



## Developing services for climate impact and adaptation baseline information and methodologies for the Andes

C. Huggel and the AndesPlus project Team

Department of Geography, University of Zurich, Zurich, Switzerland (christian.huggel@geo.uzh.ch)

Impacts of climate change are observed and projected across a range of ecosystems and economic sectors, and mountain regions thereby rank among the hotspots of climate change. The Andes are considered particularly vulnerable to climate change, not only due to fragile ecosystems but also due to the high vulnerability of the population. Natural resources such as water systems play a critical role and are observed and projected to be seriously affected.

Adaptation to climate change impacts is therefore crucial to contain the negative effects on the population. Adaptation projects require information on the climate and affected socio-environmental systems. There is, however, generally a lack of methodological guidelines how to generate the necessary scientific information and how to communicate to implementing governmental and non-governmental institutions. This is particularly important in view of the international funds for adaptation such as the Green Climate Fund established and set into process at the UNFCCC Conferences of the Parties in Cancun 2010 and Durban 2011. To facilitate this process international and regional organizations (World Bank and Andean Community) and a consortium of research institutions have joined forces to develop and define comprehensive methodologies for baseline and climate change impact assessments for the Andes, with an application potential to other mountain regions (AndesPlus project).

Considered are the climatological baseline of a region, and the assessment of trends based on ground meteorological stations, reanalysis data, and satellite information. A challenge is the scarcity of climate information in the Andes, and the complex climatology of the mountain terrain. A climate data platform has been developed for the southern Peruvian Andes and is a key element for climate data service and exchange.

Water resources are among the key livelihood components for the Andean population, and local and national economy, in particular for agriculture and hydropower. The retreat of glaciers as one of the clearest signal of climate change represents a problem for water supply during the long dry season. Hydrological modeling, using data from the few gauging stations and complemented by satellite precipitation data, is needed to generate baseline and climate impact information. Food security is often considered threatened due to climate change impacts, in the Andes for instance by droughts and cold spells that seriously affect high-elevation food systems. Eventually, methodologies are compiled and developed for analyzing risks from natural hazards and disasters. The vulnerabilities and risks for all types of climate impacts need to be reflected by analyzing the local and regional social, cultural, political and economic context. To provide the necessary references and information the project AndesPlus has developed a web-based knowledge and information platform. The highly interdisciplinary process of the project should contribute to climate impact and adaptation information services, needed to meet the challenges of adaptation.