

## 7th ENES HPC Workshop

**Monday, May 9 2022 - Wednesday, May 11 2022**

**Barcelona Supercomputing Center (BSC), Spain**

**Sala de Junes, Rectorat UPC**

### Monday 9 May

13:00	Welcome & Introduction		
13:10	<b>Session 1: European and International Landscape</b>	<b>Joachim Biercamp &amp; Jenni Kontkanen</b>	
13:10	Strengthening the European HPC communities by addressing the skills and competence level	Bastian Koller	HLRS, CASTIEL, EuroCC,
13:35	Lumi - the first EuroHPC pre-exa system	Jenni Kontkanen	CSC
14:00	ARMing the IFS: Experiments and experiences from porting the ECMWF model to Fugaku	Samuel Hatfield	ECMWF
14:25	<i>Break</i>		
14:45	Numerical Climate and Weather Modeling on the China Earth System Simulator	Yongqiang Yu	LASG, Institute of Atmospheric Physics
15:10	DestinE: opportunities & challenges for digital twins of the Earth System	Nils Wedi	ECMWF
15:35	HPC Challenges for CMIP: lessons from CMIP6 and potential next steps	Jean François Lamarque	NCAR
16:00	<i>Coffee break</i>		
16:30	<b>Session 2: Mix traditional modeling with ML</b>	<b>Jean-Claude André &amp; V. Balaji</b>	
16:30	Machine learning for weather and climate predictions	Peter Dueben	ECMWF
17:00	High-Tune Explorer: a tool to accelerate model calibration based on process-oriented metrics	Fleur Couvreur	Météo-France
17:25	Skilful precipitation nowcasting using deep generative models of radar	Suman Ravuri	Google Deep Mind
17:50	Fourier Neural Operators for Fast Weather Modeling	Anima Anandkumar	CalTech & NVIDIA
18:15	Building digital twins of the Earth for NVIDIA's Earth-2 initiative	Karthik Kashinath	NVIDIA
18:40	Discussion	V. Balaji & J.C. André	Princeton & CERFACS
19:30	<i>End of session</i>		



## Tuesday 10 May

09:15	Welcome coffee		
09:45	<b>Session 3: Performance</b>	<b>Sophie Valcke &amp; Mario Acosta</b>	
09:45	CPMIP performance metrics for CMIP6: Lessons, recommendations and next steps	Mario Acosta	BSC
10:10	Performance optimization in NEMO ocean model	Italo Epicoco	CMCC
10:35	The new load balancing tool in OASIS3-MCT_5.0	Eric Maisonnave	CERFACS
11:00	<i>Break</i>		
11:20	The Potential of Functional Concurrency in W&C models	Reinhard Budich	MPI
11:45	PoP Studies of Earth Sciences Codes	Jesus Labarta	BSC
12:10	Recent Atlas library developments for Earth system modelling	Willem Deconinck	ECMWF
12:35	On the energy costs of data production, data transfer and data storing	Jean-Claude André	CERFACS
13:00	Discussion		
13:15	<i>Lunch</i>		
14:30	<b>Session 4 : Heterogeneous architectures (accelerators)</b>	<b>Sylvie Joussaume &amp; Italo Epicoco</b>	
14:30	Preparing ICON for heterogeneous architectures - Experiences and the way forward	Claudia Frauen	DKRZ
14:55	PSyclone in Met Office: Evolution and revolution	Iva Kavcic	UK Met
15:20	Accelerating tracer transport in FESOM-2 with GPU's	Gijs van den Oord	NLeSC
15:45	CAMP First GPU Solver: A Solution to Accelerate Chemistry in Atmospheric Models	Christian Guzman	BSC
16:10	<i>Break</i>		
16:35	Preparing IFS for HPC accelerators via source-to-source translation	Michael Lange	ECMWF
17:00	Enabling large scale modeling on GPU accelerated nodes for NCAR's next supercomputer Derecho	Thomas Hauser	NCAR
17:25	E3SM's C++ based GPU strategy and latest performance	Mark Taylor	PNL
17:50	Discussion		
18:15	<i>End of session</i>		
20:30	<i>Social dinner</i>		



## Wednesday 11 May

08:30	Welcome coffee		
09:00	<b>Session 5: Data Workflow</b>	<b>Kim Serradell &amp; Jean Christophe Rioual</b>	
09:00	Nobody needed all those bits anyway: compressing atmospheric data into its real information content	Milan Klöwer	Oxford
09:25	Fostering lossy compression in the European Earth System Modelling community: SZ compressor and XIOS I/O server as a case study	Xavier Yepes	BSC
09:50	Data-Centric workflows in Exascale Weather Forecasting	Tiago Quintino	ECMWF
10:15	<i>Break</i>		
10:30	ExCALIData: Exascale I/O & Storage and Workflow	Grenville Lister	NCAS
10:55	Semantic access to gridded weather data based on zarr	Gabriela Aznar	MSwiss
11:20	Towards HPC and Big Data convergence for climate analysis at scale	Donatello Elia	CMCC
11:45	Discussion		
13:00	<i>Lunch</i>		

**Organising committee :** Kim Serradell, Sylvie Joussaume, Sophie Valcke, Jean-Christophe Rioual, Jenni Kontkanen, Joachim Biercamp, Italo Epicoco, Mario Acosta, Jean-Claude André, V. Balaji

