

Interactive comment on “Assessing water resources in China using PRECIS projections and VIC model” by G. Q. Wang et al.

Anonymous Referee #2

Received and published: 18 September 2011

It is indeed a very interesting paper. While the research follows a similar approach as seen in many other papers, i.e., climate projection forcing from (regional) climate model + hydrological model + assessing water resources change (mainly runoff); it also clearly stands out in terms of both the scale (entire China) and the details, i.e., great number of subcatchments, complexity in dealing with ungauged basins etc. In this respect, I appreciate authors' efforts and willingness to share the findings of this interesting yet complicated studies.

However, I still have a few observations/doubts that I think authors may need to clarify or improve.

1)The language needs to be posh a bit more. To some extent, some key ideas of
C4072

the paper were found to have been hindered by the language used, for example, in describing model setting.

2)One of the objectives (line 26 page 7296) was to develop a “national model”. I wonder if this objective has been met since VIC and PRECIS all have been “developed” well before the study. I guess “a model application at the national level” might be more appropriate.

3)Regarding VIC calibration (line 18 page 7298), it is indicated that there are quite a number of forcing terms needed but only two (precips and max temp) were available and used. It would be useful to also tell how you dealt with others – using default values or other approaches. I am particularly curious about how evapotranspiration was calculated without caring about the wind velocity data.

4)It might be good to talk a bit more in details about how model parameters were “transferred” to some ungauged basins.

5)The RE error shown in Fig. 3 (page 7312) might ostensibly give an impression of an overall water balance in the simulations, but indeed it cannot. I would like to see this number for all major control stations but not for other small and unimportant catchments (in the sense of assessing water resources). See the point following.

6)The authors concluded (line 22 page 7300) that VIC works well for the entire country, but in fact there are only results from two cathments (out of many) which both underestimate. This conclusion would be more robust if more data for other regions/major basins was shown, although not necessarily at the same level of details as that of the previous two.

7)The model error, e.g., RE has already reached nearly the same order of magnitude of the projected changes concluded. The model error apparently is quite acceptable for general hydrological simulation per se, however it is still important (and necessary in my opinion) to remind reader this uncertainty especially in this case. I would suggest

further to acknowledge uncertainty issue properly when talking about future changes in water resources.

8) In Fig. 5 (page 7314) there was a peak in simulated flow around 1970, but not echoed by the recorded data. Suggest to have a double check.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 8, 7293, 2011.

C4074