

Subject: RE: SoG storm surge paper draft
From: "Lu, Youyu" <Youyu.Lu@dfo-mpo.gc.ca>
Date: 14-12-17 01:21 PM
To: Nancy Soontiens <nsoontie@eos.ubc.ca>, "keith.thompson@dal.ca" <keith.thompson@dal.ca>, "paquin.jeanphilippe@gmail.com" <paquin.jeanphilippe@gmail.com>, Vasily Korabel <V.Korabel@Dal.Ca>
CC: Susan Allen <sallen@eos.ubc.ca>

Nancy,

A few add on points:

Section 4,

4.1 You may only show full hindcast examples here, move tests on tidal-surge interaction to 4.2

4.2 First point importance of OBC forcing; then discuss "local" wind, then "local" atmospheric pressure, then tide-surge interaction.

What are not tested here are influence of rivers (a test without river runoff?), stratification (a test without stratification?) - I am not suggesting you must do it, but perhaps need to be noted - echoing "introduction". - this seems to be the complete set of 'contributing factors'.

5. Title should be "Conclusion and discussion" - perhaps need to emphasize this regional model needs to be nested to a large scale model for surge forecasting.

Youyu

-----Original Message-----

From: Lu, Youyu

Sent: 2014-December-17 1:56 PM

To: 'Nancy Soontiens'; keith.thompson@dal.ca; paquin.jeanphilippe@gmail.com; Vasily Korabel

Cc: Susan Allen

Subject: RE: SoG storm surge paper draft

Nancy,

Thanks for including (still debating with myself whether this can be justified), but I've read through the manuscripts and got the following points for you to consider.

1. Title could be "Storm surges in Strait of Georgia simulated with a regional model". The emphasis of "regional model" is consistent with your findings: surges are to the leading order forced by forcing and sea level changes outside of model domain - in the open ocean to the west of Vancouver Island. Hence one would not expect a "forecast' with this model.

2. Introduction; a bit lengthy; description of regional oceanography can be used for later papers. You may start describing the region, why storm surges are a concern; possible factors may influence surges (need a shortened description of regional oceanography - focusing those may influence surges), what have been done previously, the purpose and novel aspects of this study.

3. Mode description (not only configuration):

Webtide needs reference (Hannah et al? Web?);

T-S climatology - 3D? latter on you started with 1D? Perhaps it is 3D because the model is not run continuously?

Sea levels OBC: any spatial structure? You do not have current, how do you apply Flather? If Flather is only for tides, then how the surge part is done?

'Inverse barometer'- if it is exactly IB then you do not need to include in model - just add correction to the modeled sea levels caused by other forcing. What you mean must be "local atmospheric pressure forcing forcing is included). Besides IB (i.e., drop of sea level with increase of pressure), there is a non-IB part simulated.

The non-IB part may be small; in fact, even the IB part can be small because this region is not particularly big compared with the scale of weather system - i.e., there needs to be a gradient of air pressure.

IB & non-IB effect can be important if considering the large-scale forcing - outside of the model domain - the effects must be included in your OBC sea level.

In fact, considering your model domain as inner and open sea as outer, pressure gradients from inside and outside can generate non-IB oscillations.

This was identified for the Hudson Bay/Labrador Shelf system - see the following paper that also includes a reference to Wright et al.

de Young, B., Y. Lu, and Greatbatch, 1995: Synoptic bottom pressure variability on the Labrador and Newfoundland continental shelves. Journal of Geophysical Research, 100, 8639-8653.

This aspect cannot be dealt with by your model - but needs to be noted for completeness.

4. Also, if the surges are mostly due to processes in the open water, then how the storms pass by open sea would be a determining factor. This may include the direction and speed of storm moving.

There is a recent studies by Greatbatch, Jinyu Sheng et al with one of their students for the east coast. Check for reference. Again this cannot be simulated with this model, but worth noting.

For now, I may get back you with a few points later.

Cheers,

Youyu

-----Original Message-----

From: Nancy Soontiens [<mailto:nsoontie@eos.ubc.ca>]

Sent: 2014-December-11 7:58 PM

To: keith.thompson@dal.ca; Lu, Youyu; paguin.jeanphilippe@gmail.com; Vasily Korabel

Cc: Susan Allen

Subject: SoG storm surge paper draft

Hello Keith, Youyu, JP, and Vasily,

We have completed a draft of our storm surge and Strait of Georgia model configuration paper (attached). You are all included as co-authors. We plan to submit to Atmosphere-Ocean.

From each of you, I will need

RE: SoG storm surge paper draft

1. Any comments, questions, edits to improve the paper.
2. A summary of your contributions to the project.

Ideally, I would have this feedback from you by December 19 but I know you are all busy people. Let me know if this is unrealistic.

Thanks,
Nancy

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