Evapo-Transpiration calculated from the new regional climate projections data set DRIAS-2020 over France

Sébastien Bernus\(^1\), Lola Corre\(^2\), Agathe Drouin\(^3\), Genaro Saavedra Soriano\(^4\), Pascal Simon\(^5\), and Sébastien Prats\(^6\)

\(^1\)Météo-France, Toulouse, France (sebastien.bernus@meteo.fr)
\(^2\)Météo-France, Toulouse, France (lola.corre@meteo.fr)
\(^3\)Météo-France, Toulouse, France (agathe.drouin@meteo.fr)
\(^4\)Ecole des Mines, Antibes, France (genaro.soriano@mines-paristech.fr)
\(^5\)Météo-France, Toulouse, France (pascal.simon@meteo.fr)
\(^6\)Météo-France, Toulouse, France (sebastien.prats@meteo.fr)

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Changes in climatic variables such as temperature, precipitation, relative humidity or solar radiation strongly affect the agricultural sector. Relevant indicators are strongly needed to quantify the expected impacts and implement adaptation measures. Information on the future trend of Evapo-Transpiration (ET) is one of the key issues in order to take up the water management challenge.

In 2020, a new set of climate indicators based on regional climate projections corrected over France was produced and published on the French national climate service DRIAS (www.drias-climat.fr) and the associated report was published in January 2021. The latter portal provides climate information in a variety of graphical or numerical forms. The climate projections are based on the EURO-CORDEX ensemble and have been corrected using the ADAMONT method according to the SAFRAN reference data set.

ET is calculated from this new data set with the aim of making it freely available on the DRIAS portal. Various calculation methods are used and compared. First, ET is calculated upstream and downstream of the ADAMONT method. Second, different calculation procedures are tested for the FAO recommended formula. One uses the average specific humidity instead of minimum and maximum of daily relative humidity which are not available in all selected models. ET is also calculated using the Hargreaves proxy for the visible radiation based on the square root of the maximum daily thermal amplitude multiplied by a coefficient. Three different values were tested for this coefficient: 0.16, 0.175 and 0.19.

These various ET are then analyzed with a view to quantify the influence of the calculation method on the resulting estimated trends.

Authors: BERNUS S.\(^1\), CORRE L.\(^2\), DROUIN A.\(^2\), SAAVEDRA SORIANO G.\(^3\), SIMON P.\(^2\), PRATS S.\(^4\),

\(^1\) Météo-France, Direction de la Climatologie et des Services Climatiques, Toulouse, France,
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