Interactive comment on "Automatic detection of calving events from time-lapse imagery at Tunabreen, Svalbard" by Dorothée Vallot et al.

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The paper is clearly structured and gives a good introduction about why a specific task is required and why it should be automatised using machine vision. Judging only on the machine vision part the following comments apply:

a) In machine vision, a camera should be always calibrated unless it is unfeasible. In this situation, I would strongly recommend calibrating the camera to identify the intrinsic camera parameters such as focal length, principle point and lens distortions. By failing to due so the results can have significant different results when used for sizing. Camera calibration is a standard method available in many software packages like matlab, opencv, etc.

b) Image registration works best if the camera is calibrated and lens distortions were removed from the images. Otherwise, the affine transformation must consume the lens distortion with its free parameters resulting to less accurate registrations

c) For the sizing it is important to find a virtual plane which approximates the surface in question as accurate as possible. Here, it might be useful to have several sections like in Figure 10 and approximate one plane for each of this sections. If the plane parameters are known precise sizing can be performed independently of the camera orientation by back projection (Homography). At the moment there are several assumptions about the orientation of the camera in respect to the calving front which are not always maintained.

Outlook: Deep learning is nowadays major enough to be used as a engineering tool for labelling tasks using images (matlab / opencv etc). This requires large labeled datasets for training but it seems they are available for this particular use case. This would improve the segmentation of the calving front. Here, the network can also learn how to deal with different weather conditions and remove unknown objects (birds ...).

Summery: From the technical side, I believe it is a move into the right direction using machine vision for these kind of tasks. However, there are some issues with the method outlined which can lead to wrong results in the sizing.