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PROJECT OUTLOOK, 28th November 2008

Top-Klima-Science

Hydrologic Balance and Global Change

Future Outlook for Mountain Areas in the Face of
Changes in Land Use and Climate

LEADING INSTITUTION

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INVOLVED SCHOOL

Hlfs Kematen for agriculture and food industry



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Austrian Federal Ministry of
Science and Research

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Climate change and the decline of mountain agriculture are modern developments with far-reaching consequences for the hydrologic balance of mountain ranges. Mountain areas are characterized by intricate structures and extreme conditions and react very sensitively to changes. But the impact can be felt far beyond the actual mountain area. All large rivers rise in mountain areas and more than half of humanity depends on the water stored in mountain ranges. More important is to understand the impact of land use and climate change on the hydrologic balance in mountain areas as precisely as possible.

The project Top-Klima-Science is a research cooperation at an international level: the Institute of Ecology at the University of Innsbruck and the European Academy Bolzano are coordinating their efforts with their partner school HLFS Kematen in Tyrol. Two classes with nearly 60 students are involved in all areas of the project, from forming hypotheses to field work to analysing and presenting the findings.

“In this project the students will acquire key qualifications which will enable them to meet future challenges such as diploma theses better and in a more structured way.”
 (Gabriele Geisler, teacher, HLFS Kematen, Tyrol)

“Involving future farmers in research not only provides us scientists with feedback from practitioners but also allows us to transmit the results of our research via important multipliers directly to users.”
 (Ulrike Tappeiner, Institute of Ecology, University of Innsbruck)

The project Top-Klima-Science involves investigating the evaporation across various land-use types (intensively and extensively used meadows and pastures as well as fallow land) throughout the Stubai valley in Tyrol, measuring surface run-off and infiltration and gathering additional information on vegetation, micro-climate, soil and the ecophysiology of key species. By replanting vegetation blocks from high altitude in lower areas and vice versa we will also analyse the impact of temperature changes. Such labour-intensive work was only made possible due to the involvement of the partner school.



The study provides an essential input for modelling the hydrologic balance of an entire valley and opens up an opportunity to analyse the impact of land-use and climate change scenarios.

“We are hoping for an effective exchange between teachers and scientists that will trigger new impulses and ideas in both directions.”

(Kerstin Zangerle, teacher HLFS Kematen, Tyrol)

The research project as such is accompanied by an ongoing evaluation of the process, which will form an ideal basis for the intended longer-term cooperation between research and education establishments. In a first step the students answered a questionnaire on their attitude towards the natural sciences, the future project and other scientific questions. Here are some of their answers:

I find this topic very interesting/interesting because...

- ...we will certainly learn a lot of new things and can bring our own findings to it.
- ...I am sure I will have to deal with this theme over and over again. These are issues mainly for farms, which can put the results to good use. (Source: Questionnaire)

The scientists and teachers, too, have great expectations of Top-Klima-Science:


“I hope that this project will open up many new perspectives for our students in terms of career choice and that it will kindle an interest in studying natural-science subjects even in those who had not seriously thought of going to university before.”

(Gabriele Geisler, teacher, HLFS Kematen, Tyrol)

“The project will doubtless provide new scientific findings, but I am particularly looking forward to close cooperation with the students. This will be a completely new challenge for me.”

(Erich Tasser, EURAC, Bolzano)





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