RSHS18-57
Remote Sensing and Hydrology Symposium (ICRS-IAHS)

The Canal of Aragón and Cataluña experience in remote sensing integration to support water management decisions

Mª Auxiliadora Casterad (1), María Balcells (1), Ignacio Clavería (1), and Roberto Quintilla (2)

(1) Agrifood Research and Technology Centre of Aragon, Soil and Irrigation Department (EEAD-CSIC Associated Unit), Avda. Montañana 930, 50059 Zaragoza, Spain, (acasterad@aragon.es), (2) Comunidad General de Regantes del Canal de Aragón y Cataluña, C/ Lérida 18, 22500 Binéfar (Huesca), Spain (roberto@cayc.es)

The Canal of Aragón and Cataluña (Spain) constitutes one of the irrigable areas with the greatest agro-industrial potential in Europe. In this region, the irrigation lands comprise about 1,080 km2 of the territory, with irrigation water withdrawn mainly from surface resources, the Pyrenees Mountains. Rainfall exhibits a strong seasonality and interannual variability in the Canal of Aragón and Cataluña region. Normally, evapotranspiration is higher than precipitation during the spring-summer months (April to September) leading to a high water deficit that justifies the need for irrigation in the area. The availability of water resources largely depends on snowmelt and fall and winter precipitation. The high temporal variability of water availability is determinant for crop production. Usually, the system of the General Water Users' Association of the Canal of Aragón and Cataluña (in Spanish, Comunidad General de Regantes del Canal de Aragón y Cataluña, CGRCAyC) needs to adopt limitations on water consumption during the irrigation season.

Tools to support decision-making, planning and management are being adopted by CGRCAyC, which regard Earth Observation as an important data source to improve water management (CITA-CGRCAyC collaboration agreements and PDR-Aragón Cooperation Group project). An Irrigation Water Management Support-Tool is being implemented based on water demand prediction obtained from satellite data —Crop-Development-Water demand relationships from crop maps and vegetation indices at real time— and water availability information —stored volumes, current flows, time series models and information about water orders. Also, an environmental monitoring program —irrigation return flows contribute to water pollution by salts, nutrients and pesticides— is being carried out to determine the influence of crop patterns, irrigation and fertilization management on surface water quality (CITA-CHE collaboration agreements).

This work presents how satellite-derived information —crop maps and temporal series of vegetation index— merged with geospatial information (ground and territorial information) and meteorological data are being integrated in water management decision to improve water use in the Canal of Aragón and Cataluña region.