The Cryosphere Discuss., 4, C1639–C1641, 2011
www.the-cryosphere-discuss.net/4/C1639/2011/

The Cryosphere Discussions

Interactive comment on "Longest time series of glacier mass changes in the Himalaya based on stereo imagery" *by* T. Bolch et al.

D. Quincey (Referee)

djq@aber.ac.uk

Received and published: 18 February 2011

This paper builds on the previous work of Bolch et al., 2008 to provide a more accurate, and more spatially comprehensive assessment of mass changes in the Everest-region, and, moreover, demonstrates the value of using archive datasets such as declassified Corona imagery to reconstruct decadal patterns. This work has the potential to guide further work elsewhere in the Himalaya to begin to address the paucity of mass balance measurements in the region. The paper is well written and I only have a number of minor comments.

The title could be more specific to reflect the content of the paper. It should at least include 'Everest-region' and 'Nepal'.

2594-1 The real impact of losing glacier ice on long-term water supply (certainly in terms of spatial and temporal distributions) is yet to be fully quantified, so I think it's important to avoid generalised statements such as this opening sentence. Perhaps you can modify it to 'changing runoff distribution' or something similar.

2594-12 Remove the '$\sim$' before 1970

2594-12 'at an increasing rate' – I am not convinced your results bear this out (except perhaps for the Khumbu Gl.), at least not within the stated errors. I suggest you play this statement down or remove it.

2595-8 it would be good to reiterate the numerical results of the earlier paper here

2595-9 missing 'a' before 'larger'

2595-16 missing 'the' before 'nine'

2595-25 remove 'an'

2596-8 Is there a reference for the RSG software? I am unfamiliar with it, so expect other readers would be too.

2596-22 'extraglacial' – maybe use 'non-glacierised'?

Section 2 - it would be interesting to know the spatial distributions of the GCPs, TPs and check-points, even if it is just mentioned in the text.

2597-10 it's a minor point, but I think you mean glacierised rather than glaciated.

2597-24 should this reference not be Koblet et al., 2010 as well?

2600-10 to 20 have you considered the role of different catchment topographies on the spatial variation in surface lowering rates? And/or the role of avalanche accumulation? A couple of lines about this might enhance this section.

2600-24 to 29 I think you only have 1984 data for the Khumbu Gl so to state that all the studied glaciers show an accelerated loss since then is misleading. And can you really

place so much faith in the derived data 2002-2007? At least sufficient faith to claim there has been increased mass loss in this short period? This paragraph needs toning down, or could even be removed.

2601-7 switch ‘has also’ to ‘also has’

Table 1: could you provide the image ids?

Figure 1: would benefit from a grid or similar showing lat/longs for the area

---

Interactive comment on The Cryosphere Discuss., 4, 2593, 2010.