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Final report of the Summer School "Soil & Water" 2015

1. Structure

The Summer School 2015 took place in Southern Germany from September, 6th to 19th. The underlying concept of this summer school was – besides the already established lectures – to demonstrate the soil - plant relations under two contrasting conditions of water supply. Based on the ecological background related to surplus water supply on the one side and drought on the other, management objectives were discussed in respect to human use and nature protection.

In total, 32 students were participating, 4 students from the Estonian University of Life Sciences (Estonia), 5 students from the University of South Bohemia (Czech Republic), 7 students from the Aix-Marseille University (France) and 16 students from Ulm University (Germany).

The first week of the Summer School took place in the Federsee area, where the landscape is characterized by wetlands, wet meadows and fens. Therefore, the lectures and excursions of this week were more focused on this topic. The destination of the first excursion was Lake Constance, where the lakeside comprises different types of ecosystems along the lakeshores.

During the second excursion, we visited the Federsee fen, a famous natural reserve and a World heritage museum. The region also offers an example of long-lasting human activities. The lake Federsee was heavily drained about 200 years ago and the water table in the lake was lowered by about 2 m. These changes had a severe impact on the use of the lake as fishing ground as well as the mesoclimate of the whole region. As the proposed gain of arable land after drainage was only marginal, it is one of the oldest examples of negative large-scale human-made environmental impacts in Central Europe.

The third excursion took us to the natural reserve close Wilhelmsdorf and to the Pfrunger Ried, one of the largest wetland areas in southern Germany. These wetlands were also drained during the 20th century but are being restored recently. Besides the examples of restoration efforts and wetland management, there was a demonstration of measurements of greenhouse gases emission from wetlands.

The second week of the Summer School took place in Blaubeuren, where the surroundings are dominated by dry grasslands. The teaching was dedicated to the specific geology and soils on limestone and their relations to plant growth. These effects were not only subject of the lectures but were also elucidated during a 15 km long guided hiking tour from Schelklingen to Blaubeuren.The students became demonstrated characteristic plants, animals and soils of this landscape. In addition, typical examples of techniques in agriculture and forestry on such sites were presented together with management strategies in protected areas.

In order to loosen the atmosphere between the participants, we organized an ice-breaking event for the first evening where students and teachers got to know each other. Further, all students were staying in the same accommodation (also the German students) to foster the team spirit among them. During the entire Summer School, the atmosphere was very pleasant and there was a strong international exchange between the students, even in their free time.

There were no more lectures in the afternoon, because the experience from the previous years' Summer Schools showed that the students' attention in the afternoon is decreasing when listening to lectures. We introduced student projects, where groups of 3 - 5 students worked on a topic for the whole duration of the Summer School. These projects replaced the seminars and practical work from the past years. The students had to read and present scientific literature, do practical work and write a report about their project after the Summer School. These projects made the learning effect more intense, because there was more time for the individual topics.

During the "Erasmus mobility" session at the end of the Summer School, general information about the Erasmus exchange was given first. Thereafter each partner presented their university and the offer of courses for potential Erasmus exchange students.

2. Content

The teachers from the different partner universities held their lectures, which were incorporating the experience of the previous Summer Schools. Following the common line of sustainable management, they were unifying their expertise from the following fields: soil science and ecology, plant sciences and zoology. The lectures increased the students' knowledge regarding interactions between soils, plants and soil organisms with special emphasis on soil processes, effects like drought and flooding on plants and soil organisms and the man-bound impact on soil degradation and ecosystem restoration. Additionally to these lectures, there were several introductory lectures about the local landscapes, geology, vegetation and management practices.

Further, the lecture "How to write reports and give presentations" was introduced in order to improve the formal features of students' contributions (seminar talks, protocols and daily reports). In consequence of this, the students' presentations were much better in 2015 than in the previous year although the students had less time to prepare their topics. However, this might also be due to the structure of the new student projects, because the students prepared their presentations together in their groups and discussed a lot about their respective topics.

3. Didactics

The Center for Teaching and Learning of Ulm University gave us some suggestions on how to improve the teaching during the Summer School. We followed them in the structure of the teaching and also in the organisatory matters regarding the whole Summer School.

An important issue for an intensive teaching programme like our Summer School is the interaction between the teachers and the students. All teachers were well motivated to involve the students in their lectures, e.g. by asking questions. This created an open-minded atmosphere and the students asked many questions. We implemented short breaks after 45 – 60 min of teaching in order to increase the attention of the students. This also enabled informal contacts between the respective teacher and the participants. Since there are several different teachers with their specific lectures, it is important to establish connections between the lectures, the excursions and the practical work to have a golden thread throughout the whole Summer School. Therefore, each teacher tried to incorporate links to other lectures and to show the alignment of the lecture in the overall concept of the Summer School.