

Interactive comment on “Response of “Glacier-Runoff” system in a typical monsoonal temperate glacier region, Hailuogou Basin in Mt. Gongga of China, to global warming” by Zongxing Li et al.

Anonymous Referee #2

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The paper presents the data of glacier-covered area changes in Hailuoguo basin during the last century and analyses correlation of these changes with climatic fluctuation at the same period. The specific feature of monsoonal temperate glaciers is their considerable sensitivity to climatic change with shorter lag time than polar ones. However in this case it is important to understand the real cause of glacier runoff rise; is it either increase of ablation rate or rising mean annual precipitation? Using the correlation analysis, the authors made an attempt to show that increase of ablation is the main

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reason for increasing total runoff in Hailuoguo basin. It is necessary to note that correlation analysis is widely used for the problems investigated in the paper, and, in this sense, the suggested approach doesn't seem novel.

Principle comments 1. It is difficult to see why the authors have concluded that the influence of ablation on rising glacier runoff is prevailing; ablation data are available up to 1995 whereas runoff became to rise after 1999. 2. The time lag of the glacier response to climate change is estimated in the paper. How was obtained this estimation if only 6 years of the glacier retreat observations are available? 3. High values of correlation coefficients between air temperature changes and mass balance variations for the last 45 years look questionable if one compares temperature variations on Fig. 2 and mass balance changes on Fig. 3. Probably, the correlation was calculated between the curves shown in Fig. 3 which, as one can guess, are fitted to time series of the temperature and mass balance, respectively.

Technical corrections 1. It is not clear for me what temperature variations are shown in Fig. 3? According to figure captions these variations are the same as ones shown in Fig. 2, however the graphs on Fig. 2 and 3 look quite different. 2. There are four graphs on Fig. 2, but only two ones are explained in the figure caption. 3. Runoff data from 1994 to 2004 are shown on Fig. 4b, however, as it is written in page 3398, the hydrological data are available for the period of 1999-2004 only. 4. Mark Dyurgerov; Dyurgerov M. in References 5. Pujiancheng; in the text is not agree with Pu Jiancheng; in References 6. Li Zongxing et al., 2007; is absent in References

1. Does the paper address relevant scientific questions within the scope of HESS? YES 2. Does the paper present novel concepts, ideas, tools or data? NO 3. Are substantial conclusions reached? NO 4. Are the scientific methods and assumptions valid and clearly outlined? YES 5. Are the results sufficient to support the interpretations and conclusions? NOT COMPLETELY 6. Is the description of experiments and calcu-

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lations sufficiently complete and precise to allow their reproduction by fellow scientific (traceability of results)? NO 7. Do the authors give proper credit to related work and clearly indicate their own new/original contribution? YES 8. Does the title clearly reflect the contents of the paper? YES 9. Does the abstract provide a concise and complete summary? YES 10. Is the overall presentation well structured and clear? YES 11. Is the language fluent and precise? NOT COMPLETELY 12. Are mathematical formulae, symbols, abbreviations, and units correctly defined and used? 13. Should any parts of the paper (text, formulae, figures, tables) be clarified, reduced, combined, or eliminated? YES 14. Are the number and quality of references appropriate? NOT COMPLETELY 15. Is the amount and quality of supplementary material appropriate? NOT COMPLETELY

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