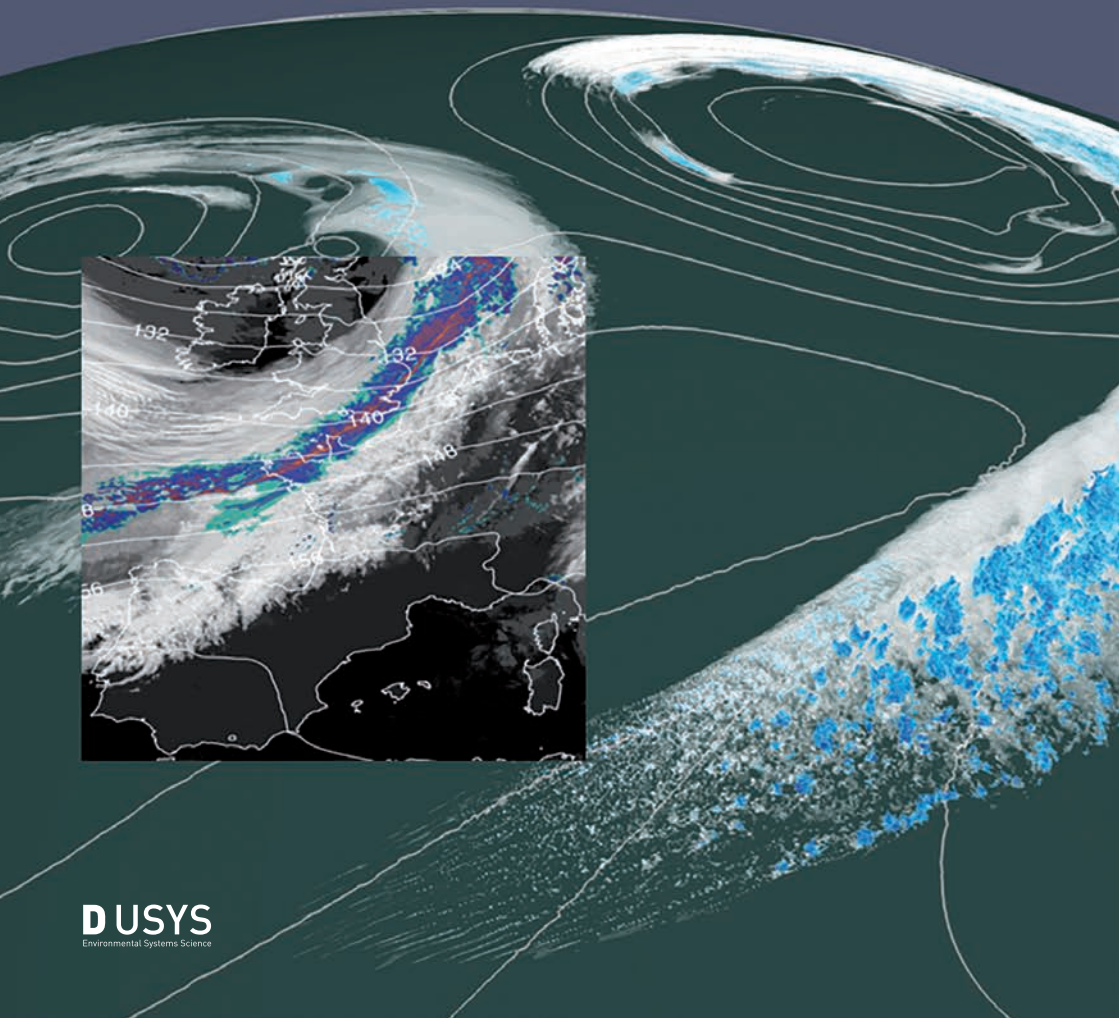
ETH zürich

LATSIS SYMPOSIUM 2019

High-Resolution Climate Modeling: Perspectives and Challenges

August 21 – 23, 2019, ETH Zürich

FONDATION LATSIS
Internationale



D USYS
Environmental Systems Science

Wednesday, August 21

08:15 **Registration** (ETH Zürich Main Hall, Rämistrasse 101, 8092 Zürich)

SESSION 1 (Chair: Linda Schlemmer)

09:00 Nina Buchmann, ETH Zürich, Head of D-USYS
Opening

09:10 Frédéric Merkt, Latsis Foundation
What is the Latsis Foundation?

09:20 Christoph Schär, ETH Zürich, Atmospheric and Climate Science
Introductory remarks

09:30 Bjorn Stevens, MPI-Met, Hamburg
Next Generation Climate Models

10:00 L. Ruby Leung, PNNL, Richland
Modeling Mesoscale Convective Systems and Their Large-Scale Environments

10:30 **Break**

SESSION 2 (Chair: Roy Rasmussen)

11:00 Thomas Schulthess, CSCS, Lugano
Bridging the Software and Performance Gap to Exascale for Weather and Climate

11:30 Nicholas Weber, University of Washington
The impacts of convection-permitting resolution on extended global prediction in MPAS

11:45 Chia-Ying Tu, Academia Sinica
Applications of Variable-Resolution GCM for Weather and Climate Research

12:00 Thomas Arsouze, Barcelona Supercomputing Center
A very-high resolution configuration of the EC-Earth climate model: focus on the role of mechanical air-sea interactions.

12:15 Cliff Mass, University of Washington
Ensemble-based High-Resolution Regional Climate Modeling

12:30 **Lunch and Posters**

SESSION 3 (Chair: Veronika Eyring)

13:30 Peter Bauer, ECMWF, Reading
European leadership in defining the future role of high-performance computing, big data handling and artificial intelligence in numerical weather and climate prediction

14:00 Hsin-I Chang, University of Arizona
Towards Improvement in Convective Precipitation Forecast in the South-west United States using Convective-Permitting Regional Climate Model

14:15 Steven Chan, Newcastle University
Recent developments in convection-permitting climate modelling at the UK Met Office

14:30 Marat Khairoutdinov, Stony Brook University New York
Preliminary results from Global SAM

14:45 Colin Manning, Newcastle University
Does a convection permitting climate model improve the representation of wind gusts across Europe?

15:00 **Break and Posters**

SESSION 4 (Chair: David Leutwyler)

16:00 Nikolina Ban, ETH Zürich, Atmospheric and Climate Science
Exploiting kilometer-scale resolution for climate change simulation over Europe

16:30 Bodo Ahrens, Goethe University Frankfurt am Main
Space-time dynamics of convective rain cells in climate change simulations

16:45 Geert Lenderink, KNMI, De Bilt
Evaluating rainfall statistics in convection-permitting simulations using a dew point temperature scaling framework

17:00 Alex Hall, UCLA, Los Angeles
Why changes in extreme precipitation are different upon downscaling: a case study in California

17:15 Andreas Dobler, Norwegian Meteorological Institute
Using km-scale observations to evaluate convection permitting simulations for Norway – or vice versa?

17:30 **End of session**

18:00 Reto Knutti, ETH Zürich, Atmospheric and Climate Science
Public lecture: Why do we need better climate models?

Thursday, August 22

SESSION 5 (Chair: Adel Imamovic)

09:00 Tim Palmer, University of Oxford
Reduced precision for high resolution

09:30 Pier Siebesma, Delft University of Technology
LES based regional superparameterisation of the marine subtropics

09:45 Neil Hart, University of Oxford
Why convective-permitting models are needed for simulating subtropical weather and climate

10:00 Jesus Vergara Temprado, ETH Zürich, Atmospheric and Climate Science
The effects of switching-off parameterized convection at grey-zone resolutions

10:15 Lorenzo Tomassini, Met Office, Exeter
The Grey Zone Project: an intercomparison project of scale-aware approaches to turbulence and convection

10:30 Break

SESSION 6 (Chair: Klaus Goergen)

11:00 Jed Brown, University of Colorado
Algorithms, architectures, and community for high-resolution climate modeling

11:30 Shun-ichi Watanabe, Japan Meteorological Business Support Center
Coupled atmosphere-ocean regional climate model for Japan and surrounding ocean

11:45 Mathias Aschwanden, University of Bern
Modelling marine heatwaves using high resolution Earth system models

12:00 Danijel Belusic, SMHI, Norrköping
Benefits of sub-kilometer dynamical downscaling for urban areas

12:15 Josipa Milovac, University of Cantabria
Sensitivity of a high-resolution RCM to land-surface forcing in representing land-atmosphere feedbacks

12:30 Lunch and Posters

SESSION 7 (Chair: Xavier Lapillonne)

13:30 Oliver Fuhrer, MeteoSwiss, Zurich
What does it take to achieve global 1 km resolution climate simulations?

14:00 Pier Luigi Vidale, University of Reading
Suppression of Semi-Lagrangian advection near the poles in Global Storm Resolving Models

14:15 Hui Wan, PNNL, Richland
Time-step convergence as a useful verification method for atmosphere modeling

14:30 Hans Johansen, LBNL, USA
Adaptive Mesh Refinement for Global Nonhydrostatic Atmospheric Simulations

14:45 Andrey Martynov, University of Bern
Simulated hailstorms over Switzerland in May 2018 in current and future climate conditions

15:00 Break and Posters

SESSION 8 (Chair: Ivonne Anders)

16:00 Hiroaki Kawase, MRI-JMA, Japan
Future projection of snowfall and snow depth in Japan using non-hydrostatic regional climate model

16:30 Stefan Sobolowski, NORCE Norwegian Research Centre
Future precipitation changes over the Alpine region in a multi-model convection-permitting ensemble: a first look

16:45 Ségolène Berthou, Met Office, Exeter
Enhanced future changes in wet and dry extremes over Africa at convection-permitting scale

17:00 Russell Glazer, ICTP, Trieste
Convection Permitting Lake-Coupled Simulations of the Lake Victoria Basin

17:15 Petter Lind, SMHI, Norrköping
20-year simulations over the Nordic region with a convection-permitting climate model – benefits and added value of kilometer-scale resolution

17:30 End of session

19:00 Conference Dinner
(Lake Side, Bellerivestrasse 170, Zurich » plan on page 10)

Friday, August 23

SESSION 9 (Chair: Susanne Brienen)

09:00 Christopher Bretherton, University of Washington
Is tropical cyclogenesis unexpectedly predictable?

09:30 Takanobu Yamaguchi, University of Colorado
Ameliorating low cloud representation in km-scale global and regional models using the Framework for Improvement by Vertical Enhancement

09:45 Laureline Hentgen, ETH Zürich, Atmospheric and Climate Science
Clouds in extended convection-resolving climate simulations over the tropical Atlantic

10:00 Pierre Gentine, Columbia University, New York
Harvesting high-resolution data

10:15 Bettina Meyer, University of Copenhagen
Cold pool collisions as a crucial forcing for convective triggering

10:30 Break

SESSION 10 (Chair: Heini Wernli)

11:00 Andreas Prein, NCAR, Boulder
Simulating Organized Convective Storms in Climate Models

11:30 Input presentations and podium (Moderator: Heini Wernli)

Roy Rasmussen:	What observations do we need?
Oliver Fuhrer:	What programming languages should we use?
Thomas Schulthess:	What hardware will we be using?
Linda Schlemmer:	Are there any new ethical and data policy issues?
L. Ruby Leung:	What is the role of governmental institutions?
Bjorn Stevens:	What science topics should we address?
Pier Luigi Vidale:	How will CMIP integrate km-scale simulations?

13:00 Closing

Posters

Poster size is A0 portrait (84 cm wide). The posters will be up during the entire event. Presenters are asked to be present at their poster in one of the afternoon breaks. Odd numbers: Wednesday 21st, even numbers: Thursday 22nd

1 Sachiho A. Adachi **RIKEN, Japan**
Characteristics of nonlinearity between mean state change and perturbation change

2 Ivonne Anders **ZAMG, Vienna**
Influence of spectral nudging on convection permitting simulations

3 Susanne Brienen **DWD, Offenbach**
Analysis of convection-resolving COSMO-CLM simulations for Germany

4 Roman Brogli **ETH Zürich, Atmospheric and Climate Science**
Are Pseudo-Global Warming Simulations Suitable to Assess Climate Change?

5 Mike Bush **Met Office, Exeter**
The Met Office Unified Model/JULES Regional Atmosphere and Land (RAL) configurations: Developing a unified science configuration for Convection-Permitting Climate and NWP simulations.

6 Miguel Castrillo **Barcelona Supercomputing Center**
Driving Earth System Models to groundbreaking resolutions

7 Hsin-I Chang **University of Arizona**
Extreme weather impact assessment in Saudi Arabia and operational to sub-seasonal forecasting

8 Lluís Fita Borrell **Centro de Invest. del Mar y la Atmósfera (CIMA)**
Exploration of land-atmosphere interaction with CP climate simulations

9 Barbara Früh **DWD, Offenbach**
ICON-CLM – a new regional climate model for the CLM-Community

10 Marco Giorgetta **MPI-Met, Hamburg**
The quasi-biennial oscillation in an idealized model of tropical convection

11 Klaus Goergen **FZ Julich**
Soil moisture-temperature coupling in a CORDEX FPS convection permitting WRF RCM ensemble

12 Santos J. Gonzalez-Roji **University of Bern**
Sensitivity of high-resolution precipitation and temperature to physics parameterization options in WRF over equatorial regions

13 Tomas Halenka **Charles University, Prague**
On the urban effects in high resolution regional climate simulations

14 Christoph Heim **ETH Zürich, Atmospheric and Climate Science**
The Influence of the Resolution of Topography and Surface Fields on the Simulation of Orographic Moist Convection

15 Adel Imamovic **ETH Zürich, Atmospheric and Climate Science**
Do springtime soil moisture anomalies matter for Midlatitude summer precipitation? Lessons from idealized and continental-scale climate simulations at kilometer-scale resolutions

16 Dirk Nikolaus Karger **Swiss Federal Research Institute WSL**
Bridging the gap – downscaling precipitation and temperatures to very high resolutions

17 Eleni Katragkou **Aristotle University of Thessaly**
Investigating biases in the regional climate simulation of WRF-AUTH in the framework of the CORDEX FPS on Convective phenomena at high resolution over Europe and the Mediterranean.

18 Sven Kotlarski **MeteoSwiss, Zurich**
The added value of high resolution climate modelling for climate services

19 Matthieu Leclair **ETH Zürich, IBPD**
ROMSOC - A high-resolution regional earth system model for eastern boundary upwelling systems

20 David Leutwyler **MPI-Met, Hamburg**
Barotropic Instability of a Cyclone Core at Kilometer-Scale Resolution

21 David Lindstedt **SMHI, Norrköping**
Validation of the snow climate in a regional climate model at 3 km grid spacing over Scandinavia

22 Kai Lochbihler **KNMI, De Bilt**
Response of extreme precipitating cell structures to atmospheric warming

23 Samuel Lüthi **ETH Zürich, Atmospheric and Climate Science**
Alpine Snow Cover in Kilometer-Scale Climate Simulations

24 Priscilla A. Mooney **NORCE Norwegian Research Centre**
Investigating the impact of anthropogenic land cover changes with a convection permitting model

25 Masuo Nakano **JAMSTEC, Japan**
Single Precision in the Nonhydrostatic Icosahedral Atmospheric Model (NICAM)

26 Rasmus Anker Pedersen **Danish Meteorological Institute, Denmark**
Future climate change in the Nordic region – new insights from a convection-permitting climate model

27 Stefan Rüdisühli **ETH Zürich, Atmospheric and Climate Science**
Attribution of Precipitation to Cyclones and Fronts Over Europe in a Kilometer-Scale Regional Climate Simulation

28 Christoph Schär **ETH Zürich, Atmospheric and Climate Science**
Exploring kilometer-scale climate modeling strategies

29 Reinhard Schiemann **NCAS, United Kingdom**
COnective-Scale Modelling in China – forcings, variability, and upscale effects (COSMIC)

30 Linda Schlemmer **DWD, Offenbach**
The Atmospheric Boundary Layer in Numerical Weather Prediction

31 Michael Sprenger **ETH Zürich, Atmospheric and Climate Science**
Lagrangian Perspective of Orographic Blocking

32 Christian Steger **ETH Zürich, Atmospheric and Climate Science**
Considering topographic effects on surface radiation in a kilometre-scale climate model simulation with a focus on snow cover

33 Paolo Stocchi **ICTP, Italy**
Analysis of climatic simulations by RegCM4 at convection permitting scale

34 Peter Stucki **University of Bern**
Simulations of the 1876, 1910 and 2005 Vb cyclones over the Alps – Sensitivity to model physics and cyclonic moisture flux

35 Fengpeng Sun **University of Missouri**
Investigation of Climatic Impacts of Urbanization in Kansas City Metropolitan Area and Mitigation Potentials

36 Jozef Syktus **The University of Queensland**
High-resolution Climate Change Projections for Queensland

37 Heimo Truhetz **University of Graz**
Effects of a shallow convection scheme in perennial convection permitting CORDEX-FPS WRF simulations

38 Stefano Ubbiali **ETH Zürich, Theoretical Physics**
A Python-based approach to the physics-dynamics coupling in atmospheric models

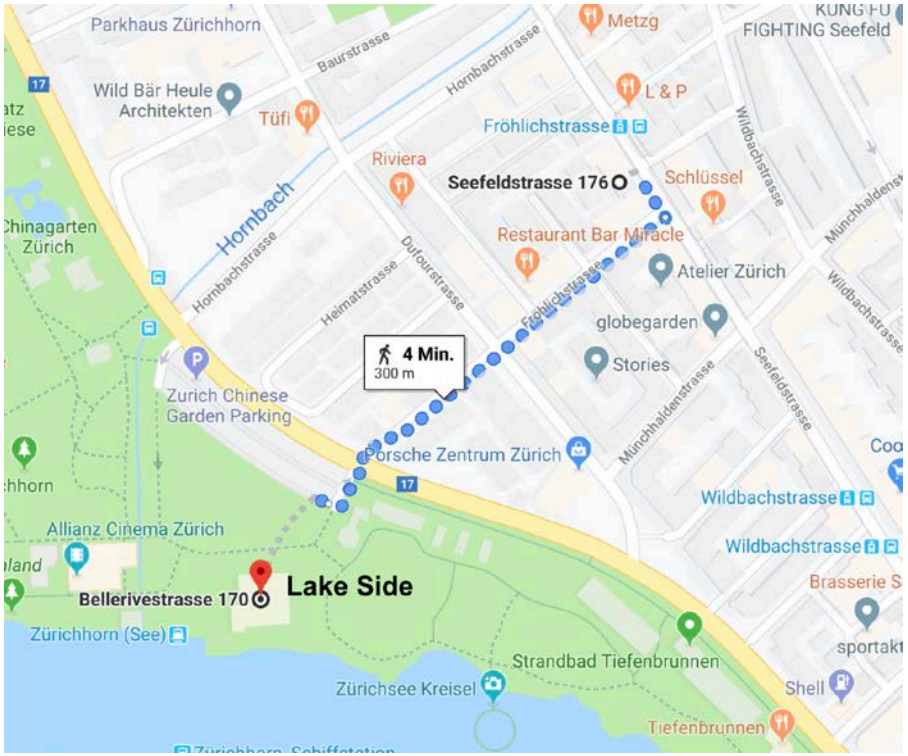
39 Benoît Vannière **NCAS, United Kingdom**
The water budget of tropical cyclones, from GCMs to convection-permitting models.

40 Ziwei Wang **The University of Chicago**
Model performance in reproducing observed CAPE distributions

41 Christian Zeman **ETH Zürich, Atmospheric and Climate Science**
Model evaluation at convection-resolving scales: Intercomparison and sensitivity analysis of global versus regional models

Conference Dinner Thursday, 22. August 2019

Latsis Symposium 2019
Lake Side, Bellerivestrasse 170, 8008 Zürich



From ETH take tram number 9 to "Bellevue". Change to tram 2 or 4 until stop "Fröhlichstrasse" direction Tiefenbrunnen (duration 20 minutes).

It is a five minutes walk to the restaurant Lake Side.

ETH zürich

FONDATION LATSIS Internationale

Contact

ETH Zürich
Department of Environmental Systems Science
Institute for Atmospheric and Climate Science
Universitätsstrasse 16
8092 Zürich

→ www.latsis2019.ethz.ch
→ www.usys.ethz.ch