8th ENES HPC Workshop
on "HPC for high-resolution climate and weather modelling"
organized by ESiWACE

Lecce, CMCC Foundation, Via M. Biagi, 5
22-24 May 2024

Wednesday, 22 May		
14:00-14:30 h	*Registration & Welcome coffee*	
14:30-14:40 h	**Welcome session**	
14:30-14:35 h	Welcome	Italo Epicoco - CMCC, IT
14:35-14:40 h	Workshop introduction and opening remarks	Joachim Biercamp - DKRZ, DE
14:40-18:20 h	**Session 1 – European and International Landscape**	**Chairs:** **Joachim Biercamp, DKRZ, DE** **Erwan Raffin, ATOS, FR**
14:40-15:05 h	Feasibility study for the next flagship supercomputer development and high-resolution climate modelling efforts in Japan	Hisashi Yashiro - NIES, JP *in-person attendance*
15:05-15:30 h	Jules Verne consortium: toward a French and European Exascale Ambition	Corinne Béal - GENCI, FR *in-person attendance*
15:30-15:55 h	Latest developments in the DestinE framework	Nils Wedi - ECMWF, EU *virtual attendance*
15:55-16:20 h	JUPITER - Exascale computing for European climate research	Lars Hoffmann - JSC, EU *in-person attendance*
16:20-16:40 h	*Coffee break*	
16:40-17:05 h	Update on E3SM and exascale readiness in the US	Robert Jacob - Argonne National Lab, US *in-person attendance*
17:05-17:30 h	HPC enabled Cyberinfrastructure development for integrated environment modelling and services in India	Akshara Kaginalkar - former C-DAC, IN *virtual attendance*

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17:30-17:55 h	EU chips for HPC: the contribution of the European Processor Initiative & EUPEX	Etienne Walter - Eviden, EU *in-person attendance*
17:55-18:20 h	High-Resolution Climate Modeling and Prediction in China	Yongquiang Yu - IAP/CAS, Ocean University of China *in-person attendance*
18:20-18:50 h	**General discussion & end of day 1**	

Note: time for speakers includes 5 minutes for questions

Thursday, 23 May		
09:00-09:30 h	*Welcome coffee*	
09:30-13:10 h	**Session 2 – Data workflow**	**Chairs:** **Uwe Fladrich, SMHI, SE** **Sandro Fiore, UniTrento, IT**
09:30-09:55 h	Innovations in data handling associated with the CANARI large ensemble programme and the UK exascale software programme Excalibur	Bryan Lawrence - NCAS, UK *virtual attendance*
09:55-10:20 h	ESGF and preparations for CMIP7	Dave Poulter - UKRI, UK *in-person attendance*
10:20-10:45 h	Scientific data valorisation on federated, national compute resources in EGI	Gergely Sipos - EGI, EU *virtual attendance*
10:45-11:10 h	Destination Earth Data Lake - Services & Interaction with HPC sites	Michael Schick - EUMETSAT, DE *in-person attendance*
11:10-11:30 h	*Coffee break*	
11:30-11:55 h	Certification of Archives	Andrea Lammert - DKRZ, DE *virtual attendance*

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11:55-12:20 h	Metadata Advances in Support of Earth System Modelling	David Hassell - NCAS, UK *in-person attendance*
12:20-12:45 h	Climate indices for model evaluation and user applications	Lars Bärring - SMHI, SE *in-person attendance*
12:45-13:10 h	Multi-level provenance management in climate scientific workflows	Sandro Fiore - UniTrento, IT Fabrizio Antonio - CMCC, IT *in-person attendance*
13:10 -14:10 h	*Lunch break*	
14:10-18:30 h	**Session 3 – Performance and accelerators** ***In memory of Rupert Ford***	**Chairs:** **Mario Acosta, BSC, SP** **Sophie Valcke, CERFACS, FR**
14:10-14:25 h	**In memory of Rupert Ford** (including one minute of silence)	
14:25-14:50 h	PSyclone: a source-to-source compiler to achieve Fortran performance portability	Sergi Siso - STFC, UK *in-person attendance*
14:50-15:15 h	Managing I/O performance in LFRic with XIOS	Harry Shepherd - MetOffice, UK *in-person attendance*
15:15-15:40 h	The Loki source-to-source tool and GPU adaptation at ECMWF	Michael Lange - ECMWF, UK *in-person attendance*
15:40-16.05 h	Comparison of eddy-permitting, eddy rich and sub-mesoscale permitting global configurations based on NEMO 4.2 OGCM	Clément Bricaud, Mercator, FR *virtual attendance*
16:05-16:25 h	*Coffee break*	
16:25-16:50 h	Performance optimisation of ultra-high resolution earth system models on GPUs	John Dennis - NCAR, US *virtual attendance*

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16:50-17:15 h	Ongoing development of the new Eulerian sea-ice model neXtSIM-DG: a focus on the scalability and parallelisation strategies	Laurent Brodeau, CNRS, FR *virtual attendance*
17:15-17:40 h	DestinE: DT weather extremes (TBD)	Piet Termonia - Météo-France, FMI, BE *virtual attendance*
17:40-18:05 h	DestinE: DT climate (IFS-NEMO, IFS-FESOM, ICON)	Mario Acosta - BSC, SP *in-person attendance*
18:05-18:30 h	**General discussion & end of day 2**	
20:30 h	**Social dinner (place to be determined)**	

Note: time for speakers includes 5 minutes for questions

Friday, 24 May		
09:00-09:30 h	*Welcome coffee*	
09:30-16:00 h	**Session 4 – Machine Learning**	**Chairs:** **Giovanni Aloisio, CMCC, IT** **Peter Dueben, ECMWF, UK**
09:30-09:55 h	Understanding and modelling the Earth System with Machine Learning	Veronika Eyring - DLR, DE *virtual attendance*
09:55-10:20 h	Data-driven weather forecasting at ECMWF	Simon Lang - ECMWF, UK *virtual attendance*
10:20-10:45 h	Machine Learning Downscaling	Laure Raynaud - MétéoFrance, FR *virtual attendance*
10:45-11:05 h	*Coffee break*	
11:05-11:30 h	End-to-end learning for ocean modelling, monitoring and forecasting	Ronan Fablet - IMT Atlantique, FR

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		virtual attendance
11:30-11:55 h	Atmorep	Ilaria Luise - CERN, CH *in-person attendance*
11:55-12:20 h	Using ChatGPT to Translate and Modernize an Earth System Model from Fortran to Python/JAX	Anthony Zhou - Columbia University, US *virtual attendance*
12:20-12:45 h	PanguWeather	Lingxi Xie - Huawei Research, CN *virtual attendance*
12:45-13:10 h	DiffDA: a diffusion model for weather-scale data assimilation	Langwen Huang - ETH, CH *in-person attendance*
13:10-14:30 h	*Lunch break*	
14:30-14:55 h	Why all emergent constraints are wrong but some are useful - a machine learning perspective	Peer Nowack - KIT, DE *in-person attendance*
14:55-15:20 h	Improving parameterisation of convective momentum transport through machine learning	Paul O'Gorman, MIT, US *virtual attendance*
15:30-16:00 h	**Closing remarks and end of the workshop**	

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