In this paper, Bradley et al. study the role of a relative sea level (RSL) forcing and of a parameterised sub-shelf melt rate on the evolution of the GrIS over the last two glacial cycles. The RSL forcing accounts for the non-local signals of GrIS adjacent glacial ice sheets and controls the submarine melting rate through a parameterisation based on the water depth. The work shows an interesting analysis on the effect that the sea level and the melting at the base of the ice shelf might have in reproducing the paleo GrIS evolution through an ice-sheet/ice-shelf model and it is worth to be published. However, the manuscript needs to go through some substantial modifications. The discussion of the results is difficult to follow in some parts and too many different analysis are presented, which make the main conclusions of the work hard to be highlighted.

Below are some suggestions and comments which the authors should consider for publication.

General comments:
1. The description of the IMAU-ICE model lacks informations. How are the ice streams treated? Since the sliding factor A_s plays an important role in the analysis, I suggest to describe the sliding law in detail. Also, how is the surface mass balance calculated?
2. Sea level forcing and WD forcing: The comparison between the ΔWD from Eq. (5) and the ΔWD from Eq (4) is not clear to me. Is the ΔWD from Eq. (4) calculated from the eustatic sea level (ESL) forcing? But if this is the case, the ΔG, although spatially uniform, accounts for global changes in the geoid, while ΔR from the ELRA model would account only for local GrIS bedrock deformations. So the comparison between ΔWD from Eq. (5) and the ΔWD from Eq (4) would miss not only the ΔG_L but also ΔR_{NL} term.
3. In SSM Methods 3 and 4 the melting rate at the sea level is set 0 m/yr, differently from the previously discussed parameterisations. Is there any particular motivation to set no melting at the sea level here?
4. As Reviewer#1, I don't see the necessity of publishing the supplementary information for this work. The main results of SSM Methods 1-3 (Section S1) have already been commented in the main manuscript. Since that part shows a sensitivity analysis relative to parameterisations already discussed in previous studies and diverts from the main message of the work, I suggest you not to discuss that analysis in detail.
5. The design of the experiment should be more linear. The analysis implies many parameters to play with (ice-sheet only, with ice shelves, ESL forcing, RSL forcing, A_s, and all the tunable parameters related to the SSM parameterisations). However, to me not all of them are worth to be discussed. Choose the most interesting and do the discussion following the main message and conclusions of the work. For example, the analysis done with the ESL forcing seems not to be really necessary. I suggest to delete that part.

Specific comments:
1. In the Abstract you say that the sea level drop simulated at the LGM (-2,59 m) is "considerably more than most previous studies". However, this is not true if you consider the results suggested by recent works (such as Lecavalier et al., 2014, Simpson et al., 2009), in which the LGM sea-level reduction is higher than that presented here. Since these studies are considered to present a more realistic GrIS glacial extent (Vasskog et al., 2015*), I suggest to modify the sentence.
2. Pag. 5 lines 173-175: most of the cited works are based on the ice sheet-only version of the ANICE model, while only the work from de Boer et al., 2014 refers to an ice sheet-ice shelf model, such as the one you use in the study. Please, correct the sentence.
3. Pag. 5, lines 80-81: The grounding line treatment is not very clear to me. It should be described in further depth including references to previous works.
4. Differ the acronym of the Eustatic Sea Level (ESL) from that of the Equivalent Sea Level (ESL).

Technical comments:
- Pag 1, line 18 (and many times across the manuscript): "parametersiation" should be "parameterisation"
- Pag 1, line 32: "sub surface melt (SSM)" should be "sub-ice shelf melting" as in Pag. 3 line 76. The first expression can be referred to melting below grounded ice.
- Pag 2, line 58: "Lecavalier 2015" should be "Lecavalier 2014"
- Pag 3, line 80: The citation "Colleoni et al., 2014" can't be found in the References
- Pag 3, line 106: The citation "Funder et al., 2011" can't be found in the References
- Pag 5, line 174: "Graversen et al, 2011" should be "Graversen et al., 2010"
- Pag 5, line 178: "ice sheet points" should be "ice shelf points"
- Pag 6, line 209: "including sub ice shelf" should be "including sub ice shelf melting"
- Pag 7 line 250: "as represent" should be "as represented"
- Pag 9, line 320: "in thicker" should be "is thicker"
- Pag 9, line 334: "a lower A_s" should be "an increasing A_s", right?
- Pag 10, line 363: "the choice sliding coefficient" should be "the chosen sliding coefficient"
- Pag 12, line 420: "Lecavalier 2004" should be "Lecavalier 2014"
- Pag 27, Table 1: "Dyke et al., 2004" should be "Dyke et al., 2014"
- Suppl. Info, pag 1, line 19: "mm/yr" should be "m/yr"

*Vasskog, K., Langebroek, P., Andrews, J. , Nilsen, J. and Nesje, A., *The Greenland Ice Sheet during the last glacial cycle: Current ice loss and contribution to sea-level rise from a palaeoclimatic perspective*, Earth Science Review, Vol. 150, Pag. 45-67, 2015.