Exploitation of newly available terrain datasets in the Baltic region is undoubtedly welcome, since the offshore sector was both dynamically important to the last ice sheet and highly under-researched. However, we identify a number of concerning problems with the work presented here, notably the quality and rigour of the landform mapping. We comment only on internal issues in the manuscript. We do not discuss interpretations guided by any data not available to these authors, only what is presented as figures or text in the manuscript.

1. Mapping rigour

- We find numerous examples of erroneous landform interpretation: bedrock ridges (with little/no sediment cover), dolerite dykes, aeolian dunes, marine current bedforms, estuarine banks, among others, mapped erroneously as glacial landforms.
- We find numerous examples of inconsistent mapping choices: neighbouring landforms of similar appearance mapped or unmapped.
- Landforms visualised in figures have not actually been mapped (e.g. Landsort Deep, Fig. 5G, 9F).
- The approach to moraine mapping offshore is very unclear: it appears that all 'bumps' not considered a lineation, rib or esker are recorded as moraines, with little/no discussion of or motivation for the interpretation. This is problematic for the discussion of the retreat pattern (e.g. Section 4.5).
- Consultation of geological maps (easily and publicly available) would have avoided many mapping errors. (Statements like L264-5 - lack of information on composition - are false.)

We provide a selection of examples of mapping errors in the Figure, below, and note that these examples are just a few of those we encountered.

Furthermore, with regards to mapping methods:

- There are three versions of the tiled EMODnet DTM product (2018, 2020, 2022); the authors do not state which version was used. These versions have noticeable differences in landform visibility stemming from differences in input datasets and (re-) gridding results. Comparing with visually obvious gridding artefacts, the base topography in their Fig 4 appears to be the 2018 version - did they use more recent data too?
- L154: "Artifacts are common in the dataset and where these occurred, cross-checking in the data from hydroacoustic surveys and seismic profiles were used to help identify glacigenic landforms" - what hydroacoustic surveys, what additional data?

2. Unsubstantiated or unqualified interpretations.

- While the authors acknowledge that low resolution data may preclude complete landform detection, they nonetheless make interpretations of ice flow behaviour and retreat style based on the apparent absence of landforms or landform traits, especially in the southern and eastern Baltic where the input data underlying the EMODnet terrain model are sparse or entirely absent. Such interpretations are false and misleading.
  For example, in the S/E Baltic: L221, absence of cross-cutting (in fact there is an absence of lineations altogether); L273, absence of eskers; L422, absence of ploughmarks (taken as indication for land-terminating margin).
- L385: "MSGLs with locally splayed termini"... "ice streams that operated … behind a back-stepping ice margin" - these relationships have not been demonstrated, the interpretations are unsubstantiated.
- L388: "Ice marginal signatures … comprised overprinted lobes arising from oscillations and readvances of ice margins along with switching of flow orientations and changing lobe positions…"

This has not been demonstrated (unclear if the statement reflects the authors' own observations or relates to the reference (Kjær) provided).

- L432: "the Baltic depression is mostly floored with thick glaciolacustrine sediment" - this is not the case, demonstrated by publicly available substrate geological maps/data (e.g. EMODnet geology (Quaternary lithology) or seabed sediment classification layers; e.g. SGU 1:500,000 marine geology).
- L442-3: "the presence of lacustrine wedges and outwash fans, and large moraines in the central Baltic is consistently associated with these geological structures." This claim has not been demonstrated at all.
- L454-5: "predominance of a western ice lobe over the West Gotland Basin in the earlier stages of deglaciation and a later switch to dominance of the eastern lobe." This relative chronology has not been discussed or demonstrated.
- L455: "The suture between the two lobes was located along Gotland Island." Beyond the figure citation, this has not been demonstrated; the figure caption does not discuss this "suture".

3. Sloppy manuscript preparation

- Several instances of erroneous labelling within figures (which in some cases lead to opposing or contrasting conclusions) and mis-referencing figure numbers in the text.
    - Fig 3A: the West Gotland Basin label is incorrect - both these depressions are in the East Gotland Basin, with the topographic high Klints Bank in the middle.
    - Fig 3: "DEM conglometare margin"? Unclear what this means - data stitching boundary, data integration boundary, data seam…?
    - Fig 6: direction of flow lines in NW Skåne (green flowset) is arrowed south, instead of north (stated as north in text)
    - Fig 8: also over Skåne, the same ice-marginal line has an arrow indicating retreat both to the north and the south
    - L298: Fig 7E is offshore, not onshore as stated
    - L427: Fig 7F, I ? (Not 8)
- Unclear what the basis is for naming "phases" or "moraines" on Fig. 1B (described in the caption as "major moraine systems").
- Reference for "the Baltic Ice Lake" given as Uścinowicz 2006 - the Baltic Ice Lake has been known and named since the early 1900s, this is lazy treatment of the literature.

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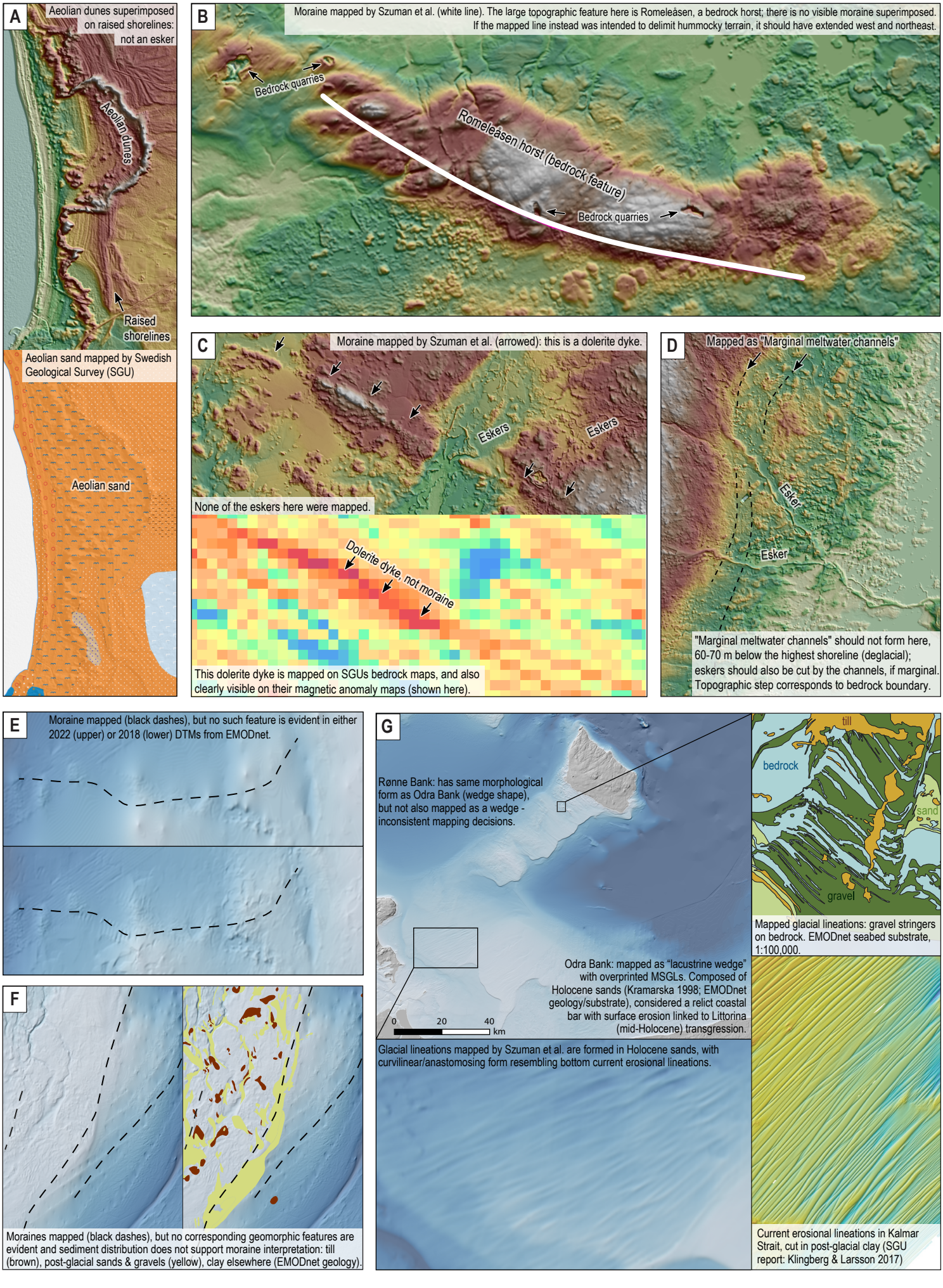

Figure: selection of mapping errors encountered in Szuman et al. manuscript