

## ***Interactive comment on “Waning habitats due to climate change: effects of streamflow and temperature changes at the rear edge of the distribution of a cold-water fish” by José M. Santiago et al.***

**Anonymous Referee #2**

Received and published: 22 March 2017

The authors present modelling study to evaluate effects of changing climate on streamflow and temperature changes in several rivers in Spain. They further analyze effect of change to habitat changes of a cold-water fishes. The topic is interesting, up-to-date and with global interest. Authors use suitable approaches and analysis techniques, and manuscript has some potential to be published in high quality journal. However, manuscript contains weakness which needs to handle before acceptance, mainly related to writing style and language.

Main comments.

C1

The paper is long and confusing with at times repeat and/or not needed information. It needs to be re-written and streamlined for clarity. Please separate Discussion and Conclusions into two different sections. Many sections are difficult to read and follow, especially methods, results and discussion need to be re-written. Try to make manuscript more compact and avoid repeating. Use of several abbreviation and various terminologies makes “story” in the manuscript sometimes difficult to follow and understand the main points. Manuscript contains lots of results, but authors should focus only to the main results. Is all small details needed to highlight? Language should be checked by native speaker.

Detailed comments:

- Please provide more specified objectives
- There has been newer IPCC climate scenarios (IPCC6). Please let readers know how this reflects to your results.
- Study sites: Please specify which kind of forest and geology sites contains
- Data collection: what are time periods for temperature data collection? How logger was installed? Was discharge measured from all sites?
- Hydrological modelling: Whole section is confusing, please clarify and make in more compact. Did authors calibrate M5 models with measured discharge from all sites? Was model validation done?
- Stream temperature modelling: Please re-write whole section
- Page 9, lines 10-14: Correct place for geology part? What geology classes where used?
- Page 10, lines 2-6: Please tell in more details how DEM was used to study stream continuum. Was this information mentioned in Results?
- Results: Tell first main results (in beginning of the paragraph). Please re-write results,

C2

now they are difficult to follow.

- Figure 6: Not sure is this figure needed. At least need more explanation from main points.
- Figure 7: please tell geological classes already in methods
- Page 17: is all numerical results necessary to include to the text? Especially section 3.3.4 is challenging to read.
- Discussion: Please re-formulate and re-write. No detailed comments provided.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., doi:10.5194/hess-2016-606, 2017.