HPSC TerrSys Fall School 2017

Bonn / Germany

Terrestrial Modeling and High-Performance Scientific Computing

2nd Announcement

http://www.hpsc-terrsys.de/fallschool

Date

Monday, 25 September, 2017, 10:30 to Friday, 29 September, 2017, 13:00

Objectives

The objectives of this applied course is to provide the theoretical and technical context of terrestrial modeling in high-performance scientific computing (HPSC) environments utilizing stand-alone and coupled hydrologic, land surface and atmospheric models. Utilizing the Terrestrial Systems Modeling Platform (TerrSysMP), the course will take a complete tour of terrestrial modeling and HPSC in connection with real-world observations and data assimilation including

- setting up a terrestrial model and performing simulations in massively parallel supercomputer environments at the Jülich Supercomputing Centre (JSC);
- parallel performance analysis and profiling;
- parallel data assimilation using TerrSysMP-PDAF (Parallel Data Assimilation Framework);
- post-processing and visualization in the age of big data.

Keynote Speakers

Lars Nerger, Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research, Germany

Eric Maisonnave, Centre Européen de Recherche et de Formation Avancée en Calcul Scientifique, France

Laura Condon, Syracuse University, U.S.A

Plus more to be announced

Learning Outcomes

Completion of the course will provide the participants with the generic capabilities of terrestrial modeling and data assimilation in supercomputing environments with a focus on TerrSysMP(-PDAF) including parallel performance analysis and profiling utilizing freely available software tools, and handling of very large data sets in the analyses and visualization process.

Target Audience and Prerequisites

- Master or PhD students, PostDocs with a deep interest in terrestrial modeling (hydrology, land surface, atmosphere)
- Basic knowledge of LINUX/UNIX and programming languages such as R, Python, C/C++, or FORTRAN as well as data formats such as NetCDF is an advantage

Organized by

Stefan Kollet and Wendy Sharples (Forschungszentrum Jülich, EoCoE WP4 Members)
Centre for High-Performance Scientific Computing in Terrestrial Systems (HPSC TerrSys)

With support from **EoCoE: Energy Orientated Centre of Excellence for Computing Applications**

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Registration deadline

15 May 2017   later registrations might be considered but places are limited

Agenda

Monday
10:30-12:00:   Introduction to MPI short course (Optional)
13:00-16:30:   Introduction to fundamentals of environmental (climate, hydrology, georesources, terrestrial systems) modeling (lectures: Laura Condon, Syracuse University plus TBA)
16:30-18:00:   Characteristics and handling of HPC resources (lectures and first hands on)

Tuesday
08:30-11:00:   Setup of regional terrestrial models and performing simulations (hands on)
11:00-12:00:   The OASIS coupler (lecture: Eric Maisonnave, CERFACS)
Lunch break
13:00-16:00:   Continue morning projects and inspection of results with real data (hands on)
16:00-18:00:   Visualization and big data strategies (lectures: in-situ processing, Jens Hendrik Göbbert; big data analytics, Martin Schultz; parallel I/O, Sebastian Lührs; all JSC)

Wednesday
08:30-12:00:   Parallel performance and profiling (lecture: Markus Geimer, JSC)
Lunch break
13:00-18:00:   Performance and profiling analysis (hands on)

Thursday
08:30-11:00:   Ensemble data assimilation (lecture: Lars Nerger, AWI)
11:00-12:00:   Ensemble data assimilation with TerrSysMP (hands on)
Lunch break
13:00-18:00:   Ensemble data assimilation with TerrSysMP (hands on)

Friday (optional)
08:30-12:00:   Continue projects and wrap-up (hands on)

Registration procedures

To register as a participant, please use the online registration form on the HPSC TerrSys Fall School 2017 website: www.hpsc-terrsys.de/fallschool. Final notifications and confirmation of participation will go out by the end of May 2017.

Venue

Meteorological Institute
Bonn University
Auf dem Hügel 20
53121 Bonn
Germany

Fees

The school is free for members of the Geoverbund ABC/J. For external participants, there is a 300 EUR contribution to expenses. Payment details, travel and accommodation infor-mation will be given with the notifications. All participants need to cover their expenses for travel and accommodation by themselves. Catering during the event will be provided.

Geoverbund ABC/J (http://www.geoverbund-abcj.de) is the geoscience network of

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