

First Announcement:

An Introduction to the **PAR**allelized **LES** Model **PALM**

A seminar to be held at the Institute of Meteorology and Climatology, Leibniz Universität Hannover (LUH), 9am to 6pm, October 10-14, 2016.

PALM is a parallelized large-eddy simulation model, which has been continuously developed at the Institute of Meteorology and Climatology (IMUK), Leibniz Universität Hannover, Germany, since 1997. It is used to study micro- and mesoscale turbulent boundary layer flows in the atmosphere and ocean by different groups of researchers all over the world. Compared with many other LES models, PALM includes a number of advanced features like topography, non-cyclic horizontal boundary conditions, an embedded Lagrangian particle model allowing explicit treatment of cloud droplet physics, or an interface for adding user defined code. The ocean option of PALM includes salinity and the equation of state for seawater. A coupling between PALM-atmosphere and PALM-ocean is also realized. Data output is in NetCDF format. PALM is optimized for high performance on all kind of state-of-the-art processor architectures and scales on up to several tens of thousands of processors. It is free software and can be redistributed and/or modified under the terms of the GNU General Public License (v3). Download information and a detailed online documentation is available under <http://palm.muk.uni-hannover.de>.

Seminar contents

The one week seminar gives an overview of PALM, and demonstrates how to carry out runs - on Linux notebooks provided by the participants or by IMUK-LUH. The seminar starts with a general introduction to large eddy simulation, followed by a discussion of the basic set of equations that are used in PALM, and the numerical methods that are implemented. After a brief introduction to the PALM installation, the main focus is given on how to set up PALM simulations and how to run them using the bash-shell scripts that are provided with PALM. Further attention is also given to questions like how to extend PALM by user-defined code and how to debug the code. Setups for several standard applications will be explained in detail (e.g. convection, flow around buildings, etc.), the focus will be on urban applications this year. Additionally, we will offer separate sessions on an introduction to the PALM code for model developers.

Beside the theoretical lessons given in the morning, there will be hands-on sessions in the afternoon, where participants carry out exercises under the guidance of the lecturers. The lecturers will be Siegfried Raasch, Björn Maronga, and other members of the PALM group at IMUK.

Requirements

Participants should have a solid background in CFD modeling, Fortran 2003, MPI, and Linux/Unix. Due to the expected large number of participants this year, we kindly require that participants - if possible - use their own Linux notebooks with at least a dual-core processor for running PALM during the seminar. It is expected that the following software has been installed on the notebook by the participants **in advance**: a *Fortran-2003 compiler*, an *MPI library*, the *NetCDF library* (version $\geq 3.6.3$), graphics software to display *NetCDF* data (*ncview*, *NCL*, *panoply*), the *bash shell* (*bash*), as well as *subversion* (a revision control system necessary to download the PALM code). *subversion* is already a part of many Linux distributions (e.g. *openSuSe*). Please contact us well in advance, if you have problems installing the required software on your notebook. There won't be any time to handle these problems during the seminar.

Costs / fee

The fee for participants from outside LUH will be: 600€ for commercial companies, 300€ for educational/research institutions. This includes tuition and seminar handouts. Accommodation costs, meals, and transport costs are not included. **The total number of participants is limited to 25 persons.**

Further information and Registration

For application, send an email with your name, status (master student, PhD student, etc.), and current affiliation to Farah Kanani-Sühring (kanani@muk.uni-hannover.de), not later than August 12, 2016. Please also tell us in case you can NOT bring your own notebook. Registered participants will receive more detailed information (method of payment, location plan, schedule, etc.) end of August 2016.