

Interactive comment on “A 50-year analysis of hydrological trends and processes in a Mediterranean catchment” by Nathalie Folton et al.

Anonymous Referee #1

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1 General comments

This article presents an analysis of hydrometeorological trends in the Réal Collobrier observatory, which gathered 50 year long time series of precipitation and streamflow.

The catchment is small, 70 km², but it is well observed and it is scarcely influenced by human activities, thus, the observed changes are due to climate and environmental changes, instead of human activities.

The authors calculate well-known indices (extremes and drought) and then use the Man Kendall method in order to calculate trends.

In order to explore the causes of these trends, they also analyze trends in PET (calcu-

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lated from observations) and modeled soil moisture (with two different models).

They find that water resources are diminishing in this study area. The most significant trends are in spring. As there are no significant trends of precipitation, the main cause is the increase in PET. They also find that it is difficult to detect significant trends (except in spring). These results are coherent with what is in general seen in other Mediterranean basins.

They also find that there is high variability between subbasins. This result is important for the community that studies the impacts of climate change on water resources, as it shows that the impacts of climate change depend on the physical characteristics of the basins, whose spatial variability is high at fine scales and, thus, shows that it is difficult to study the impacts of climate change at the scales of human activities (1-10 km).

This article also shows the importance of having well instrumented long-term hydrometeorological observatories, something that is necessary, but rarely done, as long-term funding for observational activities is scarce, specially in the Mediterranean areas, where research funds are scarce in general.

The article is well written, well organized, and its methodology is sound. Its results are relevant and an original contribution to its field of research. Therefore, I recommend its publication with minor changes.

2 Specific comments

1. English is not my native language, but I suspect that "tendencies" is not the right word to mean "trends".
2. Line 69: There are vineyards in the basin. Being France, I guess they are not irrigated. As nowadays vineyards are being equipped with irrigation in other Mediterranean areas, to irrigate during droughts, it would help the reader to mention if

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these are, or not, irrigated.

3. Line 126: I wonder if the authors checked the goodness of fit of the gamma law. Later, they did for standardized streamflows, so I'd like to see a comment on this fact.

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