<u>Reply to the Referee #1's comments</u>

Point-by-Point Responses

1. Q …My primary concern is that the authors of these two manuscripts seem to come to different conclusions in terms of changes in Antarctica. Each group could not have known about the other, but due to the fact that both groups are publishing in 'The Cryosphere', I encourage the editors to initiate a detailed comparison of key elements of the two manuscripts. Maybe the main authors could be invited to provide an open comment to the other paper

R. Here, we carefully compared our manuscript and the manuscript by Gardner et al focusing on conclusion and processing method, and provided the detailed summaries.

Summary for the conclusions

(1) Although the two manuscripts seem to have different conclusions, but they actually have the same or similar value estimates. For example, for the total increased ice discharge in entire Antarctic ice sheet, our estimate is 49±40 Gt/yr, close to 35±15Gt/yr from Gardner et al. However, we didn't emphasize the finding that the total ice discharge was increased in entire Antarctic ice sheet during the surveyed period because the uncertainty of our estimate is large compared to the estimate itself. It should be noted that uncertainty of 15Gt/yr may be underestimated by Gardner et al. Please check their Table2, the uncertainty should be 56Gt/yr instead of 15Gt/yr.

(2) For the total mass loss of Antarctic ice sheet, our estimate is 205±90 Gt/yr (an average of 181±68 Gt/yr for 2006 and 230±60 Gt/yr for 2015). The estimate of Gardner et al is 186±93 Gt/yr. The two estimates are quite similar.

(3) We both find that the largest imbalance occurred in Amundsen Sea sector. Our mass balance estimate is –212±24 Gt/yr while Gardner et al's estimate is –213±51 Gt/yr.

(4) Gardner et al. found that the increased ice discharge in Antarctica is mainly contributed by Amundsen Sea Embayment and Getz of west Antarctica, and Marguerite Bay of Antarctic Peninsula. However, we also found the increased ice discharges in these area, for example, 13±1 Gt/yr for Amundsen Sea Embayment (basins 21 and 22), 10±25 Gt yr^{-1} for West Antarctica and 14±7 Gt yr^{-1} for Antarctic Peninsula although the magnitude of increased ice discharges are slightly different to those by Gardner et al. The causes may consist of different grounding lines and method of ice flux used (which will be described in processing method section). Due to large uncertainty of our estimate for West Antarctica, we didn't emphasis the finding that the ice discharges were increased in the area. Furthermore, we also found the rate of accelerated ice discharge in Amundsen Sea Embayment during the surveyed period is less than the former period (1996-2006) (see Figure S4 and S5). As stated

above, the uncertainties for discharge changes may be underestimated by Gardner et al. in their Table2 since the error propagation law was not used for the evaluation of the uncertainties.

Summary for the processing methods.

Method of ice velocity product

(1) For the ice velocity extraction, we used the COSI-Corr procedure, a frequency-based method developed by Leprince et al., 2007 while Gardner et al. used auto-RIFT technique, a spatial domain one. According to Leprince et al., 2007, the frequency-based technique is generally more accurate than the spatial domain method.

(2) We produced the ice velocity in 100m spatial resolution based on the spatial resolution (~100m) of displacement vectors, while Gardner used the displacement vectors in different spatial resolution (from 240m to 2km) to combine to produce the velocity map of 240*240m grids according to their description in L80.

(3) For quality control for displacement vectors, we used the following three steps to enhance the signal and exclude unreliable measurements. First, an adaptive filter and a median filter were used. They can maximize to remove 'salt and pepper' noise in displacement vectors. The areas covered by cloud and water were excluded from the displacement scenes using integrated QA band. The areas covered by cloud and water also showed lower SNR, generally lower than 0.5, and they were also masked in mosaic product using the SNR <0.9. In addition, the edge of displacement scene was also trimmed. For Gardner et al's manuscript, the quartile filter was used for stable surface, we don't understand whether the method was also applied in fast flow area similarly? Using quartile filter may be not reasonable when the displacements varied with the time separation of image pairs.

(4) For absolute calibration of ice velocity, we used existing SAR ice velocity as a reference to define stable areas (ice velocity <5m/yr). We considered that the threshold is a relatively rigorous. We assumed that the displacement gradient is stable due to stable image geometry, so the mean values of differences between our ice velocity and InSAR ice velocity were applied for the absolute calibration of mosaic ice velocity product. The calibration processing for NSIDC LISA in Gardner et al was similar to our method, but they used the thresholds <10m/yr and 10-25m/yr respectively to estimate the offsets caused by geolocation error.

(5) In mosaic ice velocity production, we used the time-separation for each image pair as a weight (see equation 1) to estimate ice velocity in order to suppress short-interval velocity measurement because short interval usually has higher error in ice velocity extraction. Generally the coregistration error is independent on the time separation of image pair, in other words, coregistration error of displacement vectors inferred from short time-separation image pair will be amplified largely. NSIDC

LISA were processed in the similar manner in ice velocity extraction but for different weighting (0.3 for 16-day separation, 0.6 for 32-day separation).

Ice discharge analysis

(1) We used the Antarctic grounding lines provided by Depoorter et al.(2013) for ice flux (discharge) processing and minor adjustments were made for calculating ice fluxes at different time periods due to incomplete ice thickness and ice flow data as described in section 1 of SI. The grounding line is compilation of near all existed grounding lines products inferred from different techniques (such as optical imagery, InSAR, altimetry) and is considered to be the most approximation of real grounding line. Because the discharge estimate generally varies 3%-8% due to different gate placement from previously studies (depoorter et al. (2013), rignot et al. (2013) and our experiment (a case shown in response to referee #2)), the induced uncertainty is too large for ice discharge estimate. While Gardner used three datasets of grounding lines (namely, GL0, FG1, FG2), and used FG2 to estimate the ice discharge in Antarctic ice sheet while FG2 is far from the true grounding line, especially in West Antarctica. The ice discharge was thus adjusted using the SMB and unmeasured flux due to ice flow convergence/divergence (in L260).

(2) In ice discharge estimate, we considered the direction of ice velocity and plane of flux gate to minimize the influence of inaccurate grounding lines (see figure R1). We considered there may be some errors in defining the grounding lines which may cause that some of ice velocity along grounding line point towards ice sheet instead of the outlet glaciers (case 2). So the derived incorrect flux values cannot be considered and should be removed from the ice flux estimates. Here, for simplification and clarity, we described the two cases (see figure R1) to further explain our processing method, as shown in Figure R1. In case 1, the grounding line is placed on ice-shelf mistakenly, the ice flux through the gate should be zero because the gate and direction of ice flow are parallel. In case 2, the gates b and c are placed by mistake, the ice fluxes in gates b and c can be completely compensated if the effect of ice flow convergence /divergence is negligible. In the next, we further discuss how to calculate the ice flux using the unreal grounding line (Figure R2). In Figure R2, using the real grounding lines, the ice flux of the Fisher, S1, and S2 glaciers should be calculated by the use of the gates of 'L0-4','0-1', and '2-3' respectively along the real grounding lines. But in the case of unreal grounding lines used, for the Fisher glacier, the unmeasured ice flux by the gate A (L0-L1) is also measured in gate B ('L1-L2') eventually. For S1, and S2 glaciers, their unmeasured ice flux by the gate A are also measured eventually in Gate B ('L1-L2'). Finally, the ice fluxes from the three glaciers can still be estimated correctly if the ice thickness and velocity data is accurate. The only discrepancy in the estimates for ice flux along different grounding lines is that the additional contribution from the SMB and ice dynamics in the gap area between flux gate and real grounding line. However it is generally small. We believe that our processing method could minimize the effects of inaccurate grounding lines.

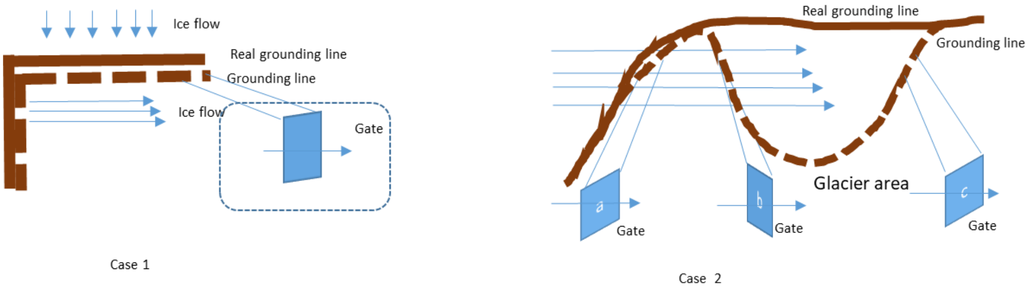

Figure R1 Schemes showing the influence of grounding line error on flux estimate.

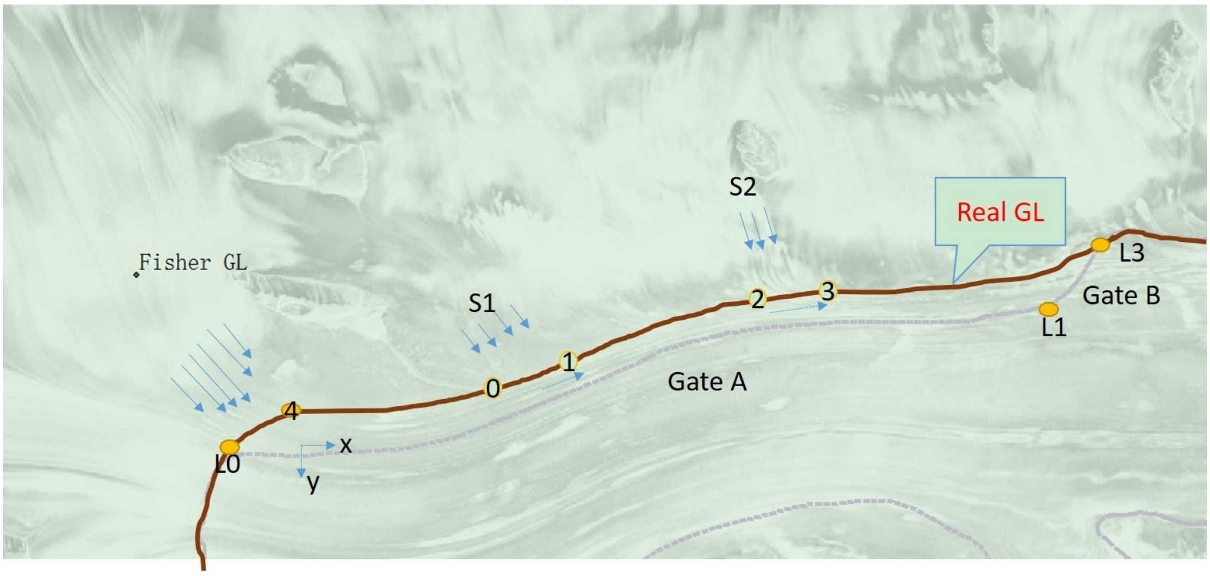

Figure R2. A case of ice flux estimate (brown line-real is grounding line, dashed gray line between) L0 and L3 is wrong grounding line)

(3) In Antarctic Peninsula, ice flux was prescribed to have no change during the surveyed period by Gardner et al. while it was estimated based on the InSAR derived velocities (2008) and our L8 based estimates. Since the Landsat ice velocity don’t cover the area >82.4 degree in south latitude, Gardner et al used two SAR maps in 1997 and 2009 to extrapolate the ice flux in 2015. We only used one map of 2008 for the ice velocities of 2014 and 2015 under the assumption of no significant change from 2008 to 2015.

(4) We focused on ice discharge and its change on six oceanic sectors although the results were given and the analyses were done on three areas (East, West and Antarctic Peninsula). However, Gardner et al. focused on the latter areas.

2. Q …I therefore view a quantitative comparison of this map with a product based on data from a single year as problematic. This is true for both manuscripts currently in review in ‘The cryosphere’. Both groups alleviate the problem to some degree by utilizing time series data for areas where they are available (i.e. Amundsen sea). In this context, a MEaSUREs product has since become available that provides annual maps from 2005-2016 (http://nsidc.org/data/nsidc-0720).See also the next comment

R. We agree your point of view on SAR ice velocity, but it is difficult to discern the exact observation date for SAR ice velocity. We used the reference year for 2006 which are based on the published paper by Rignot et al.(Rignot et al ,NGeo, 2008). In this paper, they analyzed mass balance and its change between 1996 and 2006. Mouginot et al (2012) indicated the spare coverage in 1996 by SAR images. These lead us to select 2006 as reference year. Although the Rignot group just released updated SAR ice velocities on 25, April, 2017, since the released date is later to our submission date, we didn’t use the new data. In fact, we used the InSAR velocity data covering 2007, 2008 and 2009 from Rignot et al. (2011), so ‘2006’ should be changed into ‘2008’. The single year ‘2008’ used is just for convenience, it actually denotes 2007, 2008 and 2009. These would be indicated in the text.

3.Q Processing ice velocity form Landsat is not new. In addition to references cited in the manuscript, a recent publication presents the Landsat-8–based ice velocity maps and goes on to integrate the data with data from other sensors to present a much more comprehensive, annual time series for Antarctica spanning a time span of 11 years. Also, Mouginot et al. 2017 is a published manuscript as opposed to a discussion paper. The maps are publicly available at NSIDC: http://nsidc.org/data/nsidc-0720 and are much better suited for the comparative work w.r.t. mass balance

R. We also noted a new paper by Mouginot et al. (2017) in remote sensing, but the annual ice velocity products can not cover the entire Antarctic ice sheet before 2013.

Point-by-Point Response for Specific Comments.

4. Q Line 59: grounded based – > ground based

R. corrected, thanks.

5. Q Line 69-71: While I consider this a contribution worth publishing, please see the two manuscripts mentioned earlier dealing with the same data set.

69 Therefore, here we intend to construct two present-day ice flow maps covering the years of

70 2014 and 2015 for all of the Antarctica inferred from Landsat 8 (L8) images acquired by the
71 Operational Land Imager (OLI).

R. we don’t understand the question. We guess that you mean that why the two manuscripts have different conclusions using same data. The question has been replied in response 1.

6. Q. Line 72: Rignot et al. 2011 is used to estimate the mass discharge in 2006 See my comment above on this topic.

R. the reference year for SAR ice velocity has been described in response 2.

7. Q. Line 93: “Compared to the satellite interferometric SAR data, the L8 panchromaticimagery is more suitable to estimate ice motion in fast-flowing regions for several reasons,...” While I agree that Landsat-8 is a valuable resource for ice velocity monitoring, I challenge the statement made here based on Mouginot et al. 2017, who show that the error for a single image pair is smaller for SAR when compared to optical.

R. Agree and thanks. We delete the description of the comparison between Landsat8 and SAR, and the descriptions on characteristics of Landsat 8 move into the former paragraph.

8. Q Line 94, 95: Statement (1) nadir look: Ice velocity from SAR AND optical are generated from data pairs acquired in the same viewing geometry. If the authors mean that velocity maps from spatially adjacent scenes need to be carefully combined because theviewing geometry changes, the statement needs to be clarified. Topographic artifacts in SAR based ice velocities in Antarctica are regionally limited to mountainous areaslike the Antarctic Peninsula and the Transantarctic Mountains. Over large glaciers and ice streams this is less of an issue

R. Agree and thanks. As in response 7, we delete the comparison with SAR.

9. Q. Line96 ff: Statement (2) Non-cloud free sensor. Change ‘non-cloud free’ to ‘cloud cover sensitive’ The quality and coverage of the map is owed to a very generous acquisition plan by USGS (i.e. near continuous Landsat-8 acquisitions), so cloud covered images can be discarded and there is still enough data available to provide a near full coverage of the observed area if data from a full year are combined. The fact that more data are available does not support the statement that Landsat-8 is better suited for ice velocity mapping (see my comment above and the assessment in Mouginot et al. 2017)

R. Agree and thanks.

10. Q. Line 101 ff: Statement (4) Feature tracking vs speckle tracking vs InSAR phase analysis Speckle Tracking and SAR: Range and azimuth resolution is variable in SAR, but the statement that azimuth is generally lower is not true. In fact, this is mode dependent (see RADARSAT-2 vs Sentinel-1). InSAR phase analysis and SAR: While it is correct the InSAR phase is only sensitive to line of sight displacement, it has been shown that the combination of ascending and descending data leads to a superior result. Combining SAR data from multiple angles even allows a reconstruction of the 3-d flow. Joughin, I. (2002), Ice sheet velocity mapping: A combined interferometric and speckle tracking approach, Ann. Glaciol., 34, 195–201. Gray, L. (2011), Using multiple RADARSAT InSAR pairs to estimate a full three-dimensional solution for glacial ice movement, Geophys. Res. Lett., 38, L05502, doi:10.1029/2010GL046484.

R. Agree and thanks. As in response 7-9, we deleted the comparison with SAR.

11. Q. Line 122: See comment for Line 72

R. Please see response 2.

12. Q Line 156: 100 m resolution product. Does this refer to 100 m posting (i.e. a calculated value every 100 m), instead?

R. The 100m resolution of image pairs decides that displacement vector resolution is 100m, then that the resolution of ice velocity product is also 100 m.

13. Q. Line 167: These filters factor into the resolution of your product (see comment above).

R. The local sigma and median filters don't change our spatial resolution of ice velocity products.

14. Q. Line 189, 190: 'In fact, the offset tuning is often called absolute calibration of the ice velocity data.' Is often called : : : by whom? Please provide reference(s)

R. We originally mean to use the term in elonics tuner processing to help us to explain the work. Sorry to mislead you. We change to the general term 'absolute calibration'

15. Q. Lines 207, 208; Equation 1: I would have expected a weighted average of speeds here. The equation as written will provide more weight to data with longer time separation, but this could be presented more clearly in my opinion (i.e. specify the weights). Also, as written, the authors do not provide an option for spatial adjustment of weights depending on glacier speed for example. Longer time separation will provide advantages in areas of slow flow, but are less suitable in areas of fast flow (see Mouginot et al. 2017)

R. Here, we used the time separation as weight to calculate weighted average of ice velocity. The equation 1 is commonly used in high-accuracy InSAR processing. The displacement vectors in a shorter time separation have larger uncertainty in estimate of the ice velocity since the accuracy of co-registration is usually thought to be independent to time interval of two images. Thus, for the longer time interval displacement vectors have lower uncertainty in estimate of the ice velocity, they should have larger weight in ice velocity extraction. The reviewer may worry that the longer time separation will lead to loss of coherence between two images. However, unreliable displacement measurements were excluded after a rigorous quality control as stated in section 2.3 of main text. We also obtained a large numbers of displacement vectors for the shorter time intervals, to assure that the ice velocity can be correctly estimated.

16. Q. Equations 2 and 3 are derived from Equation 1. A clearer formulation of the weighting Scheme used would necessitate a revision of these equations

R. The equation 1 can be rewritten in the following for better clarity to express time-separation weighted in estimate of ice velocity. Since we gave the errors of displacement vectors, the uncertainty of ice velocity on each grid can be calculated using equation 2 and 3.

$$v = \frac{\Delta t_1 * \frac{\Delta d_1}{\Delta t_1} + \Delta t_2 * \frac{\Delta d_2}{\Delta t_2} + \cdots + \Delta t_n * \frac{\Delta d_n}{\Delta t_n}}{\Delta t_1 + \Delta t_2 + \cdots + \Delta t_n}$$

Figure R3. The rewritten equation 1

17. Q. Chapter 4: Decadal glacier dynamics The primary concern here is that Rignot et al. 2011 is an undated reference map for the period of IPY (definitely not 2006), where data from 1996 were used to provide increased coverage (this aspect is described in Rignot et al. 2011 as well as in the product description at NSIDC). A better comparison here would be using the recently published annual maps provided by the group (see initial comment for access).

R. Although the older SAR ice flow map is a synthesis compilation inferred from SAR images acquired in longer time period, including SAR data in 1996 which has been described in SI, we checked the annual maps newly released by the same group, it is still difficult to obtain full coverage using the annual ice flow map in any single year before 2013. As Rignot et al. (2011) mentioned, the ice velocities first covering entire Antarctica were inferred from the data acquired mainly from 2007 to 2009. Therefore, we agree now to use 2008 as a reference year when SAR ice velocity was compared with our 2015 L8 ice velocity to investigate the ice discharge, mass balance and the changes from 2008 to 2015.

18. Q. Chapter 5: Decadal variations of mass discharge and mass balance, How do the authors account for surface elevation change or ice sheet thinning? e.g. Pritchard, H.D., Arthern, R.J., Vaughan, D.G. and Edwards, L.A., 2009. Extensive dynamic thinning on the margins of the Greenland and Antarctic ice sheets. Nature, 461(7266), pp.971-975.

R. Generally, there are three independent methods to estimate net mass balance of Antarctic ice sheet on satellite techniques. The first one is surface elevation change by satellite radar/laser altimetry, the second is input and output method (IOM) as the manuscript mentioned, and the third is mass change from satellite gravity. Because we estimated the ice discharge along the grounding lines, not FG2 as in Gardner's manuscript, we don't need to take into account the contribution of the surface elevation change in estimate of ice discharge. However, in Gardner's manuscript, contribution from the surface elevation change in the areas between FG2 and GL0 in estimate of ice discharge must be considered. In principle, we agree that dynamic surface elevation change on grounding lines affect ice discharge estimate to some degree, but the surface elevation change is far less than uncertainty of ice thickness, and is thus not considered in our study.

19. Q. Do the authors account for basal melting? This is an issue where the grounding line used is outdated and too far downstream.The authors use multiple sources for grounding lines, but do not appear to have selected a flux gate for estimates well upstream of the GL to improve the flux estimate. This method is described in Mouginot, J., Rignot, E. and Scheuchl, B., 2014. Sustained increase in ice discharge from the Amundsen Sea Embayment, West Antarctica, from 1973 to 2013. Geophysical Research Letters, 41(5), pp.1576-1584.

R. We didn't consider the basal melting. Actually, the basal melt should be considered in estimate of net mass balance. However, due to difficulty for the estimate of change of basal melt, it is still difficult to be involved in the analysis of mass balance change on Antarctic ice sheet. We used the grounding lines provided Depoorter et al. (2013), although it has been updated in Amundsen Sea and Totten Glacier areas since then. We followed the Depoorter et al (2013) and Rignot et al. (2008, 2013) to estimate ice flux along grounding lines and didn't use the method in Mouginot et al. (2014) and Gardner et al. (in discussion, TC), the reasons have been given in Response 2.

20. Q. Bedmap-2 is a somewhat unreliable source for ice thickness for the purpose of flux measurements due to interpolation issues. The authors seem to access also underlying ground penetrating radar flight lines, however, the choice of gates (i.e. use specific grounding line products) indicates that Bedmap thickness is used. This aspect should be clarified and may require an update of the uncertainties.

R. For minimize the uncertainty of Bedmap-2 ice thickness, we also used the IPR data as much as possible as described in section 1 in SI. In uncertainty assessment, we used the error of Bedmap-2 ice thickness to estimate the uncertainty of ice discharge no matter Bedmap-2 data or IPR data were used, so the uncertainty estimate was relatively conservative.

21. Q. The differences to Gardner et al. 2017 (in review) should be investigated further. Both papers deal with the same topic, use roughly the same data sets, but come to different conclusions

R. please see in Response 1.

22. Q. Conclusions: Lines 438,439: The two maps generated do not cover all of Antarctica, the first sentence is therefore misleading.

R. Agree, we change the sentence to 'we constructed two continent-wide high-resolution ice flow maps covering the years of 2014 and 2015 in Antarctica, which…'

Point-by-Point Responses for Figures

23. Q. Figure 1: Caption should indicate that the InSAR derived velocity is previously published work from someone else. The 2015-2014 difference map shows large differences in several areas where

none are expected. This, in my mind, indicates that the overall quality estimate for this data set is likely overly optimistic.

R. Thanks, we added the reference for InSAR derived ice velocity. The relatively large changes up to 20 m/yr (such as in Ross and Ronne ice shelves, and some places of the ice sheet) are attributable to the less displacement scenes in 2014 or 2015 ice velocity mosaics, the uncertainty of absolute calibration in ice shelves, especially in fast-flow ice shelves, or interannual variation of ice flow. But these didn't affect ice discharge estimates along grounding lines. The accuracy of Landsat8 ice velocity should be investigated using independent field data (see section 3.3), the gridded uncertainty of ice velocity is based on a given precision of image coregistration, because it is difficult to estimate the uncertainty of ice velocity on each grid.

24.Q. Figure 2: Caption should indicate that the InSAR derived velocity is previously published work from someone else

R. The reference for InSAR derived velocity is added, thanks.

25.Q. Figure 3: Upper inset (this work) shows larger deviations from in situ data than lower inset (Rignot et al. 2011). This runs counter an argument the authors make in lines 93-104, despite the fact that apparently more data pairs were available in 2015 (Landsat-8) compared to 2006 (InSAR). Reference Year (2006) is not a good choice (see comment above).

R. we changed the description in lines 93-104. The reference year has changed to 2008, and see more details in Response 2.

26. Q. Figure 5: See chapter 5 comments. Also, please compare to Figure 9 from Gardner et al. 2017 (in review) Differences are striking given that essentially the same data were used to generate the results

R. Our figure is plotted in term of ice shelf as an evaluated unit while Gardner's is based on basins. Our results are more consistent with the L125 ice velocity in 125m spatial resolution from Gardner et al. 2017 although there remain some discrepancies in some basins (see Figure 6).

27. Q. Figure 6: Need to cite the sources for data if not generated as part of this work

R. we add the references for the bathymetry data and sub-glacial basins used.

28. Q. figure 7: Given that the velocity difference map presented in Figure 1 shows some assive differences over Ross and Ronne Ice Shelves, I question the accuracy of the data over ice shelves. One way would be to provide a separate quality assessment for ice shelves and provide new error estimates for the region. Absolute differences are interesting, however, I would suggest that the changes are also provided in % of the speed of the glacier/shelf.

R. According your comments, we also compared ice velocities with Velmap, InSAR estimates. Here, some cases in some typical ice shelves (Ross, Ronne, Amery, Mertz ice shelves) are shown (Figure R4, R5), the row in Figure R4, R5 shows the histograms of InSAR, L8 2015 and bird view of areas. The histogram is estimated based on the differences between our ice velocities (or InSAR) and Velmap velocity data. From the cases, we can find that the two products don't shown significant different in accuracy. But it is noted that a long term change of ice velocity may be subject to occur due to the long time interval between these ice velocity estimates. We have changed to % of speed according your advices. Thanks.

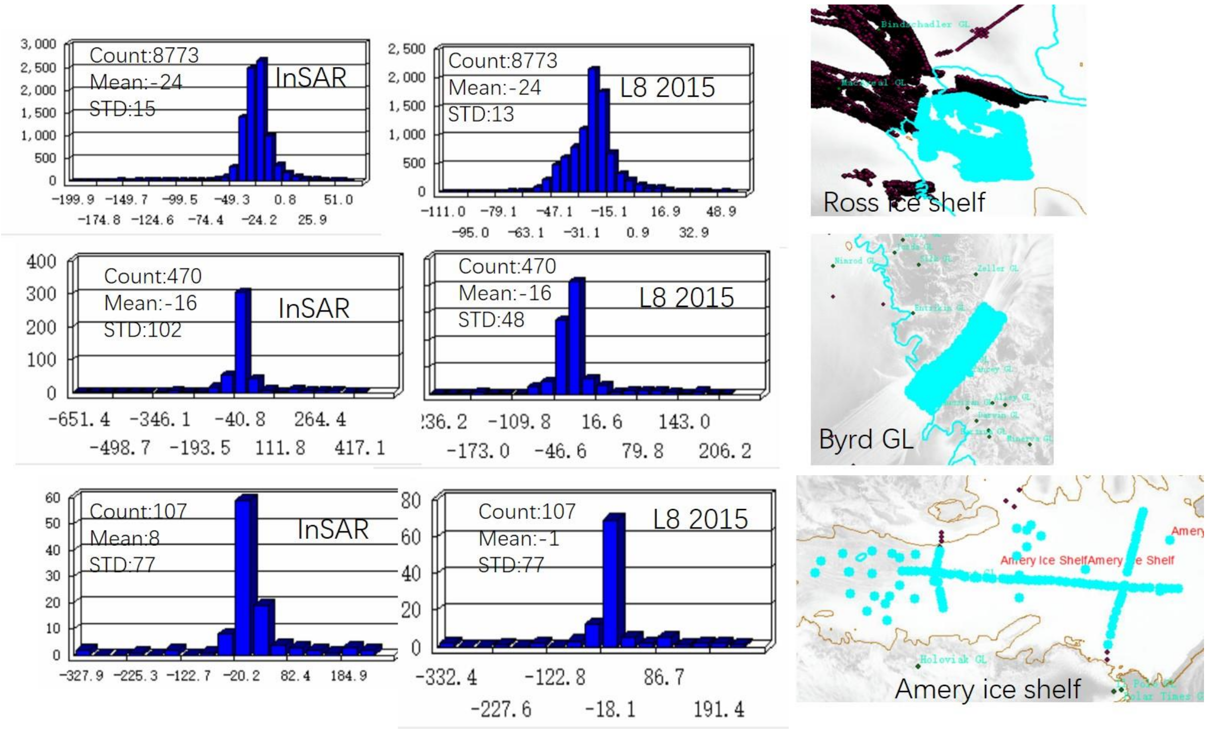

Figure R4 some cases for the investigation of ice velocities (STD: standard deviation).

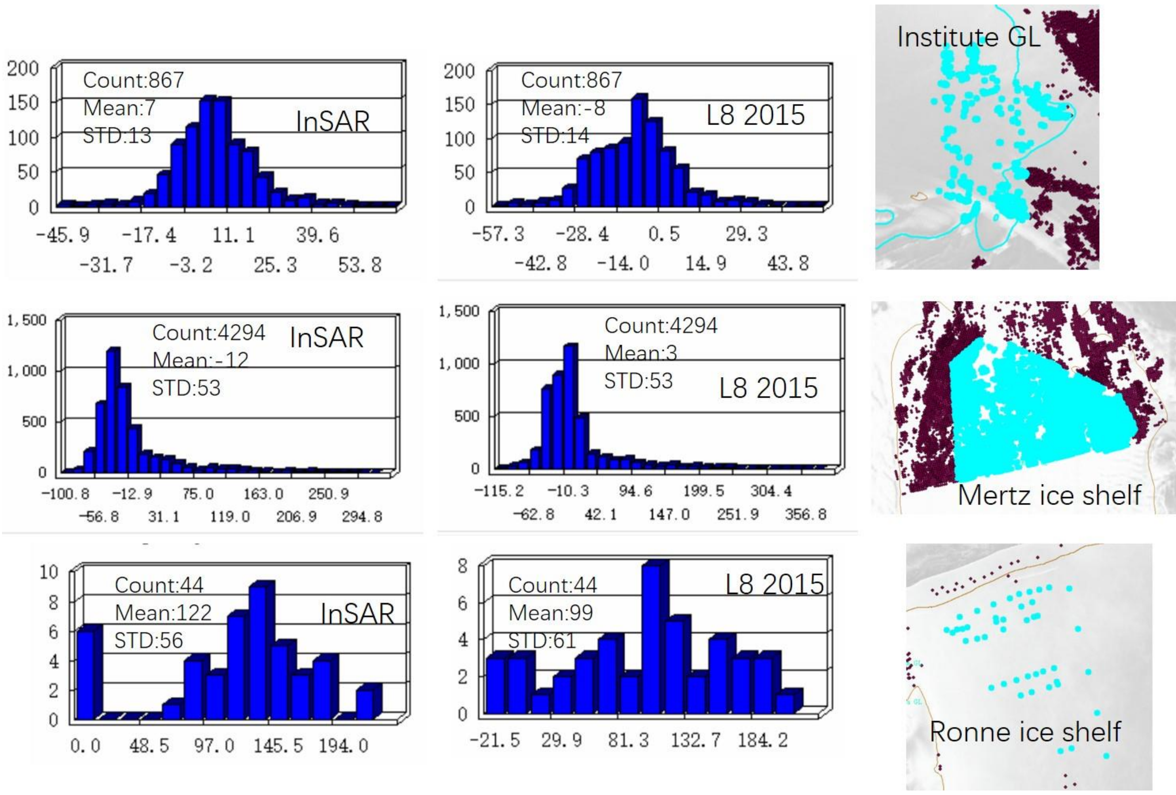

Figure R5. Some cases for the investigation of ice velocity.

Point-by-Point Response for Supplementary material:

29. Q. Tables S1 to S4 require a caption. Information sourced from other papers, data sets or sources need to be credited as such.

R. the captions of tables S1 to S4 have been added in SI, and data sources from other papers have been cited and checked.

30. Q. Line 152 of SM_v16 points to a footnote that does not exist. It seems to be a citation in a wrong format

R. We apologize for our negligence. Corrected. Thanks.

31. Q. Line 225 contains a wrong reference

R. Apologize again, corrected.

32. Q. Table S1, Table S2: How is the velocity measured? Through a single data point, averaged over the gate, or through some other average? More details need to be provided. The naming convention could be described somewhere. Some of the names used could be shown in the figures of the supplementary materials for better orientation.

R. The velocity are picked on the crossover between grounding lines and a profile along ice flow central line, which is placed from the upstream of glacier to outlet of ice shelf or glacier. Generally, the sampled velocity value is averaged ice velocity in 3 pixels (about 300m) around the crossover along the grounding line. According to your comments, some naming convention used in main text or SI now keep consistent as in Tables to avoid confusing. For example, 'mass' (2015) is changed to 'GLF' (2015) in Table S2.

33. Q. Table S4: Needs further clarification. There are multiple entries of the same reference showing different values. At the very least provide a comment column. The referenced papers used for this table do not appear in the SOM reference list.

R. Sorry for confusing, there are results in different time period or different observation techniques in a same paper. We have carefully checked the references, the majority of results were cited form Shepherd et al. (2012) and the rests are cited in Main text. Thanks.