

## ***Interactive comment on “Mapping and morphometric analysis of glaciers in Jotunheimen, South Norway, during the “Little Ice Age” maximum” by S. Baumann and S. Winkler***

**I. Brown (Referee)**

ian.brown@natgeo.su.se

Received and published: 7 September 2009

The paper by Baumann and Winkler aims to expand our knowledge of glacier change over the last 250 years by relating reconstructed glacier extents with contemporary glacier extents. The study uses geomatics, primarily image interpretation and mapping, to derive historical glacier extents in aerial photographs and a Landsat image. Existing geochronological data are used to date moraines mapped in the image data with some GPS locations used for control. From the mapping comparisons of glacier area and centre line length between the Little Ice Age (LIA) and present are produced.

The paper offers some insights into the regional pattern of glacier change over 250

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



years. However, I find the assumption that the outermost moraines are LIA moraines, somewhat unconvincing. I note that the authors accept that certain high altitude sites may be exceptions. Nevertheless, the authors need to provide more evidence to back-up the fundamental assertion. Recent studies by, amongst others, Atle Nesje and Richard Shakesby suggest that outer moraines might be older than the LIA. Whilst I accepted that Jotunheim might be different than Jostedalbreen and its' surroundings this needs to be properly validated.

The authors could further improve their paper by explaining the orthorectification methods used. From reading between the lines I assume a polynomial fit of some sort was used. Please provide more information on this. I would ask the authors to consider changing the use of the term Central Flowlines to Centrelines as we are unsure of the morphology of the historical glaciers and their flow regimes.

Section 4.2, p. 358, line 23. I am unclear as to whether the map was always used as the basis for glacier mapping? Is this the case?

Section 5 (Results) p. 361 line 13. Why are the maximum and minimum altitudes of interest? How can you reconstruct the maximum altitude without attempting to reconstruct glacier volume?

Section 5 (Results) p. 361 line 28 (and line 1 p. 362). This is repeated from Section 4.2.

Section 6.4 p. 367 and 368. I don't believe that it is relevant to compare Jotunheimen with Baffin Island and the Southern Alps. I would rather you search the literature for more data from Scandinavia and Europe.

As a general comment I think this paper would benefit from an extensive revision with particular attention paid to the language and grammar. The English is rather poor and should be reviewed by a native speaker. I would encourage the authors to resubmit their study as the data they have created could be of great value to a range of scientists,

[Full Screen / Esc](#)[Printer-friendly Version](#)[Interactive Discussion](#)[Discussion Paper](#)

not least climate modellers.

---

Interactive comment on The Cryosphere Discuss., 3, 351, 2009.

TCD

3, C184–C186, 2009

---

Interactive  
Comment

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

C186

