

Anne Hormes, Dr. Phil. Nat.

International Centre for Geohazards, The University Centre in Svalbard

**Applied cosmogenic radionuclide dating
– framework for geohazard frequency and
past ice sheet configurations**

How often did landslides hit a certain valley? Can we decide which triggering factors are controlling the release of rock falls? Can we reconstruct past ice sheet load based on ice sheet thickness for models studying hydrocarbon migration? For all these questions timing is the key factor. We need to know when a past landslide hit the valley floor, before we can account for the frequency during the past and model the most likely event to happen in the future. A chronology of events is crucial before we can decide about which factor might have triggered a certain geohazard event. Providing a chronological framework for the build-up and deglaciation of past glacial ice sheets is essential before we are able to calculate ice sheet volumes and load on underlying sediment basins.

Cosmogenic radionuclide dating is still a rather new geochronological method and offers multifaceted possibilities in the field of geohazards and paleoclimate/glacial geology. This presentation will introduce the basic principles of cosmogenic radionuclide dating and highlight applications in the Italian Alps and Svalbard.

Dr. Anne Hormes has been Associate Professor in Quaternary Geology at UNIS since 2007. She gained her PhD at the University of Bern, Switzerland in 2000, hold a research position at APAT (Italian Agency for Environmental Protection and Technical Services), was a Marie Curie Postdoctoral Research Fellow at Uppsala University, Sweden, was base-leader of the French-German Arctic research base awipev on Svalbard and was project leader for the Swiss geomonitoring company Solexperts. Her main research focus is geochronology and its application on environmental changes. She has performed extensive laboratory studies in the field of radiocarbon dating and has extended knowledge in the application of cosmogenic radionuclide dating. She is an internationally known expert on former glacier variability and her publications are cited widely. She was among the first scientists to date rock avalanche deposits in the Alps by means of cosmogenic radionuclide dating. She is working with the International Centre for Geohazards during spring/summer 2010.