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## Correlation of Meteorological and Hydrological Droughts using Observational and Modelled Data in the Guadalquivir River Basin

**Emilio Romero-Jiménez**<sup>1</sup>, Matilde García-Valdecasas Ojeda<sup>2,3</sup>, Patricio Yeste<sup>1,4</sup>, Juan José Rosa-Cánovas<sup>1,4</sup>, María Jesús Esteban-Parra<sup>1,4</sup>, Yolanda Castro-Díez<sup>1,4</sup>, and Sonia R. Gámiz-Fortis<sup>1,4</sup>

<sup>1</sup>Department of Applied Physics, University of Granada, Granada, Spain (emiliorj@ugr.es)

<sup>2</sup>Istituto Nazionale di Oceanografia e di Geosica Sperimentale (OGS), Sgonico, Italy

<sup>3</sup>Earth System Physics Section, International Centre for Theoretical Physics (ICTP), Trieste, Italy

<sup>4</sup>Andalusian Institute for Earth System Research (IISTA-CEAMA), Granada, Spain

Future scenarios of climate change foresee an increase in frequency, duration, and severity of droughts, especially in arid and semiarid regions. This predictions require an intensive study of drought mechanics, starting with how past and present droughts behave, and continuing with the study of future droughts.

In this research, it has been studied how a precipitation decrease that causes a meteorological drought is related to hydrological drought, caused by a decrease in river streamflow. The area of study is located in the Guadalquivir River basin, south of the Iberian Peninsula, which serves as an example of semiarid region. Two different sources of streamflow data are used: observational data obtained from the Spanish Centre for Public Work Experimentation and Study (CEDEX), which takes into consideration regulation from reservoirs, and modelled data obtained with the Variable Infiltration Capacity (VIC) model. The use of two data sources allows for a comparison of results, serving as a validation for future projects that will rely on the use of modelled data to study the behaviour of droughts in the near future.

The numerical description and correlation of droughts is performed by means of drought indices, such as the Standardized Precipitation Evapotranspiration Index (SPEI) or the Standardized Streamflow Index (SSI), each describing one drought type, respectively meteorological and hydrological.

**Keywords:** Drought indices, Hydrological model, Observational data, Guadalquivir basin.

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