

EUROPEAN CENTRE FOR MEDIUM-RANGE WEATHER FORECASTS

USE OF HIGH PERFORMANCE COMPUTING IN METEOROLOGY

25-29 October 2004

PROGRAMME (updated 11 October 2004)

MONDAY, 25 OCTOBER

From 08.30 REGISTRATION & COFFEE

09.15 WELCOME & OPENING
(D. Marbouty, Director, and W. Zwiefelhofer, Head, Operations Department)

SESSION 1

09.25 Adrian Simmons, ECMWF:
Monitoring the atmosphere and the observing system: ERA-40 and GEMS

10.00 Deborah Salmond/Sami Saarinen, ECMWF:
Early experiences with the new IBM P690+ at ECMWF

10.20 *C O F F E E*

SESSION 2

10.45 William Kramer, NERSC:
Science driven computer design

11.30 Hans Zima, University of Vienna and JPL:
The Cascade High Productivity Programming Language

12.05 Lars Fiedler, EUMETSAT:
The Infrared Atmospheric Sounding Interferometer (IASI) and its implication on High Performance Computing

12.30 *L U N C H*

SESSION 3

14.00 Atsuya Uno, Earth Simulator Center/JAMSTEC:
Operation Status of the Earth Simulator

14.25 Keiko Takahashi, Earth Simulator Center/JAMSTEC:
Non-hydrostatic atmospheric GCM development and its computational performance

14.45 Richard Loft, NCAR:
Price and power aware approaches to advancing atmospheric science

15.10 Venkatramani Balaji, Princeton Univ./GFDL:
A comparative study of coupling frameworks: The MOM case study

15.30 *C O F F E E*

SESSION 4

16.00 Reinhard Budich, Max Planck Institute for Meteorology:
The PRISM software infrastructure: Achievements and next steps

16.20 Chris Hill, M.I.T. Cambridge:
Applying the EMSF component interface to parallel multi-scale general circulation simulation

16.40 Lars Nerger, AWI:
PDAF - The Parallel Data Assimilation Framework: Experiences with Kalman filtering

17.05 Tuomo Kauranne, Lappeenranta University of Technology:
Optimal approximation of Kalman filtering with temporally local 4D-Var in operational weather forecasting

17.30 *C L O S E*

17.40 *C O C K T A I L S*

TUESDAY, 26 OCTOBER

SESSION 5

09.00 Thomas Sterling, Caltech:
Petaflops computing systems for meteorology

09.45 Eng Lim Goh, SGI:
Next generation science and engineering application-adaptive HPC architecture

10.20 *C O F F E E*

SESSION 6

10.45 Toshiyuki Furui, NEC:
NEC HPC systems and future

11.20 Yuji Oinaga, Fujitsu:
Fujitsu's technical vision for High Performance Computing

11.55 Steve Scott, Cray:
The Cray Rainier system: Integrated scalar/vector computing

12.30 *L U N C H*

SESSION 7

- 14.00 Don Grice, IBM:
IBM future technologies for High Performance Computing
- 14.35 Herbert Cornelius, Intel:
Intel architecture based HPC technologies and solutions
- 15.00 Gerardo Cisneros, SGI:
Experience with porting, performance and benchmarking of climate and weather codes on the SGI Altix
- 15.30 *C O F F E E*

SESSION 8

- 16.00 Jan Boerhout, NEC HPCE:
Parallelisation of Hirlam
- 16.25 John Levesque, Cray:
Optimisation of climate/weather codes for the Cray architectures
- 16.50 Alexander MacDonald, NOAA-FSL:
Optimal allocation of parallel computers for operational weather prediction
- 17.15 Richard Hodur, US Navy:
NWP in the US Navy
- 17.40 *C L O S E*

WEDNESDAY, 27 OCTOBER

SESSION 9

- 09.00 Wolfgang Sell, DKRZ:
Distributed data management at DKRZ
- 09.30 Ilia Bermous, Bureau of Meteorology:
Supercomputing upgrade at the Australian Bureau of Meteorology
- 09.55 Paul Selwood, UK Met Office:
Unified model performance on the NEC SX-6
- 10.20 *C O F F E E*

SESSION 10

- 10.50 Stephen Oxley, UK Met Office:
Met Office 4D-Var: Optimisation and performance on the SX6
- 11.15 Maryanne Kmit, Danish Meteorological Institute:
DMI-Hirlam on the NEC SX-6

11.40 Simon Pellerin, Meteorological Service of Canada:
MPMD implementation of pre-operational 4D-Var on IBM P690

12.05 Jim Tuccillo, IBM:
NCEP Phase 2 - Architecture and performance

12.30 *LUNCH*

SESSION 11

13.50 George Mozdzyński, ECMWF:
The future of RAPS

14.00 Ulrich Schättler, Deutscher Wetterdienst:
Preparing NWP models for Tera-Computing

14.25 Michel Desgagné, Environment Canada:
Large Atmospheric Computation on the Earth Simulator (LACES) with the Canadian MC2 model

14.50 John Michalakes, NCAR:
The weather research and forecast model

15.10 Hu Jiangkai, NMC China:
Establishment of an efficient managing system for NWP operation in CMA

15.30 *COFFEE*

SESSION 12

16.00 Masami Narita, Japan Meteorological Agency:
The next-generation supercomputer and NWP system of the JMA

16.25 Marijana Crepulja/Aleksandar Miljkovic, Serbia:
Performance analysis of regional ETA model (installation, running and optimisation on different platforms)

16.50 Jerry Wegiel, US Air Force Weather Agency:
Contribution of the HPC modernisation program to the weather research and forecasting model development

17.15 Ashwini Bohra, NCMRWF India:
High Performance Computing for medium and extended range prediction at NCMRWF

17.40 MEETING OF RAPS CONSORTIUM (internal)

18.00 Reception, followed by Workshop Dinner

THURSDAY, 28 OCTOBER

SESSION 13

- 09.00 Douglas East, Lawrence Livermore National Lab.:
Linux @ Livermore: Experiences operating large-scale production Linux clusters
- 09.40 John Taylor, Quadrics Ltd.:
High productivity in Linux cluster
- 10.00 Kolja Kuse, Terrascale:
Terragrid global filesystem for Linux-clusters
- 10.20 *C O F F E E*

SESSION 14

- 10.50 James Hamilton, Met Eireann:
mogall: Running Hirlam on a 6 x twin-xeon cluster at Met Eireann
- 11.15 George Mozdzynski/Peter Towers, ECMWF:
Running IFS on an LNXI Opteron cluster at ECMWF
- 11.40 Jure Jerman, Environmental Agency of Slovenia:
HPC Linux clusters, what is coming next?
- 12.05 Michael Lough/Enda O'Brien, Hewlett-Packard:
HP StorageWorks Scalable File Share: HP's Lustre implementation and its application in meteorology
- 12.30 *L U N C H*

SESSION 15

- 14.00 Mark Govett, NOAA-FSL:
The Grid: An IT infrastructure for NOAA in the 21st Century
- 14.25 Kerstin Kleese-van Dam, CCLRC-Rutherford Appleton Lab.:
An integrated computing and data environment for environmental applications
- 14.50 Andrew Woolf, CCLRC-Rutherford Appleton Lab.:
Integrating distributed climate data resources: NERC Data Grid
- 15.10 Ian Lumb, Platform Computing Inc.:
Production HPC on commodity Linux clusters: The role of infrastructural software
- 15.30 *C O F F E E*

SESSION 16

- 16.00 George Carr Jr., NCAR/CGD:
Porting and performance of the Community Climate System Model (CCSM3) on the Cray X1
- 16.25 Jean-François Estrade, METEO-FRANCE:
Supercomputing at METEO-FRANCE: Trend and perspective
- 16.45 Hyei-Sun Park, Korea Institute of Sci. & Techn. Inform.:

Development and application of climate/weather prediction system

17.05 Alain St-Denis, Meteorological Service of Canada:
MSC HPC infrastructure update

17.25 Bob Carruthers, Cray:
Message passing metrics for some common Codes and
Early experience of RAPS8 on the Cray X1

17.45 C L O S E

FRIDAY, 29 OCTOBER

SESSION 17

09.00 Luis Kornbluh, Max-Planck-Institute for Meteorology:
Design and performance of an unstructured grid approach for a global triangular grid

09.25 Venkatramani Balaji, Princeton Univ./GFDL:
A uniform programming model for arbitrarily complex distributed grid data objects in
distributed and shared memory

09.50 Nikolaos Missirlis, University of Athens:
A distribute iterative method for solving the convection-diffusion equation

10.20 *C O F F E E*

SESSION 18 Chairman: Walter Zwiefelhofer

10.45 PANEL ON EXPERIENCE OF USING HPC IN METEOROLOGY

12.00 CONCLUSION