

## Crossing Multi-Source Climate Data to Estimate the Effects of Climate Change on Evapotranspiration Data: Application to the French Central Region

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**Abstract :** Climatic factors are the subject of considerable research, both methodologically and instrumentally. Under the effect of climate change, the approach to climate parameters with precision remains one of the main objectives of the scientific community. This is from the perspective of assessing climate change and its repercussions on humans and the environment. However, many regions of the world suffer from a severe lack of reliable instruments that can make up for this deficit. Alternatively, the use of empirical methods becomes the only way to assess certain parameters that can act as climate indicators. Several scientific methods are used for the evaluation of evapotranspiration which leads to its evaluation either directly at the level of the climatic stations or by empirical methods. All these methods make a point approach and, in no case, allow the spatial variation of this parameter. We, therefore, propose in this paper the use of three sources of information (network of weather stations of Meteo France, World Databases, and Moodis satellite images) to evaluate spatial evapotranspiration (ETP) using the Turc method. This first step will reflect the degree of relevance of the indirect (satellite) methods and their generalization to sites without stations. The spatial variation representation of this parameter using the geographical information system (GIS) accounts for the heterogeneity of the behaviour of this parameter. This heterogeneity is due to the influence of site morphological factors and will make it possible to appreciate the role of certain topographic and hydrological parameters. A phase of predicting the evolution over the medium and long term of evapotranspiration under the effect of climate change by the application of the Intergovernmental Panel on Climate Change (IPCC) scenarios gives a realistic overview as to the contribution of aquatic systems to the scale of the region.

**Keywords :** climate change, ETP, MODIS, GIEC scenarios

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