



Longterm Precipitation Monitoring with OTT Pluvio² at the Southern Slope of Sierra Nevada in Granada

The Measuring Station “Tajos de Breca” has Been Upgraded With Autarkic Measuring System for Meteorological Data

Background

The measuring station “Tajos de Breca” is situated in 2470 m above sea level at the southern slope of the Sierra Nevada; the area belongs to a nature reserve. The station forms part of a measuring network named “Project Guadalfeo” which is financed by the Andalusian government and the responsible water authority. Furthermore the project is supported by the research groups “Natural Water Dynamics” of the university in Granada and “Hydrology and Hydraulics in Agriculture” of the university in Córdoba.



The data delivered from “Tajos de Breca” is controlled by the Adalusion Environmental Center (CEAMA). Hydrological data and data about the dynamics of the sediment in the river Guadalfeo are being collected and analysed since 2004. However, so far there was no systematic meteorological data from the high mountain region available. Therefore, a measuring station had to be installed there to provide reliable precipitation data, precipitation at such altitudes being mainly snow.

Task

- Systematic data monitoring in high mountains
- Collection of information relevant to the protection of Sierra Nevada's southern slopes
- Collection of precise information about hydrology and dynamics of sediment in the river Guadalfeo
- Installation of a precipitation measurement station which provides reliable data even when it is mainly snowing



Solution

The autarkic meteorological station “Tajos de Breca” was perfectly integrated into the existing measuring network of the Guadalfeo project.

“Tajos de Breca” is equipped with high-class meteorologic sensors, data memory, data transmission via modem and solar power

The precipitation measurement system which was replaced by OTT Pluvio² had been a balancing system which could not provide the required accuracy of data. Furthermore, especially in remote areas like high mountains the OTT Pluvio² features like minimum maintenance needs and absolute reliability are important advantages.

By means of comprehensive algorithms and calculation models, the OTT Pluvio² is capable of monitoring precipitation quantity and intensity regardless of whether precipitation comes as rain or snow. Parameters like temperature and wind influences are filtered out.



all meteorological data by including and evaluating the data of this station.

Summary

The data of "Tajos de Breca" was used to develop calculation models for snowmelt / spring runoff (Herrero, 2007, <http://www.ugr.es/>)



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More information about the project:

- Maintenance for the OTT Pluvio2 is remarkably simple: just visual inspections and one instrument check per year. The container must be emptied at a filling level of 80%, the filling level being a value which is transmitted with the measurement data to a control center.
- The integration of the OTT Pluvio2 into the existing system of the station "Tajos de Breca" was accomplished in November 2009 with the support of the company InterMet Sistemas y Redes.
- At the time being the research groups "Natural Water Dynamics" of the university in Granada and "Hydrology and Hydraulics in Agriculture" of the university in Córdoba are working with the data collected by "Tajos de Breca". The objective is to improve the quality of