

Diabatics 2026 Workshop

Diabatic processes across scales in the extratropics

28 April – 1 May 2026, Wolkersdorf, Austria

Program

28 April, Tuesday	
	Individual arrival at hotel
12:00-13:00	Lunch
13:00-13:30	Opening, welcome, logistics, and purpose of the workshop
13:30-15:00	Jets and waveguides (chairs: Heini Wernli and ECR – Henrik Auestad)
13:30-14:00	Andrew Winters * The Influence of Diabatic Processes on the Development, Predictability, and Future Changes of Polar–Subtropical Jet Superposition Events
14:00-14:15	Mona Bukenberger Diabatic influence on jet streak evolution and the impact of resolution on its representation
14:15-14:30	Hugo Banderier Role of diabatic processes for jet persistence
14:30-14:45	Nili Harnik The influence of large-scale moisture anomalies on anomalous jet stream merging
14:45-15:00	Ming Hon Franco Lee Potential vorticity modification by turbulence in the tropopause region
15:00-15:30	Coffee break
15:30-16:30	Storm tracks (chairs: Mark Rodwell and ECR – Jonathan Wille)
15:30-15:45	Andrea Marcheggiani Diabatic processes on synoptic timescales drive baroclinicity variability in midlatitude storm tracks
15:45-16:00	Jacopo Riboldi Diabatic modulation of land-sea contrast at the entrance of northern hemispheric storm tracks
16:00-16:15	Franziska Schnyder Mechanistic insights into the role of upstream diabatic cooling in modulating the North Pacific storm track
16:15-16:30	David Straus (given by Sarah-Jane Lock) The Influence of Stochastic Physics in the ECMWF IFS on the Diabatic Heating in the Storm Tracks: Growth of Uncertainty and Error in Storm Track Strength and Configuration.
16:30-17:00	<i>Plenary discussion</i>
17:00-18:00	Icebreaker at vineyard
18:00-	Dinner at vineyard

29 April, Wednesday	
09:00-10:30	Rossby waves, breaking and blocking (chairs: Nili Harnik and ECR – Alex Lojko)
09:00-09:30	Talia Brodsky * The role of diabatic heating in shaping the life cycle of Rossby Wave Breaking events
09:30-09:45	Pragallva Barpanda Diabatic effects of MJO on midlatitude blocking: New insights from the local wave activity framework
09:45-10:00	Michael Barnes Rossby wave breaking morphologies on the Southern Hemisphere dynamical tropopause

10:00-10:15	Rebecca Simpson	Testing Machine Learning Model Representation of Rossby Waves and Diabatic Processes in the Climate System
10:15-10:30	Seraphine Hauser	A quasi-Lagrangian perspective on the role of dry and moist processes in the formation of blocked North Atlantic-European weather regimes
10:30-11:00	Coffee break	
11:00-12:30	Cyclones (chairs: Suzanne Gray and ECR – Jake Keller)	
11:00-11:30	Ambrogio Volonté *	The role of diabatic processes in the dynamics of warm and bent-back fronts and in the evolution of sting jets
11:30-11:45	Tyler Leicht	A climatology of diabatically-driven wintertime extratropical cyclones in the North Atlantic
11:45-12:00	Andressa Andrade Cardoso	The role of diabatic processes in the predictability of Mediterranean cyclones
12:00-12:15	Brian Colle	Impact of Potential Vorticity Dipoles on the Lifecycle of Snow Multi-Bands in the Comma Head of Winter Storms
12:15-12:30	Chenhui Jin	Synoptic climatology of the extratropical transition of tropical cyclones in the Southern Hemisphere
12:30-13:30	Lunch	
13:30-14:00	Plenary Discussion	
14:00-15:30	Poster session (1) with Coffee, tea, and snacks	
15:30-18:00	Extended social time	
18:00	Dinner	

30 April, Thursday		
09:00-10:30	Predictability (chairs: Eigo Tochimoto and ECR – Kazumasa Sengoku)	
09:00-09:30	Michael Riemer *	Diabatic processes and the dynamics of the tropopause: implications for Rossby waves, blocking, and predictability
09:30-09:45	Jake Keller	Predictability of European Blocking and Storm Daniel Linked to Diabatic Processes during Hurricane Franklin's Extratropical Transition
09:45-10:00	John Methven	Upscale energy transfer and its links to convection, diabatic heating and predictability
10:00-10:15	Mark Rodwell	Estimating the role of mesoscale convective processes on global ensemble weather prediction
10:15-10:30	Sarah-Jane Lock	Exploring the impacts of SPP perturbations for diabatic processes in IFS ensemble forecasts
10:30-11:00	Coffee break	
11:00-12:30	Extratropical dynamics and linkages (chairs: Julian Quinting and ECR – Marc Federer)	
11:00-11:30	Hanna Joos *	Importance of diabatic processes for extratropical dynamics - a Lagrangian perspective
11:30-11:45	Eigo Tochimoto	Structure and evolution of Baiu frontal depressions and those associated extreme precipitation around Japan
11:45-12:00	Henrik Auestad	The latent heating feedback on the midlatitude circulation in a warming world
12:00-12:15	Corey Robinson	The role of diabetics in extratropical interactions with the tropical moist margin
12:15-12:30	Abel Shibu	Latent heating in a warmer world - a storm centric approach
12:30-13:30	Lunch	

13:30-15:00	Clouds and convection (chairs: Thomas Spengler and ECR – Kam Lam Yeong)	
13:30-14:00	Annika Oertel *	The influence of uncertainties in cloud microphysics and environmental conditions on warm conveyor belt ascent, associated precipitation characteristics and large-scale flow patterns
14:00-14:15	Alexander Lojko	Latent Heating Sensitivity Experiments to Assess the Role of North American Convection in the 2025 European Heatwave
14:15-14:30	Hisashi Nakamura	Radiative impact of summertime low-level clouds on local air-sea interactions and its broad indirect influences in the climate system
14:30-14:45	Edward Groot	Impact of convective precipitation on dynamics across climate zones and models: distinctive linear and off-linear model configurations?
14:45-15:00	Stephan Pfahl	The relationship between cold fronts and warm-season convection in Central Europe
15:00-16:30	Poster session (2) with coffee, tea, and snacks	
16:30-17:00	<i>Plenary discussion</i>	
17:00-18:00	<i>Preparation for group discussion</i>	
18:00	Dinner	

1 May, Friday	
09:00-10:30	<i>Group discussions</i>
10:30-11:30	Coffee break and check out
11:30-12:30	<i>Reporting to plenary and plenary discussion lead by SOC</i>
12:30-13:30	Lunch
	Individual departure

Poster session 1	
Rhiannon Biddiscombe	Quantifying contributions of latent heating to baroclinicity in the North Atlantic storm track in terms of entropy tendencies.
Rémi Bouffet-Klein	Moisture sources for warm conveyor belts
Nicolas Chiabrande	Role of diabatic and frictional processes in low-level jets of Arctic Cyclones
Yu Du	Generation of Convectively Forced Gravity Waves and Their Impacts on Convection
Viktoria Dürlich	Investigating model biases in the cold sector of extratropical cyclones during dry intrusions
Marc Federer	Moisture hand-over and the supply of warm conveyor belt inflow in the storm tracks
Or Hadas	A Lagrangian perspective on cloud-circulation coupling
Behrooz Keshtgar	Cloud-Radiative Impact on the Dynamics of Extratropical Cyclones during NAWDEX
Danqing Luo	Quantifying the importance of diabatic processes in the operational prediction of hazardous Mediterranean storm Daniel
Tuule Mürsepp	The role of radiation in the Northern Hemisphere troposphere-to-stratosphere transport
Kosei Ohara	Evaluation of Reanalysis Datasets in Terms of Diabatic Generation of Available Potential Energy
Iago Perez Fernandez	Seasonal and synoptic scale circulation linked to dry spring conditions in Brazil
Jerry Biju Samuel	The representation of cloudbands over South America in state-of-the-art seasonal forecast systems.
Andrea Marcheggiani	Impact of the distribution of sea surface temperature on the maintenance of storm tracks
Ambrogio Volonté	What are the airstreams causing extreme winds in non-medicane Mediterranean cyclones?

Poster session 2	
Suzanne Gray	The attribution of geostrophic and diabatic forcing to the transition of a summertime Arctic cyclone to axisymmetric cold-core structure
McKenzie Larson	Future Changes to Extreme Downslope Windstorms Across the Northern Colorado Front Range
Satoru Okajima	Instantaneous jet-type classification and the midwinter suppression of the North Pacific eddy activity
Julian Quinting	First insights into NAWDIC
Clairisse Reiher	Characteristics of North American Polar–Subtropical Jet Stream Superpositions in CESM2 Climate Projections
Marcelo Rodrigues de Souza	Sensitivity of Extratropical Cyclone Intensification to Diabatic and Baroclinic Drivers
Henry Schoeller	Model uncertainty patterns for Euro-Atlantic weather regimes
Kazumasa Sengoku	Detailed Assessment of the Contribution of Precipitation-Induced Diabatic Cooling Processes to the Development of Cold-Air Damming in the Kanto Plain, Japan
Thando Ndarana	Recurring Rossby wave breaking and diabatic outflows during the South African April 2022 extreme rainfall event
Thomas Spengler	Impact of Diabatic Heating on Cyclone Forecast Biases
Salman Tariq	A review on remote sensing insights into diabatic aerosol–heat interactions and their role in extratropical circulation
Heini Wernli	The interaction of warm conveyor belt outflows with the upper-level waveguide: examples, classification, and predictability
Jonathan Wille	Examining atmospheric river life cycles in East Antarctica
Kam Lam Yeung	Mesoscale variability of thermodynamic and dynamic properties associated with convection embedded in cold frontal regions: insights from NAWDIC
Or Hadas	A Lagrangian Perspective on Momentum Transfer from Storm Tracks to the Ocean

Participants

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