Evaluation results: Terrestrial Biosphere, part 1 (Aug 2017)

Course details

The course focused on processes important in biosphere-atmosphere exchange of greenhouse gases as well as methods used to scale these exchange processes to understand their importance in global biogeochemical cycles. The emphasis was on plants since soils are covered in a separate course.

Agenda of part 1:

- Introduction by Carlos Sierra (day 1)
- Biodiversity by Christiane Roscher & Anne Ebeling (day 2)
- Ecophysiology by Henrik Hartmann (day 3-4)

Agenda of part 2:

- Large scale biodiversity by Axel Kleidon (day 5)
- Plant traits by Jens Kattge (day 6 am)
- Modelling plant/soil by Carlos Sierra (day 6 pm)

Detailed information is provided on the following webpage: http://www.imprs-gbgc.de/index.php/Courses/Biosphere2017

16 out of 16 participants filled in the survey on part 1 of the course by Sep 18, 2017.

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Survey results

Please remark on the overall structure of the course.

- (2x) well organized
- (9x) well structure
- perhaps needed one more 10-15 min break in the morning lecture.
- comprehensive with enough details.
- It is a good idea to have a short introduction of the course first and also some introduction to the general terms. Demonstrations part fits well as you can relate the theory to the practical.
- Good overview on the first day, details in the following days.
- Topics do not really mix together. First day introduction was a good try: still, introduction did not mix well with the very contents.
- but the chronology is not the best. I think that the chronology could be better following the scale of study 1. plant ecophysiology 2. plant traits and modeling 3. biodiversity 4. large scale biodiversity
- individual parts still kind of unrelated
- In general fine, but you could mention, that the first day (Monday) is to define terms, which is a bit boring for those, who work at MPI BGI for more than 6 months…
- ok
- it is appropriated

Which parts of the workshop were especially good (and why)?

- The demonstrations because you get a feeling of what it is to get the measurements and do the experiments.
- Introduction by Carlos Sierra (day 1)
  - because I learnt the details that I needed for my future study.
  - and how the different cycles work.
  - improved knowledge.
- Biodiversity by Christiane Roscher & Anne Ebeling (day 2)
  - Part on history. Excursion to field site.
- Ecophysiology by Henrik Hartmann (day 3-4)
  - because this class was more active, and I could learn this topic deeply.
  - Everybody were involved in the discussions; interesting presentation; interested in the subject lecturer
  - I like the way how complex terms and theories were presented in a simple yet informative way. The lecture was quiet interactive and the demonstrations were really informative.

    - Allocation part (especially day 3) because of good teaching and link to practical experiments
    - extremely interesting parts of the course. The instructor (Henry Hartmann) was very helpful and influential. Moreover, the instruments demonstration was very useful for the understanding of the course material.
    - overall excellent didactic job (even though students were really not helping, he kept the enthusiam)
    - really engaging and motivating
    - demonstrations about how to do physiological measurements in trees because it gave us a better picture of how the physiological measurements are taken in reality.
    - the explanation of plants ecophysiology was good and complemented with graphics.
    - He interacted with the students by asking questions, discussing and trying to lern new things, because he is honest enough to say 'I'm also not an expert. If you know something better, improve my knowledge, please.
- The demonstration because it helped me to understand how we get the data.
- Link of theory and application, I learnt a lot about field work / experiments, even if I will not use it in my own work. But I have a rough idea now, what people in the other departments are doing.
- Afternoon practices are very helpful to improve the understanding.

Which parts of the workshop were not so good / not so fitting / not well enough presented?

- (5x) Everything was well. Nothing to complain.
- Introduction (day 1): Hierarchy concept was just too short. It is worthy to go and mention all SOHO theory and give an overall view to complex systems. Also, professor stated that each hierarchical level is the sum of the levels below (this is right now very questioned, in fact, is practically discarded: ecosystems are more than the sum of the parts).
- Biodiversity part (day 2)
    - Biodiversity definition: only one was given, there is multiple and all of them give you some hints to the real picture of biodiversity
    - was not well enough presented.
    - too many slides/plots dealing with Biodiversity measurements - I got lost and in the end (just) left with the impression 'biodiversity has an influence but we can not clearly state which
    - should focus more on new scientific topics and resent results, and less on the history of biodiversity research.
    - could have been more energetic. it felt a little flat and uninspiring compared to wednesday

    - could be better structured. Most of us don't know anything about biodiversity, and the introduction was very short, especially compared with reporting about more than 10 experiments (less experiments, more details! at the field side, too!)
- Ecophysiology (day 3-4):
    - on allocation, was too fast.
    - tried his best to involve us but that conflicted with presenting the topic/content in a concise and understandable way.
    - Henrik could plan breaks after 90mins!
    - the technique demonstrations are not very exciting. Maybe if the students can develop simple experiments, could be better.

Please suggest components that a future course should include.

- In my opinion, it would be better for students to learn how to build up the biogeochemical model and also try to develop the model by themselves.
- The part, concerning interactions between different components of ecosystems, might be interesting (like, between atmosphere, hydrosphere, soil etc.)
- Link the topics to introduction of the institute: Who is covering which topic with which approach.
- It would be nice if the instructors spent more time discussing their own research and how they designed their experiments.
- Ecosystems as self-organizing holarchic open systems sounds like a must! introduction to complex systems and ascendant properties are great concepts for those who never heard of them.
- Course is mainly done by BGP. What about (former) BSY and BGI?

Evaluation of the individual modules.

Hierarchical theory and levels of organization of biological systems by Carlos Sierra (day 1)

- (2x) very good
- The organization was clear to me.
- Well taught and explained.
- good overview, good initiative to have this as a starter.
- Maybe less text and more graphics in the presentation could be better
- nice overview and well presented. although in my opinion the goal of making the rest of the course more related/connected is not achieved by giving an introductory talk. the rest is still mostly unrelated because each topic so specific
- not necessary for PhDs in the 2nd or 3rd year. Please mention that in advance!

Biodiversity by Christiane Roscher and Anne Ebeling (day 2)

- It would be better if they had more interactions with the students!
- too detailed, too many plots
- The course was good but a little complex and I want to learn more about information of trees biodiversity.
- Could have been better. Somehow I felt that the lecture was not interesting.
- Was a bit boring in the beginning, the historical part about the actual research, also in its scientific context (other biodiversity experiments), was really interesting and a good intro to the excursion.
- The field excursion did not include any instruments or methods demonstration.
- more clarity about how to measure and model the biodiversity would be interesting
- topic and presentation was okay. in my opinion there should be more focus on motivating people and keep the lecture engaging. the part on the different biodiversity experiments and the real scientific work going on was very nicely presented. everything should have been like that part.
- Likely an interesting topic, but not well presented. Needs a better structure (overall concepts) and less experiments. Reports from 3-5 experiments are fine, but no one can remember all 10-15(?) experiments, that were mentioned in the lecture. Excursion need also some improvements: What can be explained/shown/reported to PhDs that have no(!) background in biodiversity and thus, ask no questions? Rather showing current work (who? what? where? how? only 1-3 sites), than going through the whole JenaExperiment history by mentioning again way to many different experiments. Cannot remember more than 3 :(

Ecophysiology by Henrik Hartmann (day 3-4)

- His enthusiasm is appreciated.
- The interaction between the lecturer and the students were outstanding! He was dominant on the topic, lecturing in an organized manner, and in conclusion, he was perfect!
- do not try to involve us all the time. You might present a topic once and then ask questions to check our understanding.
- The course was quite interesting. Maybe a little more about field observations related to drought.
- Well taught and explained.
- Style of presentation was good and motivating. I especially liked the parts where we had to think about how to find out "simple" facts (as, how to prove with simple experimentation that plants emit O2). This was a good way to teach science because it links science history, knowledge & facts, and the way how science is done. The PhD's actual learn how to think scientifically and broaden their knowledge. They also learn humbleness against experimental researchers and early achievements, and that fancy

statistics or instruments are actually not science but only sophisticated tools to do the science

- Perfect! Just give Dr Hartman more teaching hours. The instruments demonstration was very interesting and useful.
- Probably for those of us who have studied it before was short on contents: however most never have seen it before. probably going into naming the molecules: ATP, NADH, rubisco, etc etc, must be completely overwhelming for those who are listening those names for the first time. I would sujest to teach a more holistic view: treating what happens inside the membranes as a black box: "X goes in Y goes out" and it is relevant because this way we break water into oxigen using photons (probably many students did not even get this due to so many new words).
- the wednesday lecture was one of the best lectures i have listened to in quite some time. even though the topic is not one of my core interests henrik managed to keep everyone engaged and motivated. the processes were described slowly and he really made sure everyone had understood all the little steps so no one got lost at any point. really well done.
- Good job! Well structured lecture, very interactive. Minor suggestion: break after 90mins. Experiments also fine (even if there is not much to do). Well organized team. Thank you!