Response to Reviewer #2

I appreciate the efforts of the authors in making corrections to my comments. However, the paper is still limited to the description of observations and model results, and although the wind field data has been expanded, I think the mechanism is not fully explained.
The question is not only the time variability, but also why there is a flow towards the Long Strait in the first place.
The authors state its existence based on the literature showing observational data, but it is not clear why the flow deviates from the topographic constraints and heads for the Siberian continental shelf. Could it at least explain the factors of this flow shown in the numerical simulation results?

Compared to the mean flow field in Figure 7, the two eastern branches (i.e., the ACC , and current flowing eastern Herald Shoal) seem to have smaller velocities (or transport) in 2008 and 2014. Isn't it possible that if the transport through Barrow Canyon and eastern side of Herald Shoal are small (e.g., due to prevailing northeasterly winds), the Pacific-origin water will have nowhere to go and will head for Long Strait?

Also, in 2008, the clockwise circulation around Wrangel Island was enhanced, but why does this happen? Isn't it because the winds around Wrangel Island are weaker (according to Figure 6) and the topographic constraint becomes more dominant in 2008?

Why there is a flow towards Long Strait and why there is a flow bypassing Wrangel Island is also important for considering future nutrient fluxes to the Arctic Ocean, and I think that because of the lack of observational data, the authors can identify possible dominant factors using their model that could reproduces this flow.

Thanks again to the reviewer for input on our manuscript. We have added the following text to the Discussion.

The flow through Bering Strait and downstream in the Chukchi Sea has been commonly attributed to forcing by the local winds and a far-field difference in sea surface height (SSH) between the Pacific and Arctic, or so called 'pressure head' (Coachman and Aagaard, 1966; Stigebrandt, 1984). A more recent study (Peralta-Ferriz and Woodgate, 2017) based on the GRACE Ocean Mass Satellite Data and *in situ* mooring data suggests the dominant role of the East Siberian Sea (ESS) in driving the flow through Bering Strait. Their analysis shows westward winds driving northward Ekman transport of shelf waters into the basin, which lowers SSH in the ESS and amplifies the pressure head forcing. While the measurements are very limited, the northwestward flow toward Long Strait originates in the western side of Bering Strait and is most likely (Woodgate et al. 2005) steered toward Long Strait by the shallow bathymetry gradients, westward winds, and the SSH gradient centered at one end on the ESS. Note that the coastal current that flows southeastward in the southwestern Chukchi Sea [the Siberian Coastal Current (SCC)] is seasonal and it has been observed only during some years (Weingartner et al. 1999). The model does show a similar southeastward flow (SCC) sometimes and at shorter time scales. However, the long-term mean flow is to the northwest through Long Strait. This flow in the mean model results follows the topographic constraints of the Siberian coast and is a result of the predominate westward winds and pressure head forcing, in agreement with the cited literature. It's seasonal and interannual variability are driven by the combination of these two factors.

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Peralta-Ferriz, C., & Woodgate, R. A. (2017). The dominant role of the East Siberian Sea in driving the oceanic flow through the Bering Strait—Conclusions from GRACE ocean mass satellite data and in situ mooring observations between 2002 and 2016. Geophysical Research Letters, 44, 11,472– 11,481. https://doi.org/10.1002/2017GL075179

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