

## ***Interactive comment on “The past and future changes of streamflow in Poyang Lake Basin, Southeastern China” by S. L. Sun et al.***

### **Anonymous Referee #1**

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The manuscript deals with the possible impacts of climate change on streamflow in China. The topic is very interesting and addressed from a peculiar point of view, since the authors intention is to identify the drivers of streamflow changes analyzing not only temperature and precipitation but also other meteo-climatic variables. However, there are some points that need to be clarified and/or further discussed:

Even if the authors declare their interest in several variables (such as radiation, wind, etc...) at the end the discussion is mainly limited to precipitation and evaporation.

Both the abstract and the introduction need to be reformulated. The authors have to clearly state the motivation beyond their research, its strength and its innovative aspect.

C5408

To me it is not clear how did the authors use the contemporary climate projected with 20C3M. Are these used to check and/or integrate station observations? And which is the difference between the variables projected by GCM and the variable projected by 20C3M (P 9406 L9-10) ?

Did the authors consider any non temporal trend that might affect the data?

A discussion on the water balance parameter calibration is needed. How do the parameters obtained fit the values reported in the literature? There is an extensive discussion about a but not about the other parameters (i.e., b and c).

The authors stated that since the observation taken in different time periods are similar the parameters determined using historical data can be used also for future projection. This is maybe reasonable but not true and is an assumption that has to be discussed.

How did the authors compute the significance of a trend?

There are variables, such as the net radiation, that are not measured but computed. Do the authors think that this may imply some consequences in the temporal changes detection?

Did the authors consider to use also soil use in their analysis? Moreover, the presence of hydropower stations and reservoir has been taken into account in the trend analysis? If yes, how? If not, why?

How can river level be considered a driver for streamflow changes?

Consider to change the X sign with a simple dot in the Equation since the X can be confused with a variable

What do the authors mean with “water consumption ” in Eq.2?

The definition of Delta WR looks really arbitrarily and should be explained

Specific comment: P 9396 L 14-15: restate, it is not clear P 9396 L 23: non including

C5409

the SRESB1 in... this sentence is confusing, I don't understand what does it means P 9397 L 1: I would say that the environment is affected by changes in water resources but not vice versa P9397 L 5: what do the authors mean with "component of the water cycle" (if precipitation, evaporation etc should be excluded)? P 9397 L 17: forces? P 9398 L 6: to decrease P 9398 L 14: as temperature and precipitation increased P 9398 L 15: why obviously? P 9398 L 20-23: restate the sentence P 9399 L 15: I suggest to insert a reference P 9400 L 6: change in season with seasonally P 9400 L 19: which is the DEM resolution? P 9400 L 27-29: check the verb tense P 9404 L 15: set to Eq. 8 is very long, maybe it can be derived in an appendix P 9406 L 5 streamflow Eq. 10 What is D? P 9407 L 20 Mean Square Error P 9408 L 1-2: already said P 9408 L 16: characteristics P 9408 L 19: if wind is higher P 9408 L 22: Figure 4b shows the monthly annual means.... P 9408 L 26: interception P 9409 L 12: atmosphere

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 8, 9395, 2011.

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