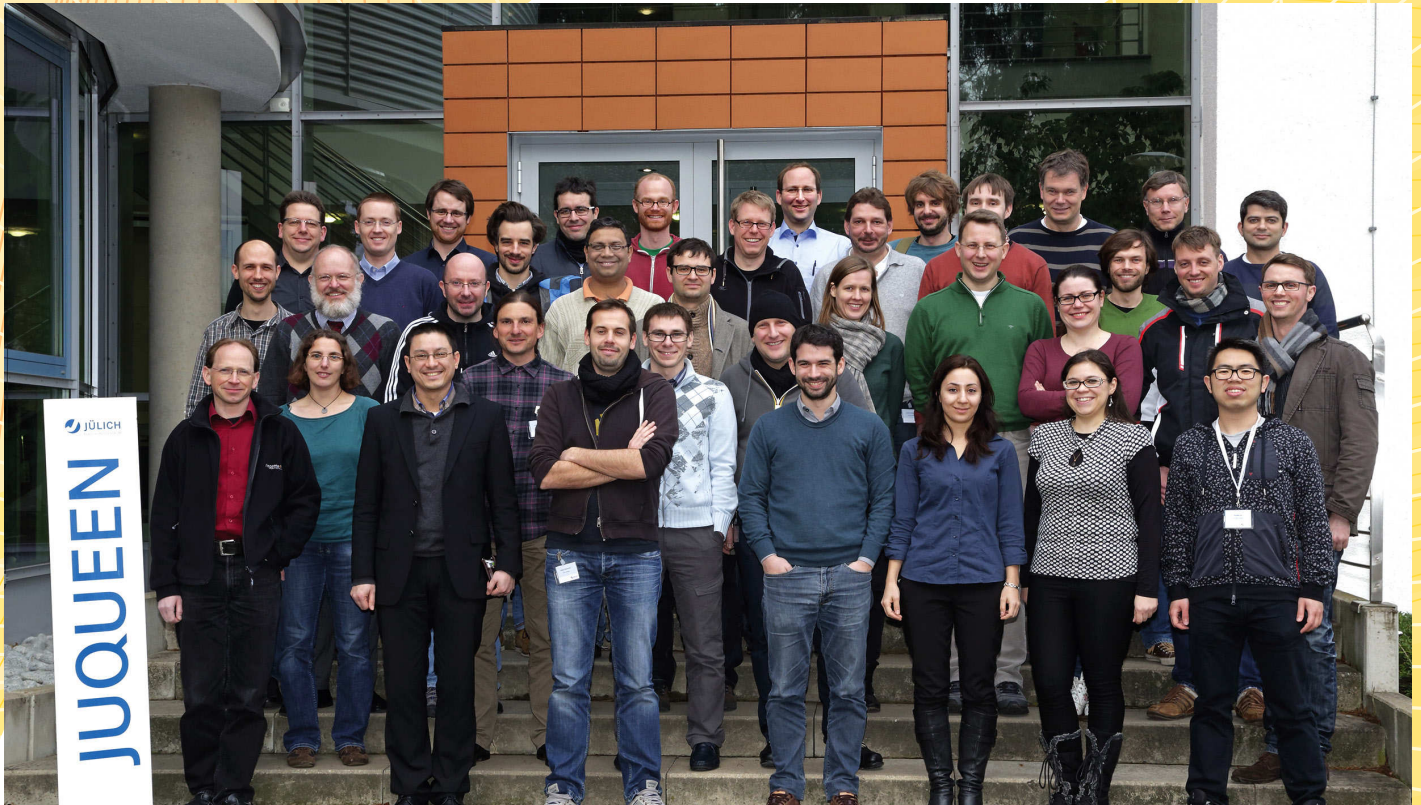# Third JUQUEEN Porting and Tuning Workshop

Figure 1: Participants of the Third JUQUEEN Porting and Tuning Workshop (© Forschungszentrum Jülich GmbH).

Jülich Supercomputing Centre (JSC) continued its successful series of JUQUEEN Porting and Tuning Workshops from 2nd to 4th of February this year. The PRACE Advanced Training Centre (PATC) course attracted over 20 participants from various institutions in three European countries. The workshop familiarised the participants with the Blue Gene/Q supercomputer installed at JSC, including the provided toolchain from compilers and libraries to debuggers and performance analysis tools. The participants received help porting their codes, analysing execution performance and scalability, and

in improving the efficiency of their applications and workflow. Each year the workshop also focuses on one special user group, this time inviting users from the Earth system modelling community. This activity was supported by the Simulation Laboratory Climate Science and the Simulation Laboratory Terrestrial Systems.

The programme of the course started with overviews of JUQUEEN's hardware and software environment. A summary of the best practices was then followed by talks on performance analysis tools, debugging, and efficient I/O. The

workshop concluded with tips on very specific hardware features of the Blue Gene/Q architecture (QPX and TM/SE). At the heart of the workshop were hands-on sessions with the participants' codes, supervised by members of staff from JSC's Simulation Laboratories and cross-sectional teams (Application Optimisation, Performance Analysis, Mathematical Methods and Algorithms) as well as IBM. The general programme was accompanied by sessions for the Earth system modelling groups with short talks by the participants and members of the two Simulation Laboratories involved. Those covered a large variety of codes and applications from process and sensitivity studies to numerical weather prediction and climate change projections. Examples shown included ensemble approaches with multiple concurrent realisations, parallel data assimilation frameworks, and innovative variable model grids. In general, the challenge here is to optimise the often large legacy codes used in geosciences with their multiphysics models (clouds and precipitation, convection, chemistry, radiation, groundwater, sediment transport) and multiple spatial and temporal scales from riverbed water percolation and fine sediment movement to global-scale climate simulations.

The slides of the talks can be found on the web at http://www.fz-juelich.de/ias/jsc/jqws15

• Dirk Brömmel[1]
• Klaus Görgen[1, 2]
• Lars Hoffmann[1]

[1] Jülich Supercomputing Centre (JSC), Germany

[2] University of Bonn, Germany

contact: Dirk Brömmel, d.broemmel@fz-juelich.de
Klaus Görgen, k.goergen@fz-juelich.de
Lars Hoffmann, l.hoffmann@fz-juelich.de