



Eddy-Covariance Workshop in Jena

General information

Timeframe: May 18-22, 2015

This workshop will cover 5 days, split up into a **scientific seminar (1 day)** at the beginning, followed by the **eddy-covariance course (4 days)** focusing on theory, instrumentation and data processing skills. During the seminar section, the participants (students and instructors) will present major research objectives from their sites, and latest results from their own research. The course itself will consist of lectures, hands-on classes with software tools, instrument sessions the laboratory, and an excursion to the MPI-BGC field site at the Wetzstein.

Target group

This workshop is offered to **external collaborators from national and international observation sites** where MPI-BGC is actively involved in the conducted research. In addition, the workshop will also be open to interested students within the MPI-BGC graduate program, IMPRG-gBGC. Maximum size of participants is set to 20.

Technical information

Location

The workshop will take place in and around the Max-Planck-Institute for Biogeochemistry:

Street Address: Hans-Knoell-Strasse 10

07745 Jena

Germany

Website: <http://www.bgc-jena.mpg.de/>

<http://www.imprs-gbgc.de/index.php/Courses/EddyCovariance2015>

Registration

Workshop participation will be free for members of the target group as outlined above. Participants will have to cover their own expenses for travel and accommodation. MPI-BGC will offer assistance for travel arrangement (national) and finding accommodation in Jena. The institute may furthermore be in a position to offer reasonable accommodation in-house or at an associated institute, depending on availability.

Please send an informal email to the organization committee listed below to indicate your interest in registering for this workshop **by May 01, 2015**. IMPRS students can also register via the IMPRS webpage (preferred).

Organization committee

For further information please contact one or (preferred) all of the persons given below:

Mathias Goeckede (mgoeck@bgc-jena.mpg.de)

Fanny Kittler (fkittler@bgc-jena.mpg.de)

Olaf Kolbe (okolle@bgc-jena.mpg.de)

Mirco Migliavacca (mmiglia@bgc-jena.mpg.de)

Scientific seminar

The scientific seminar at the beginning of the workshop week will provide the opportunity for all participants to **present the specific research conducted at their sites** and within their groups, respectively, and **summarize the major research objectives** they are targeting. This first day of scientific discussion will allow participants to discuss their scientific background as well as the skill level in terms of eddy-covariance before the workshop actually starts.

Besides the contributions from external/international participants, the seminar will also provide a general overview on research activities at MPI-BGC, and more specifically the experimental and observational eddy-covariance work currently conducted at the institute. Participating students are also asked to provide a brief overview on their research projects.

The seminar will be concluded by a **plenary discussion** that will focus on identifying overlapping research interests and potential synergy effects between groups/sites.

Agenda elements of the eddy-covariance workshop

Major elements of the agenda

Theoretical background

- fundamentals of boundary layer turbulence
- major assumptions/simplifications behind the eddy-covariance technique

Instrumentation

- major types of instruments, incl. preferred areas of application
- guidelines for installation and maintenance
- design of a customized instrumentation setup for specific environments
- hands-on session for setting up eddy-covariance instruments

Basics on high-frequency data processing

- introduction into selected software packages

- standard processing steps from raw time series to fluxes
- correction procedures (frequency, density, etc.)
- quality assessment/quality control

Post processing of eddy covariance flux data

- gap-filling
- net flux decomposition into GPP and ER
- flux data interpretation
- handling of 'tricky' datasets

Excursion

- destination: Wetzstein observation site (~90min drive from Jena)
- timeframe: afternoon excursion (~6hrs), scheduled for workshop day #4
- excursion will include lunch at a restaurant close to the observation site

Detailed workshop schedule (status: Apr 08)

The workshop will consist of lectures, hands-on sessions on instrumentation, hands-on sessions on data processing, and the above-mentioned excursion. For computer lab exercises, participants are asked to bring their own laptops, or specifically request the provision of computers through MPI-BGC (depends on availability). Hands-on experience on eddy-covariance instrumentation will be provided in the laboratory.

Tuesday, May 19: Eddy-Covariance basics			
Start	End	Topic	Responsible
9:15	9:45	Introduction to the Workshop	Organizing committee
9:45	10:30	The Eddy-Covariance Method: Basics and General Problems I	Thomas Foken
10:30	10:45	Coffee Break	
10:45	11:45	The Eddy-Covariance Method: Basics and General Problems II	Thomas Foken
11:45	13:00	Lunch Break	
13:00	15:00	Eddy-Covariance instrumentation: Measurement systems customized for specific conditions (MPI-BGC network)	Olaf Kolle
15:00	15:15	Coffee Break	
15:15	16:30	Eddy-Covariance processing: basic raw data handling, common correction procedures	Tarek el-Madany
16:30	17:45	Software installation and testing on participant's computers	Organizing committee

Wednesday, May 20: basic data processing, instruments

Start	End	Topic	Responsible
9:15	10:30	EC data processing I: available software tools, detailed introduction into selected software packages (EddySoft, EddyPro)	Fanny Kittler
10:30	10:45	Coffee Break	
10:45	11:45	Hands-on work with software tools I: easy-to-use data examples	Olaf Kolle, NN
11:45	13:00	Lunch Break	
13:00	15:00	Hands-on work with software tools I: easy-to-use data examples (cont.)	Olaf Kolle, NN
15:00	15:15	Coffee Break	
15:15	18:00	Practical work with instrumentation: Laboratory setup of EC systems, sensor comparison, data retrieval, etc.	Olaf Kolle, Freiland group

Thursday, May 21: data post-processing, excursion

Start	End	Topic	Responsible
9:00	9:30	Footprint analysis	Mathias Göckede
9:30	10:15	Flux data quality control	Georg Wohlfahrt
10:15	10:30	Coffee Break	
10:30	11:30	EC data processing II: Flux data post-processing	Mirco Migliavacca
11:30	18:00	Excursion (Wetzstein, incl. lunch)	Organizing committee

Friday, May 22: data post-processing, troubleshooting

Start	End	Topic	Responsible
9:15	10:30	Hands-on work with software tools II: application of post-processing tools	Mirco Migliavacca, NN
10:30	10:45	Coffee Break	
10:45	11:45	'dirty' eddy covariance: Application of the EC technique with e.g. slow sensors, etc	Georg Wohlfahrt
11:45	13:00	Lunch Break	
13:00	15:00	Hands-on work with software tools III: work with 'tricky' datasets, requiring special treatment	Olaf Kolle, Georg Wohlfahrt, NN
15:00	15:15	Coffee Break	
15:15	16:30	Hands-on work with software tools III: work with 'tricky' datasets, requiring special treatment (cont.)	Olaf Kolle, NN