate SNRs**

Igor Ivic

*CIWRO/NSSL, United States*

### **RSP.P3 - An augmented Lagrangian technique for multiple Doppler retrievals**

Robert Jackson, Matt Menickelly and Scott Collis

*Argonne National Laboratory, United States*

### **RSP.P4 - Next phase of the lidar radar open software environment (LROSE) as a science gateway**

Brenda Javornik, Jennifer DeHart, Michael Bell, Mike Dixon, Ting-Yu Cha and Wen-Chau Lee

*National Center for Atmospheric Research, United States*

### **RSP.P5 - Estimation of horizontal wind from Doppler data**

Léo Loyant, Tony Le Bastard and Nicolas Gaussiat

*Météo-France, France*

### **RSP.P6 - Vertical wind estimation with a 94-GHz cloud radar for enhanced DSD estimation using Mie extrema.**

Albert Oude Nijhuis, Christine Unal, Marc Schleiss, Yann Dufournet and Herman Russchenberg

*SkyEcho, Netherlands*

### **RSP.P7 - Understanding the Complementarity of Wind Measurements from Co-located X-band Weather Radar and Doppler Lidar.**

Jenna Ritvanen, Dmitri Moisseev, Ewan O'Connor, Ludovic Thobois, Raisa Lehtinen and Jani Tyynelä

*Finnish Meteorological Institute, Helsinki, Finland*

### **RSP.P8 - Forward method for vertical air motion estimation from frequency modulated continuous wave radar rain measurements**

Andreu Salcedo-Bosch, Francesc Rocadenbosch, Stephen Frasier and Paula Domínguez-Pla

*Universitat Politècnica de Catalunya, Spain*

### **RSP.P9 - The Mitigation of Debris-Induced Bias in Tornadic Doppler Velocity Measurements**

Morgan Schneider, David Bodine, Sebastian Torres, Robert Palmer, Boonleng Cheong, Caleb Fulton, Casey Griffin, Rachael Cross, Howard Bluestein, Takashi Maruyama and Javier Lujan

*School of Meteorology, University of Oklahoma, United States*

### **RSP.P10 - Improving the Data Quality of Polarimetric Variables using Hybrid Scan Estimators**

David Warde and Sebastian Torres

*CIWRO, United States*

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**SNO  
SNOWFALL**

**SNO.P1 - Ground-based, mobile, polarimetric, Doppler-radar measurements in two snowstorms in the Northeastern U. S. during IMPACTS in 2022**

Howard Bluestein, David Schwartzman, Samuel Emmerson, Danny Feland, Dale Sexton, Boonleng Cheong, Tian You Yu and Gerald Heymsfield  
*School of Meteorology/University of Oklahoma, United States*

**SNO.P2 - Precipitation type analysis using a hydrometeor classification of high-resolution radar data – evaluation results of winter season 2021/2022 at Deutscher Wetterdienst**

Tim Böhme and Markus Schultze  
*Deutscher Wetterdienst (DWD), Germany*

**SNO.P3 - Operational implementation of snow liquid water equivalent estimation for the Canadian S-band weather radar network**

Sudesh Boodoo, Emma Hung, Janti Reid, Norman Donaldson and Daniel Michelson  
*Environment and Climate Change Canada*

**SNO.P4 - Radar observation of the rain-snow transition from space and from the ground**

Brice Boudevillain, Arnaud Reboud, Fanny Brun, Thomas Condom, Frederic Cazenave, Guy Delrieu and Anil Khanal  
*Univ. Grenoble Alpes, IRD, CNRS, Grenoble INP, IGE, 38000 Grenoble, France*

**SNO.P5 - Combining Dual-Polarization Radar with Lagrangian Trajectories and a Spectral Bin Microphysics Model to Improve Snow Nowcasting**

Edwin Dunnavan, Jacob Carlin and Alexander Ryzhkov  
*Cooperative Institute for Severe and High-Impact Weather Research and Operations (CIWRO), NOAA/NSSL, United States*

**SNO.P6 - ERUO: a spectral processing routine for snowfall measurements collected by the MRR-PRO**

Alfonso Ferrone and Alexis Berne  
*Environmental Remote Sensing Laboratory, École Polytechnique Fédérale de Lausanne, Switzerland*

**SNO.P7 - MASCDB: a database of images, descriptors and microphysical properties of individual snowflakes in free fall**

Jacopo Grazioli, Gionata Ghiggi, Alexis Berne and Anne-Claire Billault-Roux  
*Environmental Remote Sensing Laboratory, École Polytechnique Fédérale de Lausanne, Switzerland*

**SNO.P8 - Cloud radar-based snowfall estimates during MOSAiC expedition**

Sergey Matrosov, Taneil Uttal and Matthew Shupe  
*University of Colorado and NOAA Physical Sciences Laboratory, United States*