Responses to the Comments from Reviewer 1

1. As a reviewing article, the valid references cited in this paper are too less to reaching an effective results. Most viewpoints are depended on only three references (i.e. Liu S, Xu Q, and Zhang Y), which prevented it to discuss deeply on a wide-attention theoretical issue. The climate change, as example, conduced from references before 2002, most data used from 1960s to 2000. How about was it last 10 years? Whether the climate change could be compared with forest change?

Response: We fully understand the valid point from reviewer 1. This is not a normal and comprehensive review. It is a summary of our studies in Minjiang Watershed located in the Upper Reach of Yangtze River Basin. To address this concern, we have added more references and have compared our results from this watershed with key published results from Yellow River Basin to strengthen our analysis.

Reviewer 1 also raised a question on data only from 1960s to 2000. This is a good question. However, data beyond year 2000 are available but not used in our climate change studies due to dam constructions. The study from Zhang et al. (2012) and Chen et al. (2005) compared the relative contribution of climate change and forest change to hydrology.

2. In section 4, author cited some research results of canopy interception and listed in Table 1. Different people provided dominate different interception ratio, from 17% to 50%, indicate that the variation and indeterminacy are very large. Thus, how did the author introduce the conclusion that the canopy interception of forest in Minjiang River is higher than in most studies forest ecosystems in China and elsewhere? In Dadu River, close to the Minjiang River, some research results shown that the interception percentage for the young and middle-aged Abies fabri stand was 23% and 21% of gross rainfall, respectively.

Response: We have removed the statement according to the suggestion.

3. The isotope composition

ïA¸d'D and ïA¸d'O are usually used to determine the underground water source,sub-surface water movement and its relationship with underground water, et al. In this article, I think the relationships among precipitation, ET, surface runoff and groundwater runoff in different type forests, and the variation of water yield in watershed scale are the key issues should be discussed. In the upper reach of Yangtze River, I knew there were a few documents on those topics. However, author cited only two references from same author on soil water movement and water use pattern of three species of subalpine forest.

Response: We have cited more studies on this topic (P6517-6518 L284-311). However, as Reviewer 1 mentioned, there are limited studies on this topic.

4. It is unclear in determining the differences of water cycle for natural forests and plantation forests. We knew that the interception, water-holding capacity in litter layers and ET differed dominantly between the two typical forests. But in subalpine forest land, when natural forests turned to plantation forests, the changes in water yield and the reason are not clear.

Response: A good question. Our Figure 3 shows the difference in ET and potential water yield among some key forest types. Clearly, more researches are needed. To suggest future research priorities, we have added one section to describe what subjects we should focus on in the watershed in the future (P6526 L540-562).

5. In section 5, Author pointed out that the contribution of glaciers and snow melt water to base flow was dominant, ranging from 63.8% to 92.6 %, while rain

contributions vary from 7.4% to 36.2 %. Although this data were related to a major tributary to the Minjiang River watershed, I suggested that the author must reconsider those statement, the data of the contribution of glaciers and snow melt water were too larger for a tributary river basin in Minjiang river. In source region of Yangtze river, the Tongtian river watershed, the contribution of glaciers and snow melt water to the total runoff is about 5.2%-9.2%, and to the base flow is lower than 50%.

Response: We reconsidered our statement. We have also added the reference regarding the study in the Tongtian river watershed as suggested (P6521 L412-416).

6. At watershed scale, author concluded that the large-scale reforestation or conversion programs consistent with the wide-held "trade-off" relationship between forest and water yield in Minjiang River. But it is lack of sufficient proofs to support this conclusion. It is better to add some effective data illustrating the "trade-off" relationship in watershed scale.

Response: Several studies (Zhang et al., 2012; Zhang et al., 2008) on this topic in the study watershed demonstrated that reforestation could lead to decreasing of water yield while harvesting can increase it. A recent paper published by Zhang et al. (2011) provided good explanations on some conflict results obtained in the Minjiang watershed in some earlier studies. The conclusion from this paper also confirmed the "trade-off" relationship even though there are dynamic hydrological responses to forest changes over a long recovery period following harvesting. Several references are added.