Published on *BSC-CNS* (https://www.bsc.es)

BSC hosts its 3rd Doctoral Symposium

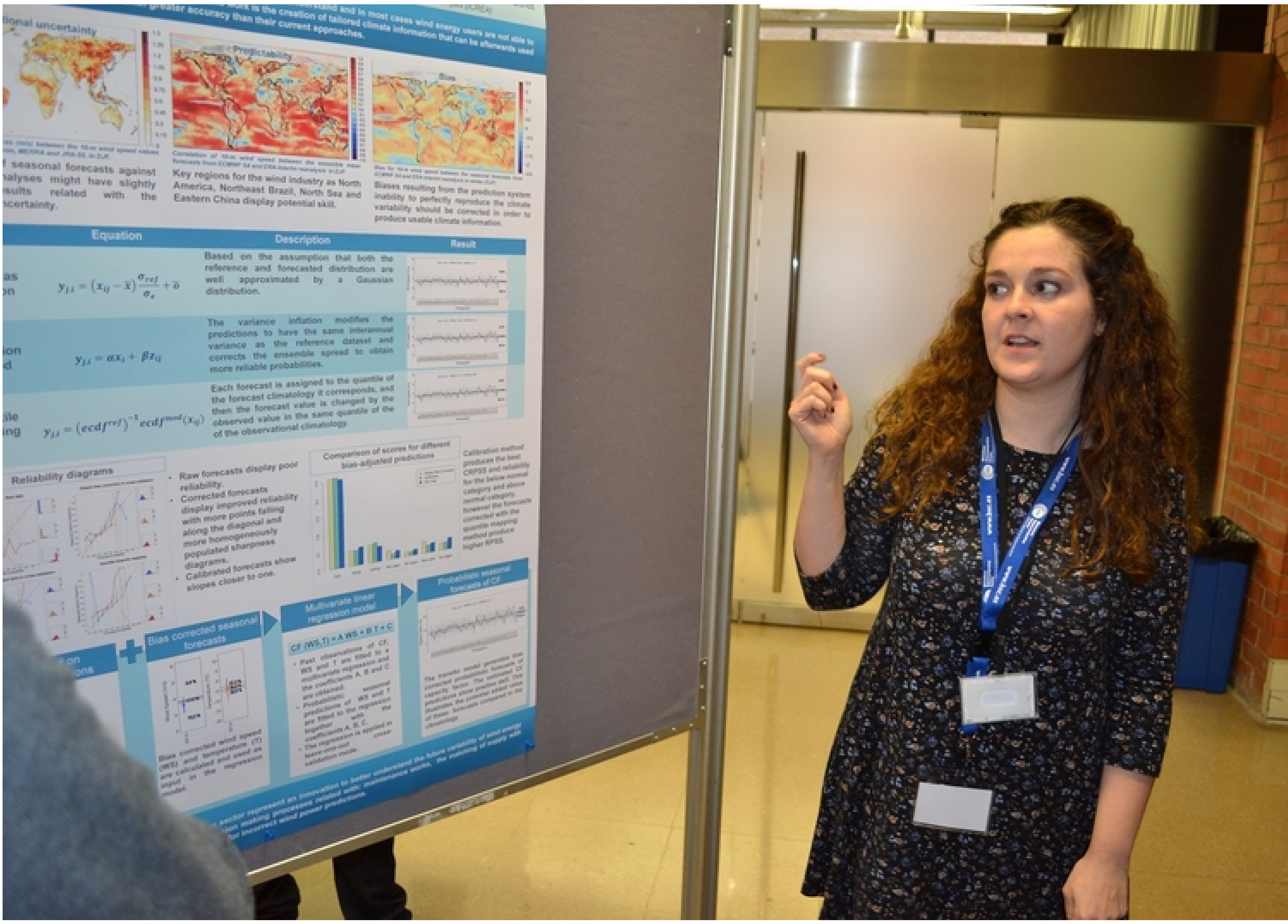
In this third edition of the BSC Doctoral Symposium we had six different sessions of talks tackling the topics of: Postdoc research at BSC; Algorithms, Physics & Data Science Algorithms, Numerical Methods and Data Science; Life Sciences; Simulations and Modelling; and Performance. The posters were exhibited and presented during four poster sessions that created lively discussion and gave the authors the opportunity to explain their research and results. The directors of BSC strongly supported the creation of the symposium and its organisation and Mateo Valero, Director of BSC, gave the opening speech.

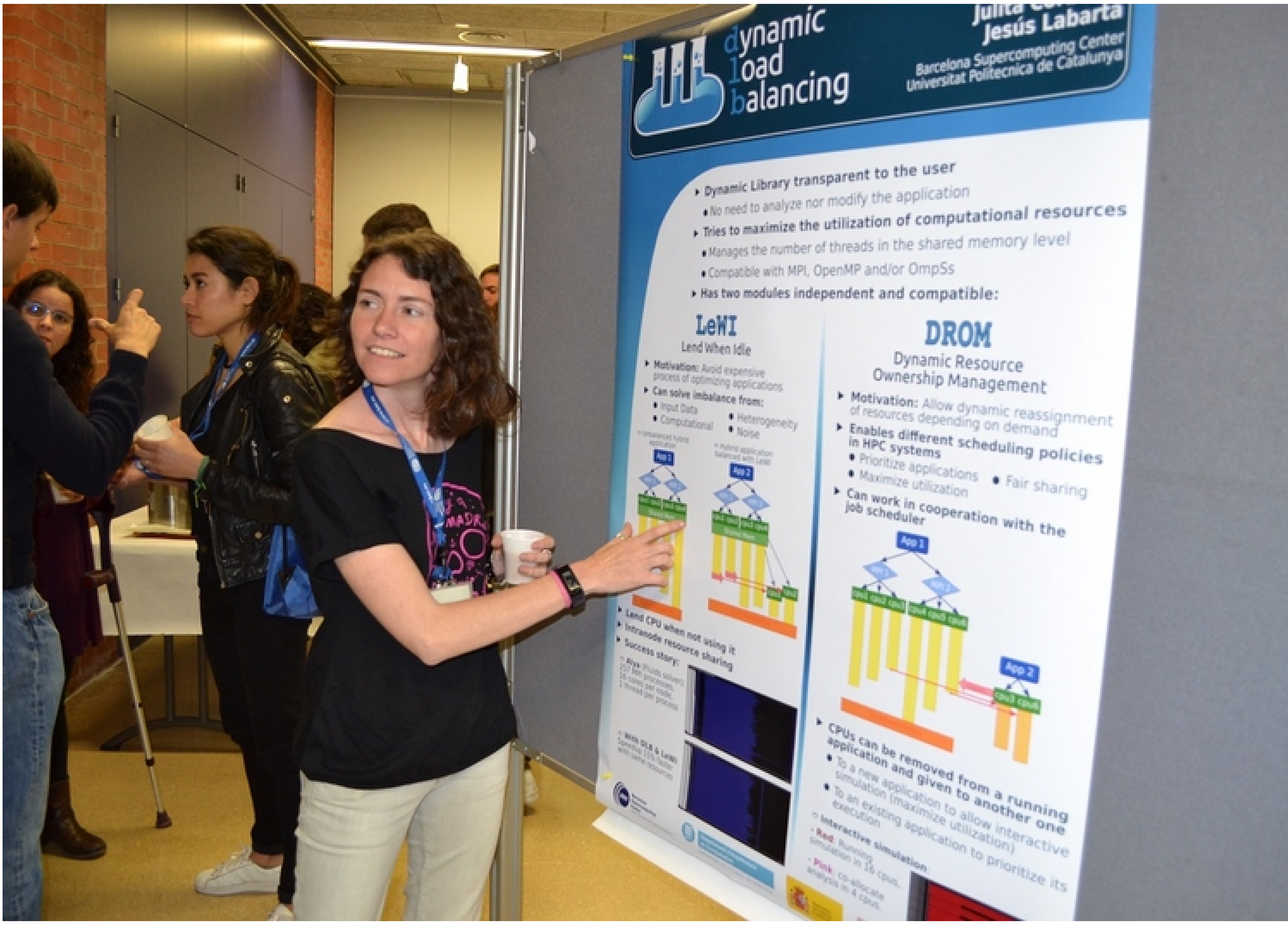
The keynote speaker, Prof. Francisco Doblas Reyes, gave the lecture: Big Data for the Study of Climate Change and Air Quality. He is Director of the Department of Earth Sciences at BSC and ICREA research professor at the Catalan Institute of Climate (IC3). At BSC he coordinates the largest FP7 project on climate prediction. The Department hosts more than 50 engineers, physicists, mathematicians and other air quality and climate researchers who try to bring the latest developments in supercomputing and Big Data to provide the best information and services. He is author of more than 100 peer-reviewed papers.

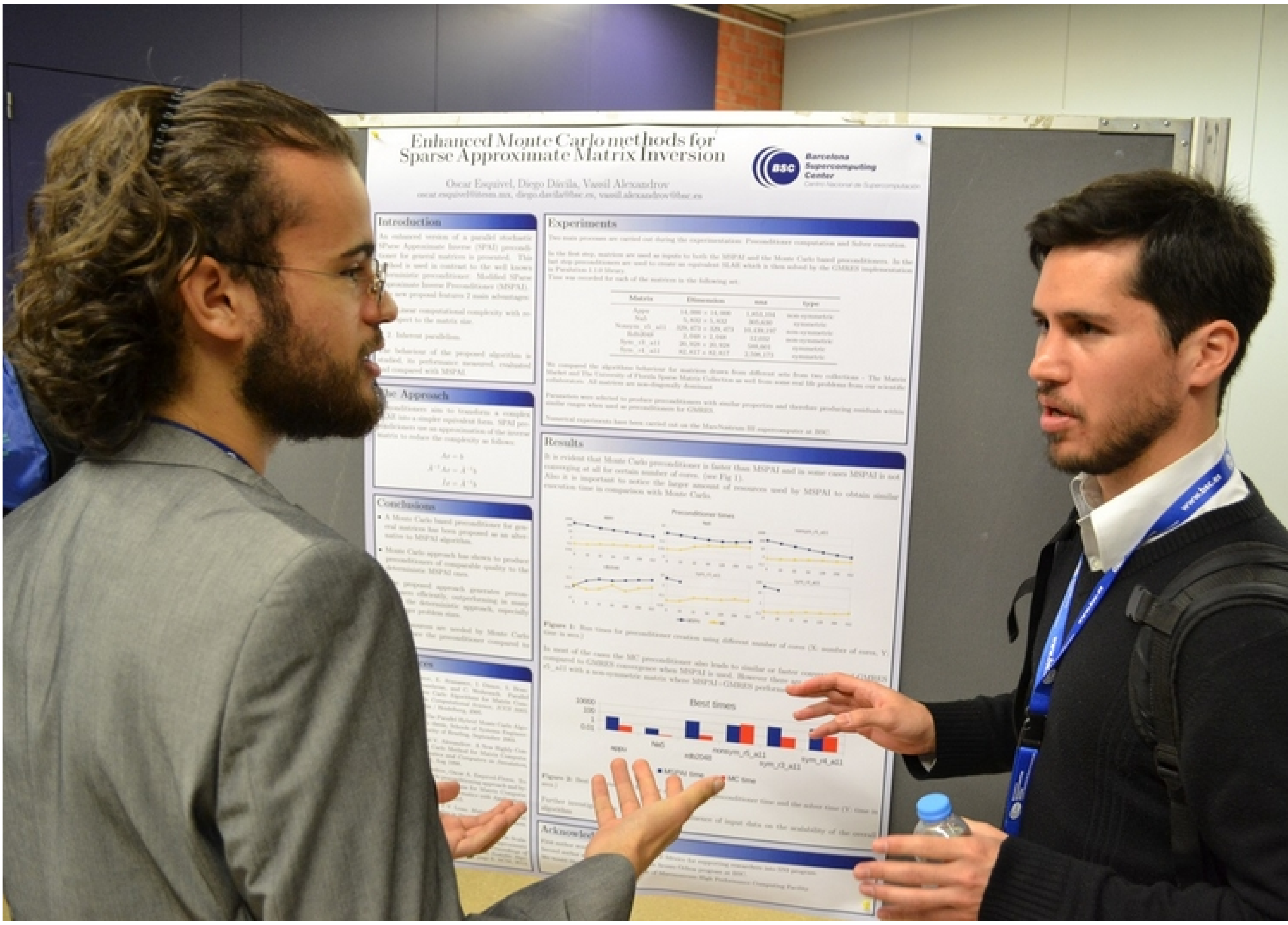
The training courses given by researchers from Computer Science Department, reviewed the fundamental Algorithms and Techniques for Data and Computationally Intensive Problems (Prof. Vassil Alexandrov, ICREA-BSC) and introduced Scientific Visualisation of Data (Dr. Javier Espinosa) as well as provided some practice regarding these concepts.

For further details, please visit the Symposium webpage: http://www.bsc.es/doctoral-symposium-2016

More photos avalaible here.




dynamic
load
balancing
Jesús Labarta
Barcelona Supercomputing Center
Universitat Politecnica de Catalunya
Dynamic Library transparent to the user
No need to analyze nor modify the application
Tries to maximize the utilization of computational resources
Manages the number of threads in the shared memory level
Compatible with MPI, OpenMP and/or OmpSs
Has two modules independent and compatible:
LeWI
Lend When Idle
Motivation: Avoid expensive process of optimizing applications
Can solve imbalance from:
Input Data
Computational
Heterogeneity
Noise
App 1
App 2
Lend CPU when not using it
Intranode resource sharing
Success story:
DROM
Dynamic Resource Ownership Management
Motivation: Allow dynamic reassignment of resources depending on demand
Enables different scheduling policies in HPC systems
Prioritize applications
Fair sharing
Maximize utilization
Can work in cooperation with the job scheduler
CPUs can be removed from a running application and given to another one
To a new application to allow interactive simulation (maximize utilization)
To an existing application to prioritize its execution
Interactive simulation:


Enhanced Monte Carlo methods for
Sparse Approximate Matrix Inversion
Barcelona Supercomputing Center
Centro Nacional de Supercomputación
Oscar Esquivel, Diego Dávila, Vassil Alexandrov
Introduction
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Results
Conclusions
Preconditioner times
Best times
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Source URL (retrieved on *28 oct 2024 - 22:06*): https://www.bsc.es/ca/news/bsc-news/bsc-hosts-its-3rd-doctoral-symposium