Interactive comment on "Climate Change Impacts on Yangtze River Discharge at the Three Gorges Dam" *by* Steve J. Birkinshaw et al.

Anonymous Referee #1

Received and published: 26 June 2016

This paper describes a study on climate impact on Yangtze River Discharge at the Three Gorges Dam. The topic is relevant to the journal's remit. The use of the high resolution Shetran physically-based distributed hydrological model represents a different model to other studies in the same region. The comparison between the CanESM2 and CSIRO-Mk3-6-0 Models is quite interesting. However, there are some issues that should be improved or clarified.

My main concern is on the short study period for the river discharge (only ten years). For climate studies, a ten year period cannot show clear patterns of climate change and environmental change (land use/land cover). Yangtze River is a major river in China and it is a surprise that the authors couldn't find more flow records beyond the ten year study period. Some other minor issues 1) More justifications/exploration on the Shetran model would be useful. As the authors have said 'By Other hydrological

models have previously been applied to the Yangtze basin (Hayashi et al. 2008, Woo et al. 2009, Xu et al. 2008), but in terms of grid resolution, this is the most detailed hydrological model that has been produced for a major part of this basin.' It would be useful if the authors could try different model resolutions to show the resolution effect on the modelling result at this basin so that a high resolution model is justified. A comparison with other models from the aforementioned literature would also be useful. 2) '52 potential evapotranspiration stations' Do you mean evaporation pans? Please clarify. 3) Irrigation abstraction from the basin could be large. How is it considered in the model? 4) 'A hydraulic conductivity value of 15m/day for a 4m deep aquifer produced the best fit.' This value seems quite large. Please comment on it.