THE FIRST JOINT WCRP-WWRP SYMPOSIUM ON DATA ASSIMILATION AND REANALYSIS

Programme

(3rd version, 9 Sep 2021)

Joint WCRP-WWRP Symposium on Data Assimilation and Reanalysis

in collaboration with the ECMWF Annual Seminar 2021

13 - 17 September 2021 (virtual)

organized by

Hans Ertel Centre
for Weather Research

Deutscher Wetterdienst
Wetter und Klima aus einer Hand

ECMWF

People

Steering group

Wenchao Cao	WMO, Switzerland
Hilda Carr	ECMWF
Karen Clarke	ECMWF
Estelle De Coning	WMO, Switzerland
Stephen English	ECMWF
Jan Keller, chair	DWD / HErZ, Germany
Daryl Kleist	NOAA, USA
Catherine Michaut	IPSL, France
Michel Rixen	WCRP, Switzerland

Scientific committee

Jan Keller, co-chair	DWD / HErZ, Germany
Daryl Kleist, co-chair	NOAA, USA
Bodo Ahrens	University of Frankfurt, Germany
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Mike Bosilovich	NASA, USA
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Hans Hersbach	ECMWF
Lili Lei	Nanjing University, China
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Cory Martin	Redline@NOAA/NCEP, USA
Andy Moore	Univ. of California, Santa Cruz, USA
Deborah Niermann	DWD, Germany
Juan Ruiz	Univ. de Buenos Aires, Argentina
Leonhard Scheck	DWD / HErZ, Germany
Arianna Valmassoi	University of Bonn / HErZ, Germany

Schedule

UTC	9	10	11	12	13	14	15	16	17
PDT	2	3	4	5	6	7	8	9	10
EDT	5	6	7	8	9	10	11	12	13
CEST	11	12	13	14	15	16	17	18	19
JST	18	19	20	21	22	23	0	1	2
Monday 13 Sep	Opening talks (room RED)	Get to know Gather.town	O1-1A DA applications O1-1B Reanalysis eval. O1-1C G.-bas. rem. sen. AS1-1	Break O1-2 Coupled DA AS1-2	Poster session P1 General DA | Reanalysis	O1-3 DA platforms AS1-3	Break O1-4A Coupled DA O1-4B Reanalysis eval. O1-4C Hybrid DA AS1-4	Poster session P1 General DA | Reanalysis	Poster session P1 General DA | Reanalysis
Tuesday 14 Sep	AS2-1	Poster session P2 Obser-vations | Methodo-logy	O2-1A Operational DA O2-1B Reanalysis eval. O2-1C Theoretic. devel. AS2-2	Break O2-2 Operational DA AS2-3	Poster session P2 Obser-vations | Methodo-logy	O2-3 Obs. impact AS2-4	Break O2-4A Operational DA O2-4B Reanalysis eval. O2-4C DA developments AS2-5	Poster session P2 Obser-vations | Methodo-logy	
Wednesday 15 Sep	AS3-1	Poster session P3 General DA | Methodo-logy	O3-1A Atm. compos. O3-1B DA devel. O3-1C G.-bas. rem. sen. AS3-2	Break O3-2 DA developments AS3-3	Poster session P3 General DA | Methodo-logy	O3-3 Ocean DA AS3-4	Break O3-4A Ocean DA O3-4B Satellites O3-4C Non-Gaussian DA AS3-5	Poster session P3 General DA | Methodo-logy	
Thursday 16 Sep	AS4-1	Poster session P4 Obser-vations | Reanalysis	O4-1A Atm. compos. O4-1B Reg. reanalysis O4-1C Aeolus AS4-2	Break O4-2 Global reanalysis joint session with AS	Poster session P4 Obser-vations | Reanalysis AS4-3	O4-3 Regional reanalysis AS4-4	Break O4-4A Innovative obs. O4-4B DA developments O4-4C Global reanalysis joint session with AS	Poster session P4 Obser-vations | Reanalysis AS4-5	
Friday 17 Sep	AS5-1	Poster session P5 General DA | Methodo-logy	O5-1A Conv. scale DA O5-1B Deep learning O5-1C Reg. reanalysis AS5-2	Break O5-2 Deep learning AS5-3	Poster session P5 General DA | Methodo-logy AS5-4	O5-3 Conv. scale DA AS5-5	Break O5-4A Conv. scale DA O5-4B Obs. impact O5-4C Reanalysis devel. AS5-6	Poster session P5 General DA | Methodo-logy	

Daily schedule - Monday, 13 Sep 2021

09:00-09:50 **Opening Talks**, speakers: *room RED*

Gerhard Adrian
WMO President

Florence Rabier
ECMWF Director-General

Sarah Jones
DWD Head of Research and Development

Tobias Fuchs
DWD Head of Climate and Environmental Services

Detlef Stammer
Chair of the WCRP Joint Scientific Committee

Jan Keller
Co-chair of WCRP TIRA

Estelle de Coning
Head of WWRP

Daryl Kleist
Co-chair of WWRP DAOS

10:00-11:00 **Get to know Gather.Town**

UTC *Explore the virtual conference area of the symposium, meet colleagues and engage in discussions*

11:00-11:45 **Parallel oral sessions**

UTC	*DA Applications*	*room RED*
	Reanalysis evaluation I	*room GREEN*
	Ground-based remote sensing I	*room BLUE*

11:45-12:00 **Break**

12:00-13:00 **Plenary oral session**

UTC	*Coupled DA I*	*room RED*

13:00-14:00 **Poster session P1**

UTC	*General DA*	*poster room*
	Reanalysis	*Monday*

14:00-14:45 **Plenary oral session**

UTC	*DA platforms*	*room RED*

15:00-16:00 **Parallel oral sessions**

UTC	*Coupled DA II*	*room RED*
	Reanalysis evaluation II	*room GREEN*
	Hybrid DA	*room BLUE*

16:00-18:00 **Poster session P1**

UTC	*General DA*	*poster room*
	Reanalysis	*Monday*

Daily schedule - Tuesday, 14 Sep 2021

10:00-11:00	**Poster session P2**	
UTC	*Observations*	*poster room*
	Methodology	*Tuesday*
11:00-11:45	**Parallel oral sessions**	
UTC	*Operational DA I*	*room RED*
	Reanalysis evaluation III	*room GREEN*
	Theoretical developments in DA	*room BLUE*
11:45-12:00	**Break**	
12:00-13:00	**Plenary oral session**	
UTC	*Operational DA II*	*room RED*
13:00-14:00	**Poster session P2**	
UTC	*Observations*	*poster room*
	Methodology	*Tuesday*
14:00-14:45	**Plenary oral session**	
UTC	*Observation impact*	*room RED*
15:00-16:00	**Parallel oral sessions**	
UTC	*Operational DA III*	*room RED*
	Reanalysis evaluation IV	*room GREEN*
	DA developments I	*room BLUE*
16:00-18:00	**Poster session P1**	
UTC	*Observations*	*poster room*
	Methodology	*Tuesday*

Daily schedule - Wednesday, 15 Sep 2021

10:00-11:00	**Poster session P3**	
UTC	*General DA*	*poster room*
	Methodology	*Wednesday*
11:00-11:45	**Parallel oral sessions**	
UTC	*DA for atmospheric composition I*	*room RED*
	DA developments II	*room GREEN*
	Ground-based remote sensing II	*room BLUE*
11:45-12:00	**Break**	
12:00-13:00	**Plenary oral session**	
UTC	*DA developments III*	*room RED*
13:00-14:00	**Poster session P3**	
UTC	*General DA*	*poster room*
	Methodology	*Wednesday*
14:00-14:45	**Plenary oral session**	
UTC	*Ocean DA I*	*room RED*
15:00-16:00	**Parallel oral sessions**	
UTC	*Ocean DA II*	*room RED*
	Satellites	*room GREEN*
	Non-Gaussian DA	*room BLUE*
16:00-18:00	**Poster session P3**	
UTC	*General DA*	*poster room*
	Methodology	*Wednesday*

Daily schedule

Daily schedule - Thursday, 16 Sep 2021

10:00-11:00	**Poster session P4**	
UTC	*Observations*	*poster room*
	Reanalysis	*Thursday*
11:00-11:45	**Parallel oral sessions**	
UTC	*DA for atmospheric composition II*	*room RED*
	Regional reanalysis I	*room GREEN*
	Aeolus	*room BLUE*
11:45-12:00	**Break**	
12:00-13:00	**Plenary oral session**	
UTC	*Global reanalysis I*	*room RED*
	(joint session with ECMWF Annual Seminar)	
13:00-14:00	**Poster session P4**	
UTC	*Observations*	*poster room*
	Reanalysis	*Thursday*
14:00-14:45	**Plenary oral session**	
UTC	*Regional reanalysis II*	*room RED*
15:00-16:00	**Parallel oral sessions**	
UTC	*Innovative observations*	*room RED*
	DA developments IV	*room GREEN*
	Global reanalysis II	*room BLUE*
	(joint session with ECMWF Annual Seminar)	
16:00-18:00	**Poster session P4**	
UTC	*Observations*	*poster room*
	Reanalysis	*Thursday*

Daily schedule - Friday, 17 Sep 2021

10:00-11:00	**Poster session P5**	
UTC	*General DA*	*poster room*
	Methodology	*Friday*
11:00-11:45	**Parallel oral sessions**	
UTC	*DA on the convective scale I*	*room RED*
	Deep learning in DA I	*room GREEN*
	Regional reanalysis III	*room BLUE*
11:45-12:00	**Break**	
12:00-13:00	**Plenary oral session**	
UTC	*Deep learning in DA II*	*room RED*
13:00-14:00	**Poster session P5**	
UTC	*General DA*	*poster room*
	Methodology	*Friday*
14:00-14:45	**Plenary oral session**	
UTC	*DA on the convective scale II*	*room RED*
15:00-16:00	**Parallel oral sessions**	
UTC	*DA on the convective scale III*	*room RED*
	Observation impact II	*room GREEN*
	Reanalysis development	*room BLUE*
16:00-18:00	**Poster session P5**	
UTC	*General DA*	*poster room*
	Methodology	*Friday*

Additional information on sessions:

Talks: Oral sessions have either 3 or 4 slots with 15 minutes (12+3) per talk.

Posters: Each poster session has an allocated time of three hours which is distributed over one day. Each poster session contains contributions from two of the major topics.

General DA

Operational DA
O2-1A, O2-2, O2-4A

Ocean DA
O3-3, O3-4A

DA on the convective scale
O5-1A, O5-3, O5-4A

DA applications
O1-1A

DA platforms
O1-3

DA for atmospheric composition
O3-1A, O4-1A

Methodology

DA developments
O2-4C, O3-1B, O3-2, O4-4B

Non-Gaussian DA
O3-4C

Hybrid DA
O1-4C

Coupled DA
O1-2, O1-4A

Theoretical developments in DA
O2-1C

Deep Learning in DA
O5-1B, O5-2

Observations

Observation impact
O2-3, O5-4B

Satellites
O3-4B

Ground-based remote sensing
O1-1C, O3-1C

Aeolus
O4-1C

Innovative observations
O4-4A

Reanalysis

Global Reanalysis
O4-2, O4-4C (joint sessions with ECMWF Annual Seminar)

Regional Reanalysis
O4-1B, O4-3, O5-1C

Reanalysis developments
O5-4C

Reanalysis evaluation
O1-1B, O1-4B, O2-1B, O2-4B

Oral sessions

DA applications (O1-1A)
Monday, 13 Sep 2021 - room RED

General DA
chair: J. Ruiz, D. Kleist

11:00 UTC	*A. Parde*	*Impact of high-resolution land surface data assimilation on fog: A case study from the WiFEX campaign*
11:15 UTC	*M. Rochoux*	*Data assimilation for landscape-scale wildland fire behavior*
11:30 UTC	*A. Valmassoi*	*Data Assimilation on the Sub-Kilometer Scale for the Urban Environment*

Reanalysis evaluation I (O1-1B)
Monday, 13 Sep 2021 - room GREEN

Reanalysis
chair: I. Bastak Duran, D. Niermann

11:00 UTC	*M. Fujiwara*	*Overview of the SPARC Reanalysis Intercomparison Project (S-RIP) during 2013-2021*
11:15 UTC	*A. Storto*	*The 20th century global warming signature on the ocean at global and basin scales as depicted from historical reanalyses*
11:30 UTC	*Y. Kosaka*	*Representation of the past weather prior to the International Geophysical Year (1957-1958) in JRA-3Q*

Ground-based remote sensing I (O1-1C)
Monday, 13 Sep 2021 - room BLUE

Observations
chair: L. Scheck, S. Dance

11:00 UTC	*U. Löhnert*	*Ground-based atmospheric boundary layer profiling and data assimilation experiments within the EU COST Action PROBE*
11:15 UTC	*C. Merker*	*Towards operational assimilation of surface based microwave radiometer and Raman lidar data at MeteoSwiss*
11:30 UTC	*D. Lippi*	*Doppler radial wind assimilation in the GFS with an observing system simulation experiment*

Coupled DA I (O1-2)
Monday, 13 Sep 2021 - room RED

Methodology
chair: A. Valmassoi, D. Kleist

12:00 UTC	*Y. Yin*	*Development of Coupled Data Assimilation for the Bureau of Meteorology's Operational Climate Forecast System ACCESS–S*
12:15 UTC	*T.Y. Leung*	*The impact of incorporating flow-dependent oceanic background-error covariance information into air-sea coupled data assimilation on the evolution of a tropical cyclone*
12:30 UTC	*Q. Tang*	*Weakly and strongly coupled data assimilation with the coupled ocean-atmosphere model AWI-CM*
12:45 UTC	*P. Smith*	*Incorporating flow dependent ocean information into weakly coupled atmosphere-ocean 4D-Var data assimilation: experiments with an idealised system*

Oral sessions

DA platforms (O1-3)
Monday, 13 Sep 2021 - room RED

General DA
chair: J. Keller, A. Valmassoi

14:00 UTC	*L. Nerger*	*PDAF - features and recent developments*
14:15 UTC	*T. Auligne*	*JCSDA's vision of a community data assimilation for research and operations*
14:30 UTC	*K. Raeder*	*A CESM+DART Atmospheric Reanalysis for Forcing Ocean, Land, and Other Surface Models.*

Coupled DA II (O1-4A)
Monday, 13 Sep 2021 - room RED

Methodology
chair: A. Valmassoi, N. Mamnun

15:00 UTC	*G. Hakim*	*Skillful Coupled Atmosphere-Ocean Data Assimilation - on a Laptop*
15:15 UTC	*S. Massart*	*Skin temperature analysis used for the assimilation of clear-sky radiances*
15:30 UTC	*C. Draper*	*Modernising the Land Data Assimilation and Land Model Uncertainty Estimation in NOAA's Global NWP Systems*
15:45 UTC	*D. Turner*	*Improved Understanding of Land-Atmosphere Interactions Using Profiling and Surface Flux Observations*

Reanalysis evaluation II (O1-4B)
Monday, 13 Sep 2021 - room GREEN

Reanalysis
chair: J. Keller, M. Fujiwara

15:00 UTC	*M. Bosilovich*	*Overview of MERRA-2 for Applications, Decision-making, and Climate Assessment*
15:15 UTC	*N. Thomas*	*Mechanisms Associated with Daytime and Nighttime Heat Waves over the Contiguous United States*
15:30 UTC	*M. Kozubek*	*Detail Analysis Of Stratospheric Trends Using ERA5*
15:45 UTC	*N. Žagar*	*Tropical wave analyses: variability, trends and uncertainties in ERA-Interim, JRA-55, MERRA and ERA5 reanalyses*

Hybrid DA (O1-4C)
Monday, 13 Sep 2021 - room BLUE

Methodology
chair: A. Moore, B. Ahrens

15:00 UTC	*L. Berre*	*4D-hybrid formulation of 4DEnVar for global data assimilation at Météo-France*
15:15 UTC	*M. Tsyrulnikov*	*Ensemble-variational assimilation with constrained non-stationary spatial convolutions*
15:30 UTC	*L. Lei*	*Integrated Hybrid Data Assimilation for an Ensemble Kalman Filter*
15:45 UTC	*T. Lei*	*Tests of hybrid EnKF-Variational Data Assimilation capabilities using JEDI with NOAA's Next Generation Regional High Resolution NWP System*

Oral sessions

Operational DA I (O2-1A)
Tuesday, 14 Sep 2021 - room RED

General DA
chair: C. Martin, S. Polavarapu

11:00 UTC	*M. Krysta*	*National Analysis System*
11:15 UTC	*Y. Ikuta*	*New Variational Data Assimilation System for Regional Model at JMA*
11:30 UTC	*M. Hu*	*Building a JEDI- and FV3-based Rapid Refresh Forecast System (RRFS) upon Decade of Development and Implementation of the High Resolution Rapid Refresh (HRRR)*

Reanalysis evaluation III (O2-1B)
Tuesday, 14 Sep 2021 - room GREEN

Reanalysis
chair: M. Fujiwara, D. Niermann

11:00 UTC	*C. Kobayashi*	*Brewer-Dobson circulation represented in JRA-3Q*
11:15 UTC	*Z. Heyvaert*	*Comparison of land surface data assimilation results driven by MERRA-2 and ERA5 meteorological forcings*
11:30 UTC	*N. Fourrie*	*Data assimilation impact studies with the AROME-WMED reanalysis during HyMeX SOP1*

Theoretical Developments in DA (O2-1C)
Tuesday, 14 Sep 2021 - room BLUE

Methodology
chair: L. Lei, T. Auligne

11:00 UTC	*C. Snyder*	*An optimal linear transformation for data assimilation*
11:15 UTC	*G. Hu*	*A Numerical Approximation Method for Fast Computations of Matrix-Vector Products with Spatially Correlated Observation Error Statistics*
11:30 UTC	*I. Dauzickaite*	*Randomised preconditioning in variational data assimilation*

Operational DA II (O2-2)
Tuesday, 14 Sep 2021 - room RED

General DA
chair: E. Bauernschubert, T. Auligne

12:00 UTC	*D. Kleist*	*NCEP Operational Global Data Assimilation System (GDAS): Recent Upgrades and Future Plans*
12:15 UTC	*R. Potthast*	*The Global-to-Regional Data Assimilation System for the ICON Model*
12:30 UTC	*M. Bonavita*	*Advancing Data Assimilation in Global NWP and Climate: the ECMWF Perspective*
12:45 UTC	*I.-H. Kwon*	*Status and Plans of Data Assimilation at KIAPS*

Observation Impact I (O2-3)
Tuesday, 14 Sep 2021 - room RED

Observations
chair: U. Löhnert, I. Bastak Duran

14:00 UTC	*B. Ingleby*	*Aircraft data and Covid-19: impact and mitigation measures at ECMWF*
14:15 UTC	*T. Nomokonova*	*Estimation of the benefits of remote-sensing profilers for sustainable energy applications*
14:30 UTC	*A. Yamazaki*	*EFSO at different geographical locations verified with observing system experiments*

Operational DA III (O2-4A)
Tuesday, 14 Sep 2021 - room RED

General DA
chair: U. Löhnert, N. Mamnun

15:00 UTC	*R. Gelaro*	*The JEDI-GEOS application: NASA's development pathway for coupled Earth system data assimilation*
15:15 UTC	*J. Carley*	*Data Assimilation for NOAA's Next Generation Regional High Resolution NWP System*
15:30 UTC	*C. Martin*	*Initial Evaluation of JEDI Unified Forward Operator For Use in NCEP's Global Data Assimilation System*
15:45 UTC	*L. Slivinski*	*Progress towards a global hourly-updating data assimilation system*

Reanalysis evaluation IV (O2-4B)
Tuesday, 14 Sep 2021 - room GREEN

Reanalysis
chair: I. Bastak Duran, H. Hersbach

15:00 UTC	*M. Marosz*	*Daily extreme temperatures in ERA5-LAND versus in-situ measurements in Poland 1991-2020*
15:15 UTC	*M. Mytilinaios*	*Evaluation of a high-resolution dust regional reanalysis using in-situ and remote sensing observations*
15:30 UTC	*K. Kosovelj*	*Comparison of a Multidecadal Walker Circulation in European reanalyses*
15:45 UTC	*B. Sara*	*Operating in risky sand and dust storm environments in Northern Africa, the Middle East and Europe: a portfolio of climate services*

New approaches to DA I (O2-4C)
Tuesday, 14 Sep 2021 - room BLUE

Methodology
chair: A. Moore, B. Ahrens

15:00 UTC	*J. Anderson*	*A General Ensemble Filtering Framework Using Quantiles*
15:15 UTC	*X. Wang*	*A new multiscale data assimilation method: Multiscale Local Gain Form Ensemble Transform Kalman Filter (MLGETKF)*
15:30 UTC	*R.S. Consuegra Ortega*	*Operational Data Assimilation using the Ensemble Kalman Filter with a Modified Cholesky decomposition*
15:45 UTC	*D. Daescu*	*Adaptive Tuning of Innovation Weight Parameters: Formulation and Results with NAVDAS-AR/NAVGEM*

Oral sessions

DA for atmospheric composition I (O3-1A)
Wednesday, 15 Sep 2021 - room RED

General DA
chair: C. Martin, S. Polavarapu

11:00 UTC	*E. Di Tomaso*	*A novel regional reanalysis of dust aerosols*
11:15 UTC	*P. Rawat*	*Radiance intercalibration of INSAT-3D ozone channel with MSG-SEVIRI and successive improvements in ozone optimal/ML retrieval and validations*
11:30 UTC	*B. Huang*	*Development of an Ensemble-Variational Data Assimilation System for Global Aerosol Forecasting at NOAA*

New approaches to DA II (O3-1B)
Wednesday, 15 Sep 2021 - room GREEN

Methodology
chair: E. Bauernschubert, B. Ahrens

11:00 UTC	*D. Francis*	*The Effective Use of Anchor Observations in VarBC in the Presence of Model Bias*
11:15 UTC	*O. Stiller*	*Newly developed impact diagnostics for cross-validating the consistent use of different observation types*
11:30 UTC	*M. Bocquet*	*State, global and local parameter estimation using ensemble Kalman filters for model error correction*

Ground-based remote sensing II (O3-1C)
Wednesday, 15 Sep 2021 - room BLUE

Observations
chair: I. Bastak Duran, S. Healy

11:00 UTC	*M. Kayser*	*Long-term assessment of Doppler lidars for an operational use in a future network*
11:15 UTC	*C. Knist*	*Assessment of microwave radiometers for operational network deployment and its observational value for forecasting models*
11:30 UTC	*A. Bell*	*Expected Benefit of Cloud Radar and Microwave Radiometer Observations for Future Data Assimilation During Fog Conditions*

New approaches to DA III (O3-2)
Wednesday, 15 Sep 2021 - room RED

Methodology
chair: J. Ruiz, B. Ahrens

12:00 UTC	*O. Pannekoucke*	*Contributions of the parametric Kalman filter in practical and theoretical data assimilation*
12:15 UTC	*K. Lonitz*	*What does the spread amongst ensembles tell us about forecast errors?*
12:30 UTC	*D. Hotta*	*"Twin-analysis" verification: a new verification approach that alleviates pitfalls of "own-analysis" verification when applied to short-range forecasts*
12:45 UTC	*M. Buehner*	*Local Ensemble Transform Kalman Filter with Cross-Validation*

Ocean DA I (O3-3)
Wednesday, 15 Sep 2021 - room RED

General DA
chair: N. Mamnun, T. Auligne

14:00 UTC	*D. Lea*	*A new global ocean ensemble system at the Met Office: Assessing the impact of hybrid data assimilation and inflation settings*
14:15 UTC	*P. Heimbach*	*Quantitative Observing System Design within ECCO's 4DVar ocean data assimilation framework*
14:30 UTC	*A. Moore*	*Forecast Sensitivity to Observations in an Analysis-Forecast System of the California Current Circulation*

Ocean DA II (O3-4A)
Wednesday, 15 Sep 2021 - room RED

General DA
chair: A. Moore, N. Mamnun

15:00 UTC	*I. Fenty*	*The Estimating the Circulation and Climate of the Ocean (ECCO) "Central Estimate": a Multi-decadal, Coupled Ocean Reanalysis*
15:15 UTC	*M. Martin*	*Assimilation of satellite total surface current velocities in global ocean forecasting systems*
15:30 UTC	*L. Liu*	*Impact of superobbing high resolution marine glider and HF radar data in regional marine JEDI data assimilation system*

Satellites (O3-4B)
Wednesday, 15 Sep 2021 - room GREEN

Observations
chair: U. Löhnert, L. Lei

15:00 UTC	*S. Lee*	*All-sky microwave humidity sounder assimilation in the Korean Integrated Model forecast system*
15:15 UTC	*W. Han*	*Evaluation and Assimilation of Geostationary Hyperspectral InfraRed Sounders (GeoHIS) : Progress and Challenges*
15:30 UTC	*L. Scheck*	*Improving cloud and radiation forecasts by assimilating visible satellite images*
15:45 UTC	*P. Combarnous*	*An observation operator for geostationary lightning imager data assimilation in storm-scale numerical weather prediction systems*

Non-Gaussian DA (O3-4C)
Wednesday, 15 Sep 2021 - room BLUE

Methodology
chair: J. Ruiz, B. Ahrens

15:00 UTC	*N. Schenk*	*4D-Localized Particle Filter Method in KENDA for ICON-LAM*
15:15 UTC	*S. Kotsuki*	*Improving the stability of the Local Particle Filter and Its Gaussian Mixture Extension: Experiments with an Intermediate AGCM*
15:30 UTC	*C.-C. Hu*	*A new way to infer non-Gaussian observation errors based on ensemble innovations*
15:45 UTC	*S. Fletcher*	*Non-Gaussian Hybrid Variational Data Assimilation*

Oral sessions

DA for atmospheric composition II (O4-1A)
Thursday, 16 Sep 2021 - room RED

General DA
chair: L. Scheck, C. Martin

11:00 UTC	*A. Tsikerdekis*	*Aerosol data assimilation as a tool to detect model errors*
11:15 UTC	*H. Wang*	*Assimilation of Aerosol Optical Depth (AOD) retrievals and PM2.5 in NCEP's Next-Generation Regional Air Quality Forecasting System*

Regional reanalysis I (O4-1B)
Thursday, 16 Sep 2021 - room GREEN

Reanalysis
chair: J. Keller, D. Niermann

11:00 UTC	*A. Aydogdu*	*A high resolution reanalysis for the Mediterranean Sea*
11:15 UTC	*I. Rani*	*IMDAA regional reanalysis over the Indian monsoon region*
11:30 UTC	*S. Fukui*	*Performance of a 5-km regional reanalysis over Japan with respect to summer precipitation*

Aeolus (O4-1C)
Thursday, 16 Sep 2021 - room BLUE

Observations
chair: U. Löhnert, N. Fourrier

11:00 UTC	*A. Cress*	*Validation and Impact assessment of Aeolus Doppler Wind Lidar Observations at the German Weather Service*
11:15 UTC	*K. Ide*	*Impact Assessment of Aeolus Wind on NOAA Global NWP Analyses and Forecasts*
11:30 UTC	*C. Chou Chih*	*Validation of Aeolus L2B Wind Product with ECCC Short-Range Forecasts and ERA5 over the Arctic*

Global reanalysis I (O4-2)
Thursday, 16 Sep 2021 - room RED

Reanalysis
chair: J. Keller, M. Fujiwara

12:00 UTC	*S. Kobayashi*	*JRA-3Q: Japanese Reanalysis for Three Quarters of a Century*
12:30 UTC	*H. Hersbach*	*The ERA5 reanalysis: a detailed record of the climate and weather for the past 70 years.*
12:45 UTC	*L. Slivinski*	*A synoptic to decadal evaluation of the 20th Century Reanalysis Version 3*

Regional reanalysis II (O4-3)
Thursday, 16 Sep 2021 - room RED

Reanalysis
chair: I. Bastak Duran, H. Hersbach

14:00 UTC	*F. Kaspar*	*Regional reanalysis activities at DWD: review and outlook*
14:15 UTC	*S. Schimanke*	*Copernicus European regional reanalysis*
14:30 UTC	*H. Schyberg*	*The Copernicus Arctic Regional Reanalysis*

Innovative observations (O4-4A)
Thursday, 16 Sep 2021 - room RED

Observations
chair: E. Bauernschubert, N. Mamnun

15:00 UTC	*W. Acevedo*	*Usage of crowd-sourced meteorological car data for new real time road weather forecast*
15:15 UTC	*A. Kelbch*	*The potential of assimilating wind power data for future reanalysis*
15:30 UTC	*Z. Paschalidi*	*Assimilation of surface observations from citizen weather stations into a regional weather prediction system*
15:45 UTC	*S. Dance*	*Exploring the characteristics of a vehicle-based temperature dataset for convection-permitting numerical weather prediction*

New approaches to DA IV (O4-4B)
Thursday, 16 Sep 2021 - room GREEN

Methodology
chair: L. Scheck, J. Ruiz

15:00 UTC	*I. Moradi*	*Assimilation of microwave radiances over the rainbands of tropical cyclones*
15:15 UTC	*X. Su*	*Hilbert curves for data thinning and application to aircraft data*
15:30 UTC	*D. Holdaway*	*Evaluation of background error models for JEDI-based data assimilation with GFS and GEOS.*
15:45 UTC	*F. Fabry*	*Are we minimizing the appropriate errors in data assimilation for weather forecasting?*

Global reanalysis II (O4-4C)
Thursday, 16 Sep 2021 - room BLUE

Reanalysis
chair: M. Bosilovich, B. Ahrens

15:00 UTC	*J. Munoz-Sabater*	*The ERA5-Land Global land surface reanalysis*
15:15 UTC	*W. Bell*	*Preparations for assimilating rescued and reprocessed satellite sounding observations in the next generation global atmospheric reanalysis at ECMWF - ERA6*
15:30 UTC	*A. El Akkraoui*	*The NASA GMAO retrospective analysis for the 21st Century GEOS-R21C*
15:45 UTC	*D.S. Banerjee*	*The CMCC Global Ocean Reanalysis System (C-GLORS): a series of consolidated eddy-permitting ocean reanalyses*

Oral sessions

Convective scale DA I (O5-1A)
Friday, 17 Sep 2021 - room RED

General DA
chair: A. Valmassoi, E. Bauernschubert

11:00 UTC	*T. Janjic*	*Representation of model error in convective scale data assimilation*
11:15 UTC	*L. Neef*	*Assimilation of Nowcast Objects in the Regional Forecast Model ICON-LAM*
11:30 UTC	*L. Duc*	*Comparison of 4D-EnVAR and 4D-LETKF when running with 1000 ensemble members*

Deep learning in DA I (O5-1B)
Friday, 17 Sep 2021 - room GREEN

Methodology
chair: J. Keller, J. Ruiz

11:00 UTC	*A. Farchi*	*Model error correction with data assimilation and machine learning*
11:15 UTC	*B. Sébastien*	*high-resolution Ensemble Kalman Filter with a low-resolution model using a machine learning super-resolution approach*
11:30 UTC	*Y. Wang*	*Deep-Learning Augmented Data Assimilation: Reconstructing Missing Information With Convolutional Autoencoders*

Regional reanalysis III (O5-1C)
Friday, 17 Sep 2021 - room BLUE

Reanalysis
chair: H. Hersbach, N. Mamnun

11:00 UTC	*A. El-Said*	*A new temporally flow-dependent EDA to estimate B-matrix in Copernicus European Regional Reanalysis*
11:15 UTC	*S.R. Sanikommu*	*A 20-year High resolution Red Sea Reanalysis using a Hybrid ensemble data assimilation*
11:30 UTC	*P. Franke*	*Evaluation of European anthropogenic trace gas and aerosol emissions using 4D-var: First results of a full-year re-analysis for 2016*

Deep learning in DA II (O5-2)
Friday, 17 Sep 2021 - room RED

Methodology
chair: L. Scheck, U. Löhnert

12:00 UTC	*S. Legler*	*Combining Data Assimilation and Machine Learning to Estimate Parameters of a Convective-Scale Model*
12:15 UTC	*A. Popov*	*Surrogate Tree and Model Forest Extensions to the Multifidelity Ensemble Kalman Filter*
12:30 UTC	*F.J. Acevedo García*	*Data-Driven Methods for Weather Forecast*
12:45 UTC	*T.-C. Chen*	*Learning UFS State-Dependent Systematic Errors from the Analysis Increments*

Convective scale DA II (O5-3)
Friday, 17 Sep 2021 - room RED

General DA
chair: J. Keller, E. Bauernschubert

14:00 UTC	*T. Miyoshi*	*Big Data Assimilation: Real-time Demonstration Experiments of 30-second-update Forecasting in Tokyo in 2020 and 2021*
14:15 UTC	*J. Waller*	*Evaluating errors due to unresolved scales in convection permitting numerical weather prediction*
14:30 UTC	*T. Necker*	*Localization on convective scales: What can we learn from a 1000-member ensemble?*

Convective scale DA III (O5-4A)
Friday, 17 Sep 2021 - room RED

General DA
chair: L. Scheck, L. Lei

15:00 UTC	*Y. Wang*	*Further development of simultaneous multiscale data assimilation in EnVar to improve convective scale weather prediction*
15:15 UTC	*C. Schwartz*	*Experiments with a continuously cycling 3-km ensemble Kalman filter over the entire conterminous United States for convection-allowing ensemble initialization*
15:30 UTC	*J. Ruiz*	*Reduced non-Gaussianity by 30-second rapid update in convective-scale numerical weather prediction*
15:45 UTC	*J. Sodhi*	*Large error correction in storms at convective scales by "grafting" look-alike modelled storms from other ensemble backgrounds*

Observation Impact II (O5-4B)
Friday, 17 Sep 2021 - room GREEN

Observations
chair: C. Martin, U. Löhnert

15:00 UTC	*C.-C. Chang*	*Implementation of Ensemble Forecast Sensitivity to Observations (EFSO) on a operational-like CFSv2 model and modifications for reanalysis*
15:15 UTC	*R. Todling*	*Impact of Losing Aqua and Legacy POES and of Gaining Radio-Occultation Observations*
15:30 UTC	*Y. Zhu*	*Assessment of observation impact on the low troposphere in the GMAO GEOS system*
15:45 UTC	*M. Zheng*	*Impact of Dropsondes from the Atmospheric River (AR) Reconnaissance Program on Forecast Skill of ARs and the Satellite Radiance Assimilation*

Reanalysis development (O5-4C)
Friday, 17 Sep 2021 - room BLUE

Reanalysis
chair: M. Bosilovich, H. Hersbach

15:00 UTC	*S. Rennie*	*Towards an enhanced regional atmospheric reanalysis for Australia*
15:15 UTC	*M. Pagowski*	*Developing Aerosol Reanalysis at NOAA Version 1.0: Methodology and Results*
15:30 UTC	*X. Yang*	*Development of kilometer scale regional data assimilation for Copernicus Arctic Regional Reanalysis*
15:45 UTC	*S. Wahl*	*A novel approach to surface reanalysis*

Poster sessions

P1 - Monday, 13 Sep 2021 (13:00-14:00, 16:00-18:00)

General DA

D. Carneiro	Improving Met Office predictions of Artic sea ice through assimilation of CryoSat-2 and SMOS thickness data
T. Diefenbach	Partial analysis increments as diagnostic for LETKF data assimilation systems
L. Duc	Investigation of the potential factors that caused the July 2020 Kyushu heavy rain using a 1000-member ensemble simulation
C. Gas	Evaluating block methods for Ensemble Data Assimilation in JEDI
I. Hernandez Banos	Test and evaluation of data assimilation algorithms and configurations to improve the Rapid Refresh Forecast System for convection forecasts
T. Kawabata	Ensemble Data Assimilation and Probabilistic Forecast with 1000 Members Coupled with a Hydrological Model Using the Supercomputer “Fugaku” Aiming to the Impact-Based Forecast
N. Kutaladze	WRF- 3DVAR application for Georgia
H.-N. Kwon	The enhancement of usage of the aircraft based observations in the KIAPS data assimilation system
S. Liu	Comparison of JEDI Unified Forward Operator and GSI Observer Using Rapid Refresh Forecast System Background
R. Menard	The WMO Global Air Quality Forecast and Information System (GAFIS) project
L. Mona	ACTRIS/EARLINET pilot for nrt provision of aerosol remote sensing profiles to cams
E. Satterfield	An Overview of Atmospheric Data Assimilation at the Naval Research Laboratory
H. Shao	Developing Unified Forward Operator (UFO) for JEDI at the Joint Center for Satellite Data Assimilation (JCSDA)
X. Su	New Variational Quality Control scheme and application in GSI
X. Zhang	Satellite radiance data assimilation within NOAA's prototype Rapid Refresh Forecast System

Reanalysis

A. Arshad	SPI-based drought forecasting data assimilation by using ARIMA models
S. Bal	Examining the model parameters of COSMO-CLM in 11 selected extreme events over West Bengal (WB), India
M. Bosilovich	Regional Water Cycle Consistency in Atmospheric Reanalysis
R. Balmaceda-Huarte	Evaluation of multiple reanalyses in reproducing temperature and precipitation indices over southern South America
A. Cipollone	Assimilation strategies of sea-ice remotely-sensed observations for ocean Reanalysis
M. Morris	Using reanalysis to assess ‘design-level’ wind events with the potential for infrastructure damage in the built environment
D. Niermann	Evaluating extreme wind speed in regional and global reanalysis products
P.K. Pothapakula	Exploring Information Exchange in Climate System Applications.
J. Stoyanova	Use of remote sensing retrievals of evapotranspiration based on reanalysis data for assessment of forested landscape drying
N. Thomas	Regionalization of MERRA-2 50-m wind speed over the United States for Energy Applications
T. Spangehl	Usage of reanalysis data for wind energy expansion in the North Sea and Baltic Sea

P2 - Tuesday, 14 Sep 2021 (10:00-11:00, 13:00-14:00, 16:00-17:00)

Methodology

N. Baillot D'etivaux	*Breakdown of the equivalence between two common preconditionnings in multi-incremental variational data assimilation*
K. Bhargava	*Impact of assimilating SST vs nudging in an atmosphere ocean coupled model*
C. Da	*Multi-layer Observation Localization for Nonlocal Observations in the LETKF*
J. Dong	*JEDI application in Assimilation and Evaluation of GTS Synoptic Snow Depth Observations into NCEP Operational FV3GFS System*
J. Feng	*A Comparison of Two Local Moment-Matching Nonlinear Filters: Local Particle Filter (LPF) and Local Nonlinear Ensemble Transform Filter (LNETF)*
T. Gichamo	*Updating and Testing the Snow Data Assimilation in the Unified Forecast System (UFS) Land surface model Noah*
S. Gilpin	*Continuum Covariance Propagation for Understanding Variance Loss in Advective Systems*
T. Kawabata	*An Adaptive R Estimator with a Storm-Scale Particle Filter*
S. Kotsuki	*Local Ensemble Transform Kalman Filter Experiments with Hybrid Background Error Covariance: A Case with an Intermediate AGCM*
R. Menard	*Numerical discretization causing error variance loss and the need for inflation*
S. Nakashita	*Assimilation of Nonlinear Observations with the Maximum Likelihood Ensemble Filter*
L. Nerger	*A hybrid nonlinear-Kalman ensemble transform filter for data assimilation in systems with different degrees of nonlinearity*
T. O'kane	*CAFE60v1: The CSIRO Climate retrospective Analysis and Forecast Ensemble system: version 1: System design, model configuration and data assimilation.*
R. Reichle	*Assimilation of SMAP Brightness Temperature Observations in the GEOS Land-Atmosphere Data Assimilation System*
S. Scherrer	*Towards the assimilation of microwave vegetation optical depth into global land surface models*
A. Subrahmanya	*A variational particle filter*

Observations

J. Amezcua	*Assimilating atmospheric infrasound data to constrain atmospheric winds in a two-dimensional grid*
B. Balan-Sarojini	*Impact of Ocean Observations on ECMWF Extended-Range Forecasts*
J. Carley	*Assimilation of Web Camera Derived Estimates of Horizontal Visibility*
G. Casaretto	*Ensemble Forecast Sensitivity to Observations applied to a regional data assimilation system over Argentina*
T. Chen	*Assimilating Disorganized Crowdsourced Imagery Data for Machine Learning-based Geomorphological Change Detection Research*
F. Diniz	*Deriving observation impact measures through the FV3-JEDI interface*
I. Genkova	*Status of Atmospheric Motion Vectors use in the NCEP GFS data assimilation system*
B. Ingleby	*Estimates of radiosonde impact and their implications*
H.-B. Jeong	*Assimilation of GK-2A clear sky radiance products in the KIM DA system*
H.-C. Lee	*An Evaluation for Impacts of Ocean Observing System in the NCEP GODAS*
X. Li	*Sea Surface Temperature analysis within the NCEP GFS*
L. Pires	*Observing System Simulation Experiments in the Brazil Current using SWOT synthetic data with HYCOM+RODAS*
D. Risto	*Influence of Snow Representation in Operational Seasonal Prediction Systems*
M. Toporov	*A virtual network of ground-based microwave radiometers for monitoring of atmospheric stability and its potential impact in synergy with hyperspectral satellite observations.*
F. Vandenberghe	*Estimating the impact of commercial observations with an Ensemble of Data Assimilations approach*
X. Wu	*Impact of Aircraft High-Density Observations on GFSv16 Tropical Cyclone Forecasts*
Y. Zeng	*Interpreting estimated Observation Error Statistics of Weather Radar Measurements using the ICON-LAM-KENDA System*

Poster sessions

P3 - Wednesday, 15 Sep 2021 (10:00-11:00, 13:00-14:00, 16:00-17:00)

General DA

C. Book	High-Resolution Regional Ocean Data Assimilation in JEDI-SOCA framework: Hurricane Supplemental Project at NOAA-EMC
I. Fukumori	Studying Causal Mechanisms of the Ocean with the ECCO Estimate: Beaufort Sea Sea-Level and Freshwater-Content Change
A. Galodha	Impact of COVID-19 measures on the air quality, monitored for the state of Himachal Pradesh: A Google Earth Engine Based Study
D. Halpern	Evaluation of ECCO Currents in the Pacific Equatorial Undercurrent
M. Khoshsima	Atmospheric radiance variation: On the basis of atmospheric aerosols in different locations Iran
C. Martin	Assimilating TROPOMI Nitrogen Dioxide Retrievals in NOAA's Next-Generation Regional Air Quality Forecasting System
H. Pohlmann	Ocean data assimilation for ICON-Seamless
S. Sabetghadam	Validation of MODIS, MISR and OMI aerosol optical depth with globally distributed AERONET data over the Middle East region
R. Santana	Mesoscale and wind‚Äëdriven intra‚Äëannual variability in the East Auckland Current
A. Subramanian	Impact of ocean observation systems on ocean analyses and subseasonal forecasts in the Indo-Pacific region
A. Tangborn	Assimilation of AOD retrievals in GEFS-Aerosols using a JEDI-based 3D-EnVar Hybrid System
J. While	Biases at the base of the mixed layer induced by 3DVar assimilation of sea surface temperature observations in ocean models.

Methodology

A. Castillo	Reconstructing the dynamics of the outer electron radiation belt by means of the standard and ensemble Kalman filter with the VERB-3D code
K. Chandramouli	Online nonlinear bias correction in ensemble Kalman filter to assimilate GOES-R all-sky radiances for the analysis and prediction of rapidly developing supercells
T. Chen	Assimilating various environmental features to train machine learning algorithms for sea ice drift prediction in the Arctic as a key geophysical parameter for understanding climate change
C. Da	Improving Tropical Cyclone Predictions by Assimilation of Satellite-Retrieved Surface Precipitation with Gaussian Transformation
A. Eichmann	Evaluation of Observation Impact and Low-Skill Forecasts in the NCEP Global Forecast System/Global Data Assimilation System using Ensemble Forecast Sensitivity to Observation Impact
T. Enomoto	Maximum Likelihood Ensemble Filter with Exact Newton Optimization
S. Frolov	Local volume solver with the static covariance model: LETKF-OI
T. Ishibashi	Improvement of Accuracy of Global Numerical Weather Prediction Using Refined Error Covariance Matrices
T. Koji	Including the spatial observation error correlation in data assimilation of AMSU-A radiances
N. Raboudi	Ensemble Kalman filtering with colored observation noise
M. Rancic	Preliminary Testing of a Multigrid Beta Filter Scheme for Modeling Background Error Covariances in NCEP's GSI
H. Ren	Effects of misspecified time-correlated model error in the (ensemble) Kalman Smoother
K. Sawada	Effects of suppressing supersaturation in a variational data assimilation system
Y. Shprits	Application of Data Assimilation to Reconstruct the State of the Near-Earth Space Environment and Issue Space Weather Predictions into the Future.
X. Tian	Development of the tangent linear and adjoint models of the MPAS-Atmosphere dynamic core and applications in adjoint relative sensitivity studies
S. Travova	Soil moisture assimilation system for multilayer soil model
J. Whitaker	Initializing high-resolution deterministic forecasts in hybrid-gain and hybrid-covariance ensemble DA systems
S.-C. Yang	Including observation error correlation for ensemble radar radial wind assimilation and its impact on heavy rainfall prediction

P4 - Thursday, 16 Sep 2021 (10:00-11:00, 13:00-14:00, 16:00-17:00)

Reanalysis

A. Andersson	Data rescue of national and international meteorological observations at Deutscher Wetterdienst
A. Arshad	Modeling impact of climate warming on cotton growth and phenology in Pakistan from 1961 to 2010 based on provincial data
S. Bal	Assessment of past and present human biometeorological environment over WB, India based on observations and Era-Interim
P. Chakraborty	Assessment of temperature extremes based on departures from long-term reanalysis and high-resolution ensemble forecasts over Indian region
Y. Harada	Early results of the evaluation of the JRA-3Q reanalysis
J. Herrera	The Panama Bight Index: a new index for the Eastern Tropical Pacific
B. Hoover	A kriging method for a gridded quantitative precipitation estimate over Alaska with uncertainty bounds
X. Liang	Analysis of the Wind Fields Based on Radar Network in the East Asia Reanalysis System
L. Lima	The 26-Year Black Sea Reanalysis
H. Naoe	Evaluation of the latest Japanese Reanalysis for three quarters of a century (JRA-3Q) during a pre-satellite era
A. Nunes	Advances in the Downscaling of Extreme Hydro-Events in South America
J. Ostermüller	Evaluation of (regional) reanalysis data using the Free Evaluation System Framework
F. Plöger	The stratospheric Brewer-Dobson circulation in ERA5 and ERA-Interim reanalyses
T. Rösch	Development and Quality Evaluation of an Operational Ensemble-based Regional Reanalysis System
P. Sapiega	Assessment of ERA-5 wave characteristics with in-situ measurements in Southern Baltic
Y.-C. Teng	Ocean Data Impacts on the Reanalysis of Atlantic Meridional overturning circulation in the Next Generation Global Ocean Data Assimilation System (NG-GODAS)
J.K. Vishal	Intercomparison of surface temperature estimates from IMDAA reanalysis with ERA5 and in-situ observations at selected locations over India
S. Wahl	Evaluation of multi-parameter dependencies in reanalyses
J. Woollen	The NCEP Reanalysis Observation Archive Contents and Formats
H. Zuo	The ORAP6 ocean and sea-ice reanalysis: description and evaluation on climate and forecasts

Observations

V. Acrc	Accuracy assessment of TRMM precipitation product in different Agro-Climatic Zones of Tamil Nadu, India
K. Bathmann	Assessment and Evaluation of Commercial GPS Radio Occultations in the NCEP Global Forecast System
F. Baur	Extending a forward operator for visible satellite channels by near-infrared and aerosol capabilities
T. Chen	Surveying ecology from UAV data using convolutional neural networks in hazard situations
K. Mohan	Impact of Satellite Radiance data assimilation on the prediction of extreme rain events in the haor basin area
S. El Mohtar	Bayesian Inference of Oil Spill Source Parameters from Image Contours
F. Fabry	Radar-measured near-surface refractivity: a rare representative constraint on the lower boundary layer
T. Gastaldo	Operational direct assimilation of radar reflectivity volumes with KENDA at Arpae-SIMC
H. Zhang	Evaluation of multiple GNSS radio occultation observation operators with JEDI
S. Kotsuki	Ensemble-Based Data Assimilation of GPM DPR Reflectivity into the Nonhydrostatic Icosahedral Atmospheric Model NICAM
V. Lehmann	DWD pilot station - Evaluating ground-based remote sensing systems for future observing networks
R. Mangla	Validation of the active microwave sensor module within the RTTOV-SCATT radiative transfer model
M. Mdini	3D Precipitation Nowcasting: RESNet applied to Highly Dense PAWR Data
R. Thundathil	Impact of ground-based water vapour and temperature lidar profiles on short-range forecast skill by means of hybrid 3DVAR-ETKF data assimilation
E. Villeneuve	A statistical evaluation of Bayesian inversions from infrared and microwave cloudy observations for future instruments MTG-FCI, MSG-MWI and MSG-ICI
X. Wu	Impact of Atmospheric River Reconnaissance Dropsonde Data on GFS Precipitation Forecasts: A Case Study

all times are in UTC

P5 - Friday, 17 Sep 2021 (10:00-11:00, 13:00-14:00, 16:00-17:00)

General DA

M. Burba	*Exploring the potential of nested EnVAR in the global-to-regional ensemble system at DWD*
P. Corrales	*Forecast Evaluation of a Deep Convection Case During Relampago Assimilating Conventional and Satellite Observations with the WRF-GSI-LETKF System*
T. Deppisch	*Assimilation of solar reflectances in a pre-operational online system with a local ensemble Kalman filter*
M. Destouches	*Hydrometeor control variables in the AROME-France 3DEnVar assimilation scheme*
L. Duc	*1000-member ensemble forecasts for extreme events: the 2019 typhoon Hagibis and the July 2020 Kyushu heavy rain*
T. Fujita	*Enhancement of Variational Assimilation of High-Frequency and High-Resolution Radial Winds*
N. Gasperoni	*Using a cost-effective approach to increase background ensemble size in EnVar to improve radar analyses and forecasts of convective systems*
S. Ulbrich	*Spin-up time from switching the microphysics scheme within the assimilation cycle and impacts on the precipitation forecast quality*
P.-Y. Wu	*The predictability of the moist convection over different mountain sizes and environmental flow conditions*

Methodology

T. Chen	*Timely allocation of resources after natural disasters: Deep learning as a tool for damage assessment and saliency mapping*
J. Hossen	*Using Machine learning techniques to switch background error distributions to improve data assimilation*
S. Karozis	*A Deep Learning approach for error correction of numerical weather prediction simulation data*
M. Mdini	*Accelerating Climate Model Computation by Neural Networks: A Comparative Study*
J. Purser	*Using a Neural Network to choose amplitude and anisotropy parameters of an adaptive background error covariance*
R. Stefanescu	*Towards Developing Radio Occultation Machine Learning Forward Operators*
Y. Wang	*Deep-Learning Augmented Data Assimilation: Reconstructing Missing Information With Convolutional Autoencoders*

Technical guidelines

General

The WCRP-WWRP Symposium on Data Assimilation and Reanalysis will be held fully virtual due to the ongoing pandemic situation. In order to let the experience come closer to that of an in-person meeting, we will use the platform Gather.town for the symposium (courtesy of ECMWF). The platform is browser-based and works with most of the common browsers (e.g., Chrome, Firefox) and operating systems.

In Gather.town, you will create an avatar which you can move around in a virtual conference center. You can visit the posters and access the oral presentations in dedicated rooms. Interactions with other participants will take place when you meet them in the hallways, at the posters or in other areas. Private spaces allow for smaller groups to retreat and have private discussions. We will enable the access to the platform before the meeting to allow the participants to get accustomed to it. Guidelines for using Gather.town will follow via email before the symposium takes place.

Oral presentations

- During the sessions, presenters will **share their screen** to show their slides. In case of technical issues, the session chairs can show the slides on their screen as a backup. Therefore, we would like to ask presenters to also **upload their presentation** in PDF format at least on the day prior to the talk. Details on how to upload the presentations will follow in the week prior to the symposium.
- The oral slots will be **15 minutes** consisting of **12 minutes** for the presentation and **3 minutes** for discussion. If you use all 15 minutes for your presentation, the discussion will be skipped.
- We suggest to use a 16:9 or 16:10 ratio for the presentation as this better fits the majority of screens.

Poster presentations

- Posters must be provided **before September 6**. Information on the upload process has been sent via email.
- Each poster session comprises 3 hours distributed over one day.
- All posters will be accessible during the whole symposium. Each poster has an assigned session (day) where the presenter is encouraged to be present.
- Posters have to be provided in PDF format.
- We suggest to use **landscape format** and similar settings as for printed posters (e.g., A0 format, high quality) for a better experience in gathertown.