

16th Workshop on High Performance Computing in Meteorology

27-31 October 2014



Programme

Monday 27 October 2014

08:30	Registration and coffee	
09:15-09:30	Welcome and opening	Isabella Weger (ECMWF)
Session 1 - Chair: Isabella Weger		
09:30-10:00	ECMWF forecasting system - research and development	Erland Källén (ECMWF)
10:00-10:30	ECMWF scalability programme	Peter Bauer (ECMWF)
10:30-11:00	<i>Coffee break</i>	
Session 2 - Chair: Sami Saarinen		
11:00-11:45	Migration of the IFS from IBM Power 7 to Cray XC30	Deborah Salmond and Peter Towers (ECMWF)
11:45-12:15	An Update on HPC at the Met Office	Paul Selwood (Met Office)
12:15-12:45	Recent activities and developments in ENES	Reinhard Budich (Max-Planck-Institute)
13:00-14:00	<i>Lunch Break</i>	
Session 3 - Chair: Luis Kornblueh		
14:00-14:30	An update of HPC at Météo-France	Alain Beuraud (Météo-France)
14:30-15:00	Performance analysis of and operational implementation of WRF	Todd Hutchinson (Weather Services International)
15:00-15:30	The current and future US navy global prediction system	Timothy Whitcomb (Naval Research Laboratory)
15:30-16:00	<i>Coffee Break</i>	
Session 4 - Chair: Paul Dando		
16:00-16:30	DWD applications on Cray XC30 and beyond	Ulrich Schättler (DWD)
16:30-17:00	Porting and Optimisation of MetUM on ARCHER	Karthee Sivalingam (University of Reading)
17:00-17:30	Stability of Ensemble Kalman Filters	Tuomo Kauranne (Lappeenranta University)
17:30	<i>Close</i>	
	<i>Drinks reception</i>	

Tuesday 28 October 2014

Session 5 - Chair: Tuomo Kauranne

09:15-09:45	NOAA operational forecasting and the HPC imperative	John Michalakes (NOAA)
09:45-10:15	Scaling of a large WRF configuration on three different Supercomputers	Zaphiris Christidis (Lenovo)
10:15-10:45	Performance of the Met Office unified model on Intel Xeon clusters	Iliia Bermous (Australian Bureau of Meteorology)
10:45-11:15	<i>Coffee Break</i>	

Session 6 - Chair: Alan Thorpe

	Panel discussion: Anne Glover, Chief Scientific Advisor to the President of the European Commission Alan Thorpe, Director-General (ECMWF) Peg Williams, Senior Vice President of Research and Development (Cray) Rob Varley, Chief Executive (Met Office UK)	
11:30-12:30		
12:30-13:00	Champagne reception to mark the launch of the ECMWF Cray system – kindly sponsored by Cray	
13:00-14:00	<i>Lunch Break</i>	

Session 7 - Chair: Willem Deconinck

14:00-14:30	Challenges of getting ECMWF's weather forecast model (IFS) to the Exascale	George Mozdzyński (ECMWF)
14:30-15:00	NIM Model Design for Earth Analysis	Alexander MacDonald (NOAA)
15:00-15:30	An update on the parallelization and performance of the NIM dynamics and GPUs	Mark Govett (NOAA)
15:30-16:00	<i>Coffee Break</i>	

Session 8 - Chair: Paul Selwood

16:00-16:30	Porting, validating, and optimizing NOAA/ESRL forecast models on Intel Xeon Phi	James Rosinski (NOAA/ESRL)
16:30-17:00	Porting and Tuning WRF physics packages for Intel Xeon Phi and NVIDIA GPU	Tom Henderson (NOAA/ESRL/GSD and Colorado State University)
17:00-17:30	DKRZ site update (Hard- and Software)	Joachim Biercamp (DKRZ)
17:30	<i>Close</i>	

Wednesday 29 October 2014

Session 9 - Chair: Isabella Weger

09:15-10:15	Keynote talk: Climate computing: the state of play	Venkatramani Balaji (Princeton University)
10:15-10:45	Earth System Modeling HPC trends and directions	Per Nyberg (Cray)
10:45-11:15	<i>Coffee Break</i>	

Session 10 - Chair: Alain Beuraud

11:15-11:45	IBM system x strategy for High Performance Computing	Luigi Brochard (IBM/Lenovo)
11:45-12:15	Fujitsu's architectures and collaborations for weather prediction and climate research	Ross Nobes (Fujitsu)
12:15-12:45	The coupled ocean-atmosphere model at ECMWF: overview and technical challenges	Kristian Mogensen (ECMWF)
13:00-14:00	<i>Lunch Break</i>	

Session 11 - Chair: Tomas Wilhelmsson

14:00-14:30	NVIDIA HPC directions for Earth System Modelling	Stan Posey (NVIDIA)
14:30-15:00	The new Open Power Foundation and the opportunities it opens for Weather/Climate simulations and forecasts	Don Grice (IBM) and Jeremy Appleyard (NVIDIA)
15:00-15:30	HIWPP: Driving towards the next generation of NWP and High Performance Computing in the US	Timothy Schneider (NOAA)
15:30-16:00	<i>Coffee Break</i>	

Session 12 - Chair: Deborah Salmond

16:00-16:30	Preparation of IFS physics for future architectures	Sami Saarinen (CSC)
16:30-17:00	Towards Performance Portability with GungHo and GOcean	Rupert Ford (STFC Daresbury Laboratory)
17:00-17:30	Efficient multigrid solvers for mixed finite element discretisations in NWP models	Eike Müller (Bath University)
17:30	<i>Close</i>	

Reception, followed by Workshop dinner

Thursday 30 October 2014

Session 13 - Chair: Ulrich Schattler

09:15-09:45	Extreme scale computing: the exascale challenges	Marie-Christine Sawley (Intel)
09:45-10:15	Recent developments refactoring climate applications for many-core Xeon processors	Rich Loft (NCAR)
10:15-10:45	Are OpenACC directives the easy way to port Numerical Weather Prediction applications to GPUs ?	Xavier Lapillonne (ETH Zurich)
10:45-11:15	<i>Coffee Break</i>	

Session 14 - Chair: Peter Towers

11:15-11:45	Progress of IFS Vectorisation for the Cray Supercomputer at ECMWF	John Hague (Cray)
11:45-12:15	Weather and Climate Applications lifecycle : From development to production with Allinea tools	Patrick Wohlschlegel (Allinea)
12:15-12:45	High-Performance Weather Forecasting Model Advancement at SSEC using Accelerator Technology - Current Status and Future Plan	Allen Huang (SSEC)
13:00-14:00	<i>Lunch Break</i>	

Session 15 - Chair: Kristian Mogensen

14:00-14:30	High Performance Science Cloud – Meeting the Big Data Challenges of Climate Science	Daniel Duffy (NASA)
14:30-15:00	Supporting Deadline Driven Science in Research and Development High Performance Computing Environments	Craig Tierney (NOAA and CIRES/University of Colorado)
15:00-15:30	Status of HPC infrastructure and NWP operation in JMA	Toshiharu Tauchi (JMA)
15:30-16:00	<i>Coffee Break</i>	

Session 16 - Chair: Glenn Carver

16:00-16:30	Scalability of 4D-Var at ECMWF	Yannick Tremolet (ECMWF)
16:30-17:00	End-to-end optimization potentials in HPC applications for NWP and Climate Research	Luis Kornblueh (Max-Planck-Institute)
17:00-17:30	Debugging in a heterogeneous environment with TotalView	Dean Stewart (Rogue Wave Software UK Ltd)
17:30	<i>Close</i>	

Friday 31 October 2014

Session 17 - Chair: George Mozdzynski

09:15-09:45	Introduction of a stabilized bi-conjugate gradient iterative solver for Helmholtz's equation on the CMA GRAPES Global and Regional models	Hong Bo Peng (IBM)
09:45-10:15	Stabilized approximate Kalman filter and its extension towards parallel implementation	Alexander Bibov (Lappeenranta University)
10:15-10:45	Optimizing an Earth Science Atmospheric Application with the OmpSs Programming Model	Georgios Markomanolis (Barcelona Supercomputing Centre)
10:45-11:15	<i>Coffee Break</i>	
11:15-12:15	Round Table Discussion	
	<i>Close</i>	