

Interactive comment on “Determination of length, area, and volume changes at Storglaciären, Sweden, from multi-temporal aerial images (1959–1999)” by T. Koblet et al.

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We gratefully acknowledge valuable comments by the two anonymous reviewers! The given comments will help to improve our study.

In the following we will first of all address the general comments by the reviewers. Most of the specific comments are considered in the revised version of the manuscript.

Combination of Koblet et al. and Zemp et al. into one paper: Both reviewers ask for the reason of the splitting into two papers and propose to combine the two companion papers. At the same time, all referees suggest to extent specific sections. During the entire publication process, this issue was discussed several times among the au-

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thors. Based on the following reasons, we adhere to our original two-paper-decision as this allows us to: - provide enough detail on existing data, methods, and related uncertainty that is required to reproduce our work, - summarize and discuss the large number of earlier studies that are related to the combination of in-situ and remote sensing methods as well as to our re-analysis at Storglaciären in particular, - focus on the different objectives of the studies (i.e., Koblet et al.: re-analysis of all available aerial photographs, determination of length, area, and volume changes, comparison with related earlier studies; Zemp et al.: comparison of glaciol. and volum. mass balance, review of previous related studies, uncertainty assessment, conclusions for mass balance monitoring) - give the analysis of the glacier mass balance a higher weight than the one of length, area and volume changes, - include reference lists that are adequate to more than six decades of research, - acknowledge the differing contributions of the authors.

No new, but standard techniques: Both reviewers mention that the study does not provide new approaches or methods. But nevertheless they admit, that the study is “worthwhile publishing” (reviewer #2), since the “careful work is appreciated” (reviewer #1). Of course, the authors are aware of the fact that the raw data as well as the methods are not new, but with the sound reanalysis of the existing photographs, a new and profound dataset of length, area and volume changes at Storglaciären was compiled. In addition, a careful error assessment was conducted. This methodological approach will motivate other studies on the (re-) assessment of their data series.

Uncertainty assessment: Reviewer #1 is concerned about missing information in the error analysis and proposes to come up with “ONE number integrating all errors”. We do agree with the comment and will provide a list of missing data, which makes a profound error assessment as the one given by Thibert et al. impossible. Furthermore, in the revised paper we will propose one error value that is most suitable.

Make use of references: In response to Referee #2 we will revise our manuscript in order to make better use of the given references, compare our analysis to previous

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studies and discuss the implications of the study for earlier and future work.

English editing: Reviewer #2 proposes some editing of the language in order to better differentiate work previously done or from our study. In the revised paper we will improve the phrasing to make this more explicit as well as to emphasize the objectives of the paper.

Interactive comment on The Cryosphere Discuss., 4, 347, 2010.