CURRICULUM VITAE

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Education and Profession

2017	Habilitation "Remote Sensing in Climatology"
2005 - present	Lecturer (satellite remote sensing, geo-processing, remote sensing in climatology, supervision of Ph.D. and master students) at Institute of Geography, University of Bern, Switzerland
1999 – present	Head of Remote Sensing Research Group, Department of Geography, University of Bern, Switzerland
1998	Gruner Eng. Company, Switzerland. Snow load on roofs – measurements and modelling.
1995 - 1998	University of Freiburg, Germany. Post doc: SAR Interferometry, glacier dynamics, Antarctica.
1995	University of Freiburg, Germany. Doctorate
1991 - 1994	University of Freiburg, Germany. Assistant; Antarctic Project, three measurement campaigns on the Antarctic Peninsula.
1990 - 1991	Meteorological Department, University of Freiburg, Germany. Radiation balance measurements in the Rhine valley and black forest.
1990	University of Freiburg, Germany. Master degree in Hydrology
1987 - 1988	Internship: - Geological survey (2 months) - Alfred Wegener Inst. f. Polar- und Meeresforschung (6months)
1983 - 1990	University of Freiburg, Germany. Academic studies (Hydrology, Geology and Meteorology)

Further tasks:

- Member of Swiss Commission of Remote Sensing (Vice-president)
- Member of Swiss Commission of Phenology and Seasonality (cashier)
- Chairman of the EARSeL (European Association of Remote Sensing Laboratories) special interest group "Remote sensing of land ice and snow"
- Member of the EUMETSAT - Scientific Advisory Group for Post-EPS sensor development
- Reviewer of COPERNICUS Global Land Services (cryosphere and inland waters);

Snow extent: an essential climate variable with high relevance to monitor changes of the Earth

Abstract

Snow is an essential part of the Cryosphere covering an extensive area of the Northern Hemisphere (NH) during wintertime. The annual NH snow cover is observed at its minimum in the beginning of September (2-3 Million Km2) and reaching its seasonal maximum extent of almost 50 Million km2 in January. These considerable differences have a strong influence on the interaction of energy and mass flux between surface and atmosphere. Due to its importance in the climate system the Global Climate Observing System (GCOS) has consequently declared snow extent an essential climate variable (ECV).

Satellite remote sensing offers the potential to monitor the spatial distribution of snow cover on a regular basis (also in remote areas) but the quality of the retrieval depends on the spatial and spectral resolution of the sensor, and on the spectral properties of the snow cover (grain size, depth, impurities, etc.). Furthermore, topography and land cover affect the retrieval quality of the product snow extent. Various algorithms for different types of satellites have been developed and used to get the required information whether a pixel is snow covered or snow free or partly covered by snow.

The talk will show the influence of spectral properties of different snow types for the retrieval accuracy based on satellite data.

The second part of the talk focuses on the generation of long-term snow extent retrieval based on satellite data. The main difficulties of this are to guarantee a consistent and homogeneous time series for different regions of the world. Two sensor systems will be introduced to show the product snow extent as a time series for Europe / European Alps and Lesotho / southern Africa, namely AVHRR (Advanced Very High Resolution Radiometer) and MODIS (Moderate-resolution Imaging Spectroradiometer). Finally, remarkable differences between the products exist covering the Northern Hemisphere, which show the need for additional efforts to compile a snow extent time series with reasonable accuracy for global applications.