

## ***Interactive comment on “A framework for evaluating regional hydrologic sensitivity to climate change using archetypal watershed modeling” by S. R. Lopez et al.***

**Anonymous Referee #1**

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The authors in this manuscript seek to better understand the sensitivity of streamflow and sediment fluxes in the catchments of southern California to potential changes in climate. The study for the most part is a sensitivity analysis that looks at potential increases or decreases in these fluxes with changes in precipitation amount, frequency, timing and intensity as well as changes in temperature.

I have two key problems with this paper as it currently stands.

1) The goals of the project while generally stated are not clearly enunciated at the end of the introduction. This lack of clarity prevents myself as the reader from clearly

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understanding how to organize the remainder of the paper in my head and as a result offer a clear judgment on the value of the work that was done in this paper. To me the goals seem to be - a) develop framework for climate change sensitivity studies that relies on generic catchment classification system. b) assess climate sensitivity of region using the regional archetypes c) define potential changes in risk of specific hazards occurring in the specific southern California region of study.

2) The entire approach proposed for looking at sensitivity to climate change rests on the current model used (HSPF) has a robust representation of all processes important to climatic response. This flaw is true of all synthetic analyses of climate sensitivity. The authors need to explain how their approach and analyses deals with this conceptual problem. As it currently stands the manuscript skates around this problem instead of tackling it head on. This paper also goes a step beyond typical model structural representation challenges by developing catchment archetypes. This approach would seem to almost make the model application fictional further calling the relevance of the results into question.

Minor comments- (of note generally well written except for larger structural problems with manuscript)

page 13734 line 4 were should be was

page 13745 - form line 19 on some of this material would be better covered in the methods section of the paper.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 9, 13729, 2012.

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