Where glacier lovers and sheep collide

a tale about my participation in the Karthaus Glaciology summer school 2013

"Earth or Mars?" – Dr. Nanna Karlsson from the Centre for Ice and Climate in Denmark asks the audience that enthusiastically guesses the wrong answer - again. Maybe our judgement was impaired because we were on glass of wine #2 during this evening lecture on ice on the red planet, or maybe we still had a lot to learn about glaciers! That, even though we, i.e. the audience, were what a lay person would call specialists: 38 Ph.D. students and postdocs and 14 experienced scientists who focus their research on ice and climate. Around 50 glacier lovers had gathered in this little mountain village in the Italian Alps to teach or be educated about the measurement and numerical modelling of the world's ice systems. Surrounded by herds of sheep and cows, successful scientists would passionately talk about "icy topics" every day. Eagerly we learned about numerical approaches to glacier dynamics and hydrology, traditional and analytical ice sheet and shelf models. Whilst the basics of every scientific approach were covered, every lecturer also pointed us toward the forefront of their specific field of research. We were taught about cutting edge geophysical methods in glaciology, meteorological measurements on the glacier surface, remote sensing of ice masses and glacier mass balance measurements. Whilst glacial mass loss of the Earth's ice sheets and glaciers has significant implications to current sea level rise, we were also shown how to apply our glacial knowledge to gain information of past climates; deriving past glacial extend from the glacial geomorphological legacy, modelling of the evolution of large ice sheets over the last 66 million years and interpreting climatic signals in ice cores covering hundreds of thousands of years. Whereas glacier behaviour is largely determined by fluctuations in temperature and precipitation, the large ice sheets of Greenland and Antarctica terminate into the ocean. Hence, increasing our understanding of ice shelf – ocean interactions as well as the behaviour of tidewater glaciers and glacier calving becomes imperative to predicting the future of these large ice sheets, which still lock several tens of metres of sea level equivalent in them. As glacier slides accelerated in the lecture room, sheep were surging down the hill during the traditional homecoming procession from the mountains into the valleys. These annual celebrations disturbed our schedule of lectures and numerical exercises in the afternoon. We took it as a welcome break to sniff some mountain air and exercise our bodies instead of our brains. As the weather deteriorated, we even attempted an excursion to a nearby glacier, which was obviously cancelled… to the benefit of sheep gazing; a stream of several thousand animals entertained the whole valley. Refreshed by rain, sheep and social bonding, we returned to our lecture room. Since creativity and problem solving are essential skills any ice and climate researcher should have, we worked on one research topic in a group for the latter half of the course. Kindly guided and inspired by an experienced glaciology shepherd, Prof. Frank Pattyn from the Laboratoire de Glaciolgie in Belgium, our group solved the question whether an ice sheet can be stable on an upward sloping bed due to the buttressing effect of an ice shelf. We got so absorbed by our task that we even cut down our sauna sessions – did I mention that we slept in a lovely 4 star hotel? We did not skip the 5-course nightly dinner though, which was frequently washed down with dancing to live jazz or tango music. After 10 days of intense scientific discussion, exercises and networking, we returned to our respective corners of the world - well educated to solve the world's glaciological problems, to finish our Ph.D. projects and finally make a career as ice and climate scientists. And even when every glacier has melted, every ice shelf collapsed, glaciologists will live happily ever after since there is ice on Mars!

Thank you, Prof. Johannes Oerlemans from the Institute of Marine and Atmospheric Research in the Netherlands, for organizing this now renowned summer school for the 13th time! – Inka Koch