Geophysical Research Abstracts
Vol. 18, EGU2016-11484, 2016
EGU General Assembly 2016

Interannual variability of snow and fluvial regimes in Andorra

Cristina Pesado (1), Sergi Riba (2), Marc Pons (1), and Juan Ignacio Lopez-Moreno (3)

(1) Sustainability Observatory of Andorra, Sant Julià de Lòria, Andorra, (2) Escola d'Enginyeria de Camins Canals i Ports de Barcelona, Universitat Politècnica de Catalunya, Barcelona, Spain, (3) Instituto Pirenaico de Ecología IPE-CSIC, Zaragoza, Spain

Highlands in Andorra are snow-dominated areas during all the winter and most of the spring season. Interannual snow variability in these areas has a strong and straight influence on the amount and seasonality of river regimes at the bottom of the valley where most of the population and water requirements are concentrated.

The present study analyzes the temporal and spatial variability of the fluvial regimes in Andorra and seeks to understand the interplay of different topographic and climatic variables on this variability. For example, in mountainous regions temperature determines the state of precipitation and this state can significantly affect runoff formation. The interannual temporal and spatial variability of temperatures, pluviometry and different snow indices such as snow heights and days with snow on the ground has been studied for the last decade and correlated with the fluvial dynamics and its variability using discharge measurements.

This study focus especially in the assessment of the role of snow and its seasonality in the fluvial regime dynamics and the influence in the torrential flows and flood hazard. Flood hazard, force to take protection measures, which need information about flood frequency and magnitude. For this, flow instrumental series are used, but usually they do not consider phenomena like snowmelt. This study contributes intends to better understand the interplay between snow and fluvial dynamics and improve the assessment of the availability of water resources as well as the requirements in terms of protection measures.