Note: For page numbers I am using the version of text with Keith’s comments.

P6, L6 from bottom: agree with Keith, deleting “and a minimum depth …”.

P7, 1st paragraph: change “Shallow region…” to “The depth of widened grid is set to 4 m”.

P10, 2nd paragraph: Change “In the future …” to “In the future, this uniform specification of sea level at the western boundary will be relaxed by taking values from the solution of a large-scale forecasting model.”

Related: revision to #5 of response to reviewer #1: change “Our geostrophic slope calculation suggests only centimetres difference between the northern and southern sides of the Strait of Juan de Fuca. KRT comment: Geostrophy doesn’t apply at the M2 frequency. Although a non-uniform forcing condition is an interesting question, we do not believe it is warranted at this point in our model development. A tide gauge at Port Renfrew could help us investigate this issue in a future study. “

to

“The monthly-mean sea level along the boundary can be estimated by applying geostrophy. Our geostrophic slope calculation suggests only centimetres difference between the northern and southern sides of the Strait of Juan de Fuca. In the future, this uniform specification of sea level at the western boundary will be relaxed by taking values from the solution of a large-scale forecasting model. We added this point in the revised text.”

P10, L9 from bottom: add “non-tidal” before “remote forcing”.

P10, last line: change “No boundary” to “At the northern boundary, we choose the ‘no boundary condition’ of NEMO that sets up an estuarine circulation by relaxing the temperature and salinity over a width of 10 grids to the seasonal climatology”.

Response #8 to reviewer 1: change to

“The values of background eddy viscosity and diffusivity are typical for coastal models. We tested decreasing the background vertical diffusivity to 10^-6 and saw less mixing across the strongly stratified regions of the Strait of Georgia. There is no effect on the mixing between the San Juan and Gulf Islands. We have not yet examined tidal sensitivity to the background vertical viscosity but are planning to do so.”

P32, end of 1st paragraph, ”Additionally, the sea surface height anomaly from Neah Bay, forecasted by the National Oceanic and Atmospheric Administration (NOAA), will be used in future real-time water level predictions during the storm surge season.”

Change to

“Additionally, this boundary condition of the present model will be taken from a the solution of large-scale forecasting model”.

Related, change #23 of response to reviewer 1 to “Thank you. The text has been revised according to your suggestion”.

P21, “In our model, including the influence of remote atmospheric pressure forcing (in the sea level at the open boundary) produces realistic surge amplitudes compared with the runs only including local atmospheric forcing. Our results suggest that the local atmospheric pressure generates a sea level change that is smaller than the IB response. It is the atmopsheric pressure gradient that drives changes in the sea surface height. Since our domain is relatively small, so is the atmospheric pressure gradient, and hence, we see only a small contribution from local atmospheric pressure.’

Change to

“In our model, realistic surge amplitudes are produced by including the influence of atmospheric pressure forcing in the sea level at the open boundary. This indicates that the IB response of sea level to atmospheric pressure variation is mostly accounted for. If the IB response at the boundary is set to zero and the local atmospheric pressure variation is included, the model obtains much smaller response to atmospheric pressure forcing. This suggests that the local atmospheric pressure variation must be combined with the remote variation to generate the full IB response in the Salish Sea”.

Please revise the response to reviewer 2 accordingly.

#2 response to reviewer 3, simply change to

“A larger domain is much more expensive. We are already restricted by a very small time step. The longer term plan is to take boundary condition for this model from a large scale NEMO model currently under development.”