

Interactive comment on “Weak precipitation, warm winters and springs impact glaciers of south slopes of Mt. Everest (central Himalaya) in the last two decades (1994–2013)” by F. Salerno et al.

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We would like to thank Dr E. Liang for providing his careful and very constructive comments on our manuscript. We think to be able to address his suggestions and without doubt his contribution has resulted to significant improvement of the manuscript.

This ms showed changes of temperature and precipitation in the the valley of Mt. Everest. It reported climatic records above 5000 m a.s.l. over the past 20 years, being very invaluable instrumental climatic records for a better understanding of climatic change at high elevation. It should be publish in The Cryosphere. Before its acceptance, some issues could be considered.

C2979

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General comments:

1. This ms should focus on changes of temperature and precipitation records over the past 20 years. I will better to remove the discussions on “Linking climate change patterns observed at high elevation with glacier responses”. The changes of glaciers were not shown in results part. It is not very reasonable to include “glacier” in this ms. Clearly, the main topic of this ms focus on variations in temperature and precipitation.

Response: The main focus of the manuscript is declared at the end of the introduction section. “In general, this study has the ultimate goal of linking the climate change patterns observed at high elevation with the glacier responses over the last twenty years, during which a more rapid glacier shrinkage process occurred in the region of investigation.” As described in the introduction in the actual scientific debate on glacier shrinkage in Himalayan range the main current uncertainties are attributed to a lack of measurements, both of the glaciers and of climatic forcing agents. Surely the finding of this paper will be interesting for many disciplines (as ecological studies), but here we are interested in the link climate/cryosphere and in particular in relation to the observed glacier changes just recently observed by Thakuri et al., 2014 in the same region.

2. The authors should reduce the length of “Mechanisms responsible for temperature warming and precipitation weakening” part. The solar radiation absorption caused by the large amount of aerosol may be the main cause

Response: As written in the paper...This study does not aim to either realize a comprehensive review, but our intent here is just to note the recent hypotheses advanced in the literature that fit with our observations for the region of investigation. The solar radiation absorption caused by the large amount of aerosol could be the main cause, but just for April, while the significant decreasing observed in May and the slight significant decreasing during the monsoon months deviate from the scenario proposed for April. Furthermore the observed increases in minT which is follows different mechanisms described in the text.

TCD

8, C2979–C2981, 2015

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3. Page 5926, Line 15, it is not a good idea to start one sentence like “Kattel and Yao (2013) analyzed the annual minT, maxT, and meanT trends from stations”. It is reasonable to start your main findings can their comparisons with other records. The same problems in several paragraphs.

Response: We changed all these paragraphs according to your suggestions

4. It is a very good idea to summary changes of precipitation and temperature along increasing altitudes, as show in Fig. 5. I like this figure very much. 5. Fig. 8 is too complex.

Response: Thanks. Fig. 8 will be surely simplified.

Interactive comment on The Cryosphere Discuss., 8, 5911, 2014.

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