

Interactive comment on “Streamflow response of a small forested catchment on different time scales” by A. Zabaleta and I. Antigüedad

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First of all the authors want to thank the Referee George Paganopoulos for his very helpful comments which are contributing, with no doubt, to the improvement of the manuscript. In the following we address the comments.

RC The main weakness of the paper is the lack of consideration of the hydrogeology of the river basin. The results show the dominance of a base flow component which appears to both autocorrelation and cross correlation analysis as well as to the chemical composition of the surface water. The authors refer that 94% of the bedrock consists of flysch, namely a low permeability formation. I suppose that a number of small springs flow in the contact between the high permeable sandstones and limestones with the
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impermeable marls which support the base flow of the river. I believe that a more detailed hydrogeological analysis could enhance the assumption of a high regulated river system.

AC As the Referee states no detailed hydrogeological research has been carried out in this catchment. However, this calcareous flysch formation has been analysed in other areas of the Basque Country, close to our catchment, leading to the conclusion that its permeability is extremely low. In fact, there are not springs of importance in the catchment. Besides, one of the findings that this manuscript intends to highlight is that the high regulation capacity that shows the Aixola catchment is due to its deep soils more than to a rock aquifer. As it is mentioned in section 2 of the manuscript “The main types of soils observed in the Aixola catchment are relatively deep cambisols and regosols (FAO, 1991) with measured depths from 0.8 up to 13 meters”. These very deep soils are the ones that make the system highly regulated and support the base flow of the river. Nevertheless, a more in depth research is going on in this moment in the Aixola catchment which includes data from piezometers in the soil as well as in the bedrock, showing, once again, the low permeability of the aforementioned bedrock materials. This new research might help to clarify our conclusions in the present manuscript.

RC Minor point: a graph showing the river discharge in a daily or monthly basis is missing.

AC We agree with the Referee that this kind of graph could be useful for the reader. The possibility of including one will be considered.

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