Supplement for the High Performance Computing center

The *Centre Commun de Calcul Intensif*, PPF 2002-05, PPF 2006-09, FED 2010-14

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Centre Commun de Calcul Intensif: www.univ-ag.fr/c3i

Presentation of the C3I

- Research plan which provides resources to 6 teams of UAG: COVACHIM-M, GTSI, LAMIA, LARGE, LEAD, QUALITROP but also to other research institutes (Institut Pasteur, Météo-France Gpe, INRA, CIRAD)
- 15 research projects (around 40 users)
- a Cluster IBM 114 cores 300 GB, 6 TB of HDD), **a Cluster Bull with Intel SandyBridge chips of 240 cores (1.4 TB, 18 TB)** (install)
- software: Matlab/Scilab, Fortran, C, C++, R compilers (OpenMP, MPI), Gaussian
- one HPC engineer + some help from the UAG ressource center
- Previously: 1 TFlops, and now: **4,8 TFlops available**
- Training, Summerschool (HPCPA'2004)

C3I: the research projects supported 1/2

- Image processing and datamining (bigdata), tracking hurricane (forecast), prevention of major risks (LAMIA, LARGE)
- Fluid mechanics modeling in heterogeneous media (LAMIA, Pag) - Fortran -
- Tribology, structural calculation (GTSI) - Feff3D, Vasp
- Statistical analysis of dynamical wind velocities from wind energy (LARGE) - Matlab -
- Analysis of molecular structure from tropical plants (QUALITROP) - Gaussian -

C3I: the research projects supported 2/2

- Prevention of major risks -tsunamis-, subscale modeling in meteorology (LARGE, Meteo) - MesoNH, ADCIRC -
- Geothermal potential modeling (LAMIA, Brgm) - Python, Fortran -
- Fluid mechanics modeling coupled with sediment transport, Multilevel modeling in acoustics (LAMIA, Pag) -Fortran, Python -
- Bayesian analysis of pointwise process (applications in ecology or in geophysics), (LAMIA, Cirad, Inra) - R -
- Active carbon treatment on pesticide removal (COVACHIM, Cuba) - Gaussian, Hyperchem, Gromacs, Charm, Amber -

- Support from EC in CPER-DOCUP plan 2000-06, 2007-13
- Support from French Ministry of Research 2002-05, 2006-09, FED 2010-14
- From 2005, around **200 research published papers** using C3I resources
  - 50 papers in peer-reviewed journals
  - 150 papers in National or International conférences
  - 20 PhD defended in UAG
- Partner of GdR Calcul 3275 of the CNRS

C3I: The results
training - promoting

- Training
  - **HPCPA'2004**, 1st int. Summerchool of C3I -25 participants (INRA, UWI) with 10 lecturers: 4 Pr. 6 R.E. from France (support: Région, UAG, CNRS)
  - *Introduction au développement d'une application de calcul scientifique* (4 users attended a session at Grenoble 2005)
  - Master stages,
  - Training for PhD students (FEM Implementation in 2006, Parallel computations and domain decomposition in 2007, Python programming in 2011)
  - **Le développement du calcul intensif à l'UAG**, workshop of September 2007 coorganized by IBM
- Promoting:
  - *Journée de la Science*, poster *Journées sur l'Innovation*
  - les **rencontres INRA-UAG** 12/06, **UAG-Organismes de recherche** 03/08, **Journées de l'UFR-SEN** 06/08
  - invitation of *UWI Jamaica* training and research partnerships 12/12

Partnerships

- Laboratoire ID-IMAG (INRIA-UJF-INPG-CNRS)
- Université Lyon I
- IRISA (INRIA-CNRS)
- Laboratoire de Maths de Paris-XI Orsay
- CCIPL (Nantes)
- Centre de Calcul Haute-Normandie (CRIHAN)
- IS2 Guadeloupe, (HP Maroc, HP Europe), IBM, Bull-Serviware