



Interreg Sudoe e-Rigation Project: The Contribution of the Basque Meteorological Agency

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Over the past decade, the Sudoe region (Spain, Portugal, and France) has faced increasing pressure on water resources due to climate change, recurrent droughts, and growing agricultural demand. These challenges highlight the need for more efficient irrigation practices and improved access to high-resolution agrometeorological information. In many areas, the limited density of meteorological observation networks constrains the provision of accurate, parcel-scale data required for optimized water management.

To address this issue, the e-Rigation project proposes an innovative solution based on virtual meteorological stations. The initiative aims to generate operational, high-resolution meteo-climatic indicators at plot level, enabling more precise irrigation scheduling and supporting sustainable water resource management. The project is structured around three main pillars: development of the virtual station system, its implementation and validation through pilot experiences, and knowledge transfer and capacity building among end users. The project brings together a multidisciplinary consortium from across the Sudoe area, including research institutes, meteorological agencies and agricultural organizations and authorities. Basque partners play a key role, with Neiker as project coordinator and Euskalmet contributing expertise in meteorological data analysis, modeling, and operational services.

This contribution presents an overview of the project objectives and activities, with emphasis on the role of Euskalmet, which leads Work Package 1 on the design and development of the virtual meteorological station system. This includes system requirements definition, implementation and calibration of analysis and prediction tools, and improvement of applications for irrigation water management. Euskalmet also contributes to implementation by integrating virtual station data into irrigation management tools and participating in pilot testing and evaluation. These actions aim to ensure the operational delivery of daily agrometeorological indicators at parcel scale and to assess the technical and economic viability of the proposed solution. Key activities include the development of advanced interpolation and downscaling techniques to generate high-resolution meteorological fields; integration of observational data, numerical weather prediction outputs, and remote sensing products; generation of key irrigation variables such as reference evapotranspiration and soil water balance indicators; and adaptation of decision-support tools to incorporate virtual station data.

The project also emphasizes user engagement through training, dissemination, and knowledge transfer. Euskalmet contributes to training materials, supports pilot users, and participates in

system performance evaluation and impact assessment on water efficiency and agricultural practices. Overall, the e-Rigation project aims to advance smarter and more sustainable irrigation management in the Sudoe region through innovative meteorological services and collaboration between scientific, technical, and agricultural communities