General comments:

This study focusses on an algorithm for retrieval of melt pond bathymetry from photogrammetry, and comparison with in-situ validation data. This retrieval is independent of sky conditions and pond colour, and provides correction for refraction at the pond surface interface. Descriptions of ice conditions for context are notably well detailed. Retrieved pond bathymetries are analysed and discussed. I particularly enjoyed reading the discussion section, which is very clear and well-constructed. Code and data availability sections link to a notably very well documented code with a logical structure. This is a very good manuscript presenting some innovative and excellent work, and should be published subject to minor modifications to enhance clarity.

Specific comments:

Line 26:

Suggest replace 'simplified' with 'simplistically'.

Line 30:

Seems a shame to only mention the means and not to include the standard deviations reported in Morassutti and Ledrew (1996), Table 6. I think these would add to the already compelling case of the importance of your research, but I leave this to your judgement.

Line 50:

The standard convention is 'ICESat-II', not 'IceSAT-2'

Line 66:

Make clear the type of survey you're referring to.

Figure 1:

Appreciate the lat/lons for the study area are provided in text but could you please also include them in the figure caption.

Line 295:

Good interpretation of accuracy values.

Figure 2:

"All variables are explained in the text." This is not sufficient, Please add to the caption variable definitions.

Figure 12:

To clarify, is the penultimate class (royal blue) indeed >35cm or 35<x<50? I wonder if a colour bar may be more appropriate here.