Teaching Statement

General Teaching Approach
My general goal is to put the student into the center of the teaching process as an active learner. I prepare my courses and individual classes in a way that challenges students to think carefully about the presented material and the assigned tasks/questions; at the same time I try to engage students in an intellectual dialogue that trains their critical thinking skills. In my field, it is critically important to support theoretical concepts with real-world examples that students can relate to from personal experience. Moreover, the inclusion of material that stimulates curiosity is also an important factor, especially in course sections that deal with 'dull' topics at times (such as applied statistics). Finding the right examples that keeps the students’ motivation at high levels is important for enhancing the learning experience. With regards to teaching technologies in the era of digital communication, a decent mix of different class formats is probably in the best interest for our students. Therefore, I consider it part of my teaching responsibility to explore how to make best use of the new technologies in the coming years.

Report on previous teaching
In spring 2014 I taught the course ”Environmental statistics and computation” (ATM/ENV315). The course existed already and I adopted the course content and the active class-room environment in which the course had been taught before. Central topic is an introduction to commonly applied statistical methods, including data visualization methods and hypothesis testing. The course covers the basics of computer-coding (at that time using ‘R’) applied to statistical analysis of data sets from meteorology, climate, and environmental observations. In the following year, I transformed the course into a Team-Based Learning (TBL) class. Students now work in teams on assigned statistical problems in class, and the learning progress is evaluated regularly through assessment tests. I also made the transition to the programming language Python, which several DAES faculty members use in other courses, too.

In order to improve the learning experience for my students, I carefully review feedback from students both during the mid-term evaluation and at the end of the semester. The mid-term feedback is critically important for adjusting the pacing and the general use of the class time (e.g. for programming and discussions). A major challenge for many students is to learn computer coding skills without any
previous exposure to computer programming. The transition to Jupyter Notebooks for coding and teaching (inspired by discussions I had with Dr. Brian Rose) made a positive impact. We encountered less technical problems than in previous years and students seem to interact more easily with the software environment. Yet, this course remains a challenging 4-credit course for me as the instructor and for many of our students.

I have taught a second undergraduate course in "Climate Variability and Change" (ATM306) in past years. The first part of the semester I use to describe the climate system, natural modes of climate variability, and predictability of the climate. The second half of the course students learn about the causes, mechanisms and impacts of anthropogenic climate change. I use a lecture-centered teaching approach with active learning elements for the students. These include problem-solving activities in small groups and discussions. The class-activity is designed to prepare students for their homework assignments, which is confronting students with a similar problem from a slightly different perspective. Homework also requires a critical discussion of the results. This way my students have to work actively with the lecture material and train their problem-solving skills. I make it a priority to provide individual feedback to the students, so they know how to improve and succeed in class.

In Fall 2014 I taught a graduate-level course on climate change (ATM552) which gives students insight into the theory of climate change, the process of detecting evidence for climate change in observational data, and anthropogenic causes of climate change. At the graduate level, the priority is to engage students as active contributors in the class room. For example, students give short presentations on seminal and contemporary scientific papers or engage in group discussions. The course also trains their research skills: students chose a topic early in the semester, prepare a short research proposal, conduct the research, and summarize the results in a report and a short presentation. I also include the students in a peer-review process on the draft versions of the proposals and final reports. I am going to teach this course in a similar format this fall. I expect to keep the research projects as a key component in this course.

In general, I am looking forward to become more involved with the graduate teaching. I plan to create special topics courses in the field of paleoclimate research and/or future climate change projections and applications for impact studies, guided by the latest high impact research publications and trends in those areas. The timing will depend on how we (the department) will be able to cover the undergraduate education in coming years.
Teaching Statement

Oliver Elison Timm

At undergraduate level I will concentrate on improving my teaching style and presentation skills in the most critical areas: stimulate interest in the courses and finding better ways to communicate learning goals and tasks, as well as preparing well-organized lecture units in which I ’get the main points across’ to students.

**Student advising and mentoring**

At graduate and post-graduate levels, I see my advising role first and foremost in empowering these next-generation and early-career professionals to mature into independent thinkers and problem solvers. When I work with graduate students it is important to me that they have enough creative freedom to find their own innovative research approaches and uncover new scientific questions. In meetings, I encourage students to express their own ideas and to raise critical issues. Furthermore, they should feel comfortable to express opposing viewpoints or to suggest corrections to my ideas during critical discussions.

In addition to general advisement, I encourage students to attend workshops and conferences or summer schools. These meeting venues allow students to connect with leading scientists, to present their research and expertise to the research community and to form new in-person connections. My students have attended the American Geophysical Union (AGU) fall meetings in the past years, but given the importance of this activity for the professional development, I realize that I have to encourage and support my students so they can also attend specialized workshops and summer schools.

One important responsibility is to use my experience to give my students guidance in accomplishing high-quality research publications in a timely manner, and without compromising the scientific quality of the work. In this process I myself have to learn from past mistakes and find ways to improve my supervising skills. For this purpose, I will reach out to colleagues inside and outside DAES to gain a new perspective on how to better streamline research tasks and how to improve proficiency in my research productivity.

To complete my advising and mentoring statement, I want to emphasize that I will continue to provide research opportunities to undergraduate students. In the past two years I supervised the research of two students (one ATM student in paleoclimate, one ENV student investigating West Nile Virus and climate in NY). In both cases, students worked during spring semester (independent research) and continued during summer (paid research).