



ENES Workshop on
**Exascale Technologies & "Innovation in HPC
 for Climate Models**

Cap San Diego, Überseebrücke, 20459 Hamburg

Monday March 17th

speakers, chairs & moderators

10:00-11:00

Registration

11:00-11:30

Welcome session

Welcome and opening remarks
 Introduction to (IS)ENES. Review of workshops 1 & 2 (Lecce / Toulouse)

Joachim Biercamp (DKRZ, DE)
 Sylvie Joussaume (IPSL, FR)

11:30-15:00

Session 1 – Future trends in climate science & related HPC challenges

Reinhard Budich (MPIMet, DE)

11:30-12:00

Scientific challenges in climate modeling

Jochem Marotzke (MPIMet, DE)

12:00-12:30

Scalable Software Development for Climate Models (tbc)

Thomas Schulthess (ETH & CSCS, CH)

12:30-13:00

Overview from US

Venkatramani Balaji (Princeton Univ. & GFDL, US)

13:00-14:00

Lunch

14:00-14:30

Refactoring CESM for exascale

Rich Loft (NCAR, US)

14:30-15:00

The Upscale project

Pier-Luigi Vidale (Univ Reading & NCAS, UK)

15:00-17:30

Session 2 - Status of EU Exascale projects

Marie Alice Foujols (IPSL, FR)

15:00-15:25

CRESTA, Collaborative Research Into Exascale Systemware, Tools & Applications

Erwin Laure (KTH Royal Institute of Technology, SE)

15:25-15:50

DEEP, Dynamical Exascale Entry Platform

Hendrik Merx (MPIC & CYI, DE)

15:50-16:15

Break

16:15-16:40

MONT-BLANC, European scalable and power efficient HPC platform based on low-power embedded technology

Paul Carpenter (BSC, SP)

16:40-17:05

EESI 2, European Exascale Software Initiative

Phillipe Ricoux (Total, FR)

17:05-17:30

EXA2CT, EXascale Algorithms & Advanced Computational Techniques

Marie-Christine Sawley (Intel FR)

17:30-18:30

General Discussion on Session 1 & 2

Sylvie Joussaume (IPSL, FR)

18:30

End of the 1st Day

Tuesday March 18th

speakers, chairs & moderators

8:30-9:30

Session 3 - Status of EU G8 projects

Giovanni Aloisio (CMCC, IT)

08:30-08:50

G8 ESC, Enabling Climate Simulations at Extreme Scale

Rich Loft (NCAR, US)

08:50-09:10

ICOMEX, ICOSahedral-grid Models for EXascale Earth system simulations

Julian Kunkel (DKRZ, DE)

09:10-9:30

EXARCH, climate analytics on distributed EXascale data ARCHives

Martin Juckes (BADG, UK)

9:30-14:00

Session 4 - HPC Software challenges & solutions for the climate community

Uwe Fladrich (SMHI, SE)

9:30-9:50

The use of GPU in Climate models

Will Sawyer (CSCS, CH)

9:50-10:10

Porting the COSMO model to GPUs

Xavier Lapillonne (MeteoSuisse, CH)

10:10-10:40

Break

10:40-11:00

Experiences with XEON PHI in the Max-Planck-Society

Markus Ramp (RZG, DE)

11:00 -11:20

Results on XEON PHI at GFDL

Christopher Kerr (GFDL, US)

11:20-11:40

Experiences with MIC at the MetOffice

Christopher Maynard (MetOffice, UK)

11:40-12:00

Why Compilers and workflow matter

Luis Kornblueh (MPIM, DE)

12:00 -12:20

Numerical Libraries and Framework (PETSc)

Jed Brown (Argonne, US)

12:20-13:20

Lunch

13:20-13:40

Performance tools (Paraver/Dimemas)

Jesus Labarta (BSC, SP)

13:40-14:00

The ECMWF Scalability Project

Peter Bauer (ECMWF, UK)

14:00-15:30

Session 5 - New Parallel Approaches at Exascale

Graham Riley (UniMan, UK)

14:00-14:30

Hybrid Programming

William Gropp (UIUC, US)

14:30-15:00

Communication-Avoiding Algorithms

Laura Grigori (INRIA, F)

15:00-15:30

Talk on space-time parallelization

Yvon Maday (UPMC, F)

15:30-16:00

Break

16:00-17:00

General discussion on sessions 3, 4 & 5

Reinhard Budich (MPIMet)

17:00 - 18:30

Session 6 – Working session on performance intercomparisons of climate models

Jean-Claude André (F)

17:00-17:10

Introduction (output from the Toulouse workshop)

Jean-Claude André

17:10-17:20

Performance measurements of HPC-applications at LRZ

Gilbert Brietzke (LRZ, DE)

17:20-17:30

A metric for computational performance based on SYPD

Balaji (GFDL, US)

17:30-18:15

Open Discussion

18:15-18:30

Summary

Sylvie Joussaume

18:30

End of the 2nd Day

19:30

Dinner at Gröniger Brauhaus (Microbrewery)

08:30-11:30	Session 7 - HPC Hardware challenges & solutions for the climate community	Joachim Biercamp (DKRZ, DE)
08:30-08:55	Weather and Climate roadmap to extreme scale: the Intel perspective	Marie-Christine Sawley (Intel, F)
08:55-09:20	Designing a Highly Redundant Maintenance and Distribution System for Critical Research Data	Dave Fellingner (DDN, US)
09:20-09:45	A use case (based on NEMO)	Damien Declat & Franck Vigilant (Bull SA)
09:45-10:10	Load unbalance : a major bottleneck for climate applications on exascale systems	Francois Thomas & Christoph Pospiech (IBM)
10:10-10:40	Break	
10:40-11:05	Architectures for Extreme Scale Earth System Modeling	Per Nyberg (Cray)
11:05-11:30	SX-ACE technology and future visions	Rudi Fischer (NEC)
11:30-11:50	NVIDIAS perspective on EXASCALE	Stan Posey (NVIDIA)
11:50-14:35	Session 8 - Porting Climate Codes on top-of-the edge machines	Sophie Valcke (CERFACS, FR)
11:50-12:10	From Gung Ho to LFRic - replacing the Met Office Unified Model	Steve Mullerworth (Met Office, UK)
12:10-12:30	ICON for HD(CP)2 (High definition clouds and precipitation for climate prediction)	Panagiotis Adamidis (DKRZ, DE)
12:30-12:50	The SPRUCE Project	Eric Maisonnave (CERFACS, F)
12:50-13:50	Lunch	
13:50-14:10	The HiResClim and SPECS Projects	Francisco J. Doblas-Reyes (IC3)
14:10-14:30	DYNAMICO	Yann Meurdesoif (IPSL, FR)
14:30-15:15	General discussion on sessions 7 & 8	Bryan Lawrence (NCAS, UK)
15:15-17:00	Session 9 - Center of Excellence on Climate	Sylvie Joussaume (IPSL, FR)
15:15-15:45	Status of Commission initiatives	Sylvie Joussaume (IPSL, FR) and participants from task force
15:45-16:45	Open Discussion	
16:45-17:00	Summary and further actions	Sylvie Joussaume (IPSL, FR)
17:00	End of the Joint Workshop	