

## News



### Mont-Blanc highlighted at ISC'12

During the ISC'12 Mateo Valero and Alex Ramirez were invited to hold two sessions. They took the opportunity to give further details about the latest results in Mont-Blanc.

[More information on page 3](#)



### Mateo'12 brings the best computer architects to Barcelona

The event, whose title pays homage to Mateo Valero, brought together well-known players in this field.

[More information on page 3](#)



### The sequencing of the tomato genome

BSC was involved in genome assembly making massive use of in house programs and shared memory machines. Nature has published the article.

[More information on page 4](#)



### A European platform for HPC

Industry and Research Centres create the European Technology Platform to strengthen European competitiveness in the area of High Performance Computing.

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### A 3D Virtual Heart

BSC is currently working on a 3D heart simulation. Doctors from the Hospital de Sant Pau and scientists from the CVC are participating in the project.

[More information on page 4](#)

## Spotlight on...



### 'CALIOPE: much more than just a project about air quality'

By José Mª Baldasano, Earth Sciences department director

It is also very specifically a computational project about code development, communications, database management, visualisation tools, and website management.

[More information on page 5](#)



## Directors' View

It is a pleasure for us to be writing the introduction to this, the first edition of the BSC's newsletter. The newsletter aims to inform BSC staff on what is going on at the centre and to complement BSC's other channels. We are looking forward to your active participation in this new instrument.

[More information on page 2](#)

## Events

**July 2** PUMPS Summer School  
2 July, Barcelona

**July 23** Risc: Advanced Workshop  
23 July, Buenos Aires



[More events on page 2](#)

## Inside BSC

■ In this issue: Social Activities Plan, BSC now on Youtube, CosmoCaixa benefits, Newcomers, Vacancies and New Vacation Request Application.



## Directors' View



It is a pleasure for us to be writing the introduction to this, the first edition of the BSC's newsletter. The newsletter aims to inform BSC staff on what is going on at the centre and to complement the BSC's other channels such as our website, intranet and social media platforms (facebook, youtube and twitter). We are looking forward to your active participation in this new instrument.

BSC has achieved a lot in its short lifetime thanks to the talent and hard work of all of you and the support of our patrons. These achievements have been recognised in many forms including competitive projects, contracts with companies and the recent Severo Ochoa award. This success has led to fast growth and has meant that in some cases the tools and processes necessary for this larger organisation need to be refined. The first BSC Scientific Advisory Board was held this year and was an opportunity for us to take stock. BSC received an excellent report from an external committee of renowned experts as well as recommendations allowing us to plan improvements and set the centre's sights even higher.

The upgrade of the MareNostrum this year will also help us to provide a better service to science and industry and will consolidate our place in Europe as the Spanish contribution to the PRACE supercomputing infrastructure. In the first two phases of the upgrade, MareNostrum3 will reach a speed of around one Petaflop, and will support the research of thousands of Spanish and European scientists who are working on solutions to some of the most pressing problems facing the world today.

We are all aware that the current economic context is not an easy one, but we are confident that the hard work and enthusiasm of the BSC team will allow us to continue to fulfill our mission and consolidate our prestige and our reputation as a world-class organisation.

Mateo Valero, the BSC director and Francesc Subirada, the BSC associate director

## Calendar of Events

**Jul 2** PUMPS Summer School  
2 July, 2012 Barcelona

**Jul 23** Risc: Advanced Workshop  
23 July, 2012 Buenos Aires

**Jul 25** Risc: Summer/Winter School  
25 July, 2012 Buenos Aires

**Sept 12** 6th RES User's Conference and HPC  
Advisory Council Spain Conference 2012  
12 September, 2012 Málaga

**Oct 9** Slurm: A Highly Scalable Resource Manager  
9 October, 2012 Barcelona

**Oct 17** 24th ACCENT/GLOREAM Workshop  
17 October, 2012 Barcelona

**Oct 22** 1st EUDAT Conference  
22 October, 2012 Barcelona

**Nov 5** II Lectures on atmospheric mineral dust  
5 November, 2012 Barcelona

**Nov 10** SC2012: Supercomputing Conference 2012  
10 November, 2012 Salt Lake City

## News

### Mont-Blanc highlighted at ISC'12

During the International Supercomputing Conference 2012 (ISC'12) held from 17th – 21st of June 2012 in Hamburg (Germany), Mateo Valero, the BSC director, and Alex Ramirez, Mont-Blanc project coordinator, were invited to hold two sessions promoting this European project. They took the opportunity to give further details about the latest results in Mont-Blanc that is now one of the key topics among the HPC community. Coordinated by BSC, the Mont-Blanc project brings together a purely European consortium gathering industrial technology providers and supercomputing research centres, with a total budget of over 14 million Euros. Its main objective is to design a new type of computer architecture capable of setting future global HPC standards that will deliver Exascale performance while using 15 to 30 times less energy than today's energy efficiency leaders. With energy efficiency being a key issue, the system architecture will rely on energy-efficient ARM processors, also used in embedded and mobile devices. The first Mont-Blanc prototype, in 2014, is expected to achieve from 4 to 10 times increase in energy-efficiency compared with current technologies.



*Mont-Blanc project featured at the BSC booth during the ISC'12*

Web: [www.montblanc-project.eu](http://www.montblanc-project.eu)

Twitter: [@MontBlanc\\_EU](https://twitter.com/MontBlanc_EU) Facebook: [www.facebook.com/MontBlancEU](https://www.facebook.com/MontBlancEU)

### Mateo'12 brings the best computer architects to Barcelona

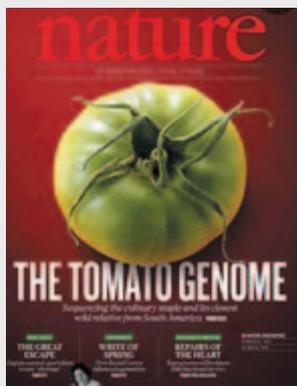
On 28 and 29 June, some of the top researchers in computer architecture converged in Barcelona to participate at [Mateo 2012: Multicore Architectures and Their Effective Operation](#) Workshop. The event, whose title pays homage to Mateo Valero, the BSC director, brought together well-known players in this field, including six winners of the prestigious Eckert Mauchly award (popularly known as the Nobel for computer architecture) and four Maurice Wilkes award winners, equivalent to the Eckert Mauchly but for young researchers. These distinguished researchers and industry representatives in the field of computer sciences have in some way collaborated or have been in contact with [UPC](#) and the FIB's Computer Architecture department, the former CEPBA and BSC. Conference sessions centred on topics such as computer microarchitecture, multicore programming, heterogeneous computing, compilers and programming models. Mateo 2012 was organised by BSC, with the collaboration of the UPC and the European network [HiPEAC](#).



*The speakers of Mateo'12*

[More information on the website](#)

## News



Nature cover

### The sequencing of the tomato genome

The Tomato Genome Consortium has sequenced and assembled the genomic DNA of this fruit species, specifically of a domesticated variety, Heinz 1706. Scientists from several European centres, including Modesto Orozco, David Torrents and Xavier Pastor, researchers from the joint programme between BSC and IRB Barcelona have joined forces to obtain the sequence of this fruit. The sequence, as well as the results of its analysis, has been published in the journal [Nature](#). For this study, the tomato genome was compared with several closely related species. These comparisons have revealed that the tomato genome has undergone complete duplications during its evolution. These events are extremely relevant from an evolutionary point of view, since they offer an optimum framework for genes affected by these duplications to explore new functions that contribute to the evolution and improvement of the species. BSC was involved in genome assembly making massive use of in house programs and shared memory machines.

[More information on the website](#)

### European Technology Platform for High Performance Computing

Major suppliers of High Performance Computing (HPC) technologies including in association with HPC research centres, among them BSC, have created a European Technology Platform for HPC (ETP4HPC) and released the ETP's Vision document to improve Europe's position in the domain of HPC technologies. The ETP strengthens European competitiveness in the area of HPC, which is a key requirement for future research and innovation as well as addressing a wide range of social and economic challenges.

For more information: [www.etp4hpc.eu](http://www.etp4hpc.eu)



The Founding Members of ETP4HPC during their first meeting in Barcelona/BSC



### A 3D Virtual Heart

BSC is currently working on a 3D heart simulation. This project is framed within the Severo Ochoa excellence programme and the MareNostrum supercomputer is essential here, as the simulation is so highly complex that it necessitates the calculation power of an extraordinarily powerful computer. Mariano Vázquez, CASE researcher, states that *"the model can have many uses, including to understand several heart anomalies that are currently treated with drugs, and helping to plan operations."*

## Spotlight on...

### ‘CALIOPE: much more than just a project about air quality’

*José M<sup>a</sup> Baldasano: Earth Sciences department director*

The MareNostrum was a unique opportunity to bring to fruition scientific and technical developments that had been ready but that could not be executed due to a lack of computational capacity. One of these was the BSC's CALIOPE project: air quality forecast system for Spain and Europe, which is funded by the Ministry of Environment.

CALIOPE is not only a scientific project about air quality. It is also very specifically a computational project about code development, communications, database management, visualisation tools, website management, etc.

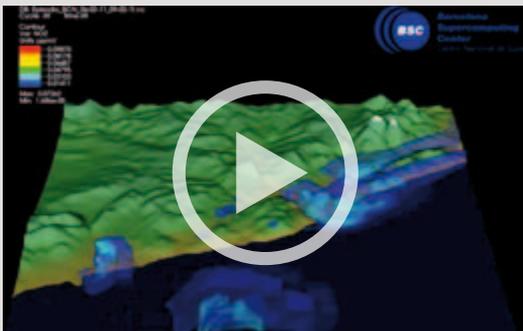


*Earth Sciences Team*

Air pollution affects human health. It is estimated that some 20 million European citizens suffer respiratory and cardiovascular problems. The cost of asthma is estimated at 3 billion euros per year. Asthmatics, particularly children, are highly sensitive to air pollution. The International Agency for Research on Cancer just defined diesel flue gases as carcinogenic.

CALIOPE integrates the WRF-ARW, HERMES, CMAQ and BSC-DREAM8b models. CMAQ is the chemical transport model used; the WRF-ARW model provides meteorological data; emissions are provided by the HERMES model, the contribution of Sahara dust is obtained from the BSC-DREAM8b model. The last two were fully developed at the BSC.

It provides a 48-hour forecast of air quality for the Spain and Europe domains with a horizontal grid resolution of 4 and 12 km<sup>2</sup> respectively, and a time resolution of 1 hour. The system calculates the hourly concentration of O<sub>3</sub>, NO<sub>x</sub>, CO, SO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub>. It is an essential tool for air quality managers and also so that citizens can know the values of the air quality that they breathe. It contains also an assessment module in Near Real Time, with measurements from 400 air quality stations in Spain and 800 in Europe, as well as 300 weather stations, which are applied to a bias correction by employing a Kalman Filter. The system has been operational since October 2006.



*CALIOPE Air Quality Forecast (Europe, Iberian Peninsula and Barcelona domains)*

This unique information contributes to understanding atmospheric processes and transport dynamics. To date, the project has published 22 papers and presented at 36 conferences. The most important result of the project has been the creation of the team, with a total of 25 people having worked on the project up to now.

## Inside BSC

### Newcomers

We would like to welcome new staff who have joined the centre in the last few months:



**ISAAC RUDOMIN**  
Senior Researcher  
Computer Sciences Dpt.



**JAZMIN AGUADO**  
Postdoctoral  
Researcher  
CASE Dpt.



**PABLO RODENAS**  
Technical Support  
Engineer  
Operations Dpt.



**ANNA QUERALT**  
Postdoctoral  
Researcher  
Computer Sciences Dpt.



**DANIEL GASULL**  
Research Support  
Engineer  
Computer Sciences Dpt.



**JANKO STRASSBURG**  
Predoctoral Researcher  
Computer Sciences Dpt.



**VICTOR MANUEL VALVERDE**  
Student researcher  
Earth Sciences Dpt.



**ROGER HERNANDEZ**  
Research Engineer  
Computer  
Sciences Dpt.



**GUILLERMO MARIN**  
Designer for Scientific  
Visualization  
CASE Dpt.



**MARC RABINAL**  
Undergraduate Student  
Management Dpt.



**MIGUEL CASTRILLO**  
Research Support  
Engineer  
Earth Sciences Dpt.



**DOLORES GUERREIRO**  
Student researcher  
Earth Sciences Dpt.



**CARLES HERNANDEZ LUZ**  
Postdoctoral Researcher  
Computer Sciences Dpt.



**MARCO VAZ**  
Research Support  
Engineer  
Life Sciences Dpt.



**LAURA BERMUDEZ**  
Web Graphic Designer  
Operations Dpt.



**MATIAS AVILA**  
Postdoctoral  
Researcher  
CASE Dpt.



**ROBERT SOLIVA**  
Postdoctoral  
Researcher  
Life Sciences Dpt.



BSC has created this new position to promote and start up new scientific-academic training initiatives in collaboration with the UPC and other institutions in the academic and business areas.

**MARIA RIBERA SANCHO**  
Responsible of BSC  
Academic Programs

### Social Activities Plan 2012

Once again BSC has launched the Social Activities Plan in order to fund initiatives to promote cohesion and contact between staff, as well as adding to the centre's social value. You can find all information [here](#).

### The "Planetario Burbuja" opens the gates of the sky to you

In the framework of the collaboration agreement between the BSC and CosmoCaixa, this summer, all BSC employees can enjoy a free visit to the "Planetario Burbuja". This space has been designed to encourage children to get interested in the world of astronomy. Read full details [here](#).

### New holiday application

The new application has been implemented, which is the result of the inter-departmental project developed between the Operations / Support Department and the Management / HR Department, and provides online access to the new system to request holidays and leaves of absence. The direct access is located in the Personal Corner section on the intranet, via the link entitled [Online Vacation Requests & Leaves](#).

### Job Vacancies

If you know someone who wants to join the BSC team, he/she can submit a CV to one of our current vacancies or fellowships' calls: [www.bsc.es/about-bsc/employment](http://www.bsc.es/about-bsc/employment). For further information contact [rrhh@bsc.es](mailto:rrhh@bsc.es).

### BSC now on Youtube



Through this space we would like to share videos about the centre and our research. Remember that you can also find BSC on and . We would be pleased for you to participate in these social networks.

### Your participation is welcome

We would like to encourage you to send us comments about the Newsletter and its content. If you have any suggestions for a new section or topic, please contact us on [newsletter@bsc.es](mailto:newsletter@bsc.es)