

Review Report

Saumur et al., A Crustal-Scale Fold Nappe from the Trans-Hudson Orogen, Northern Baffin Island, Arctic Canada, TEKTONIKA, 2026.

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1st Round of Revisions

Decision Letter

Dear Authors,

We have reached a decision regarding your submission to *tektonika*, "Identifying Crustal-Scale Nappes in Deeply-Eroded Orogens: A Trans-Hudsonian Case Study from northern Baffin Island, Arctic Canada".

Our decision is: Revisions Required

Details and motivation for this evaluation can be found in the attached documents from the two reviewers.

We look forward to receiving the revised version of the manuscript.

Best wishes,
the Editorial board

Comments by Reviewer 1

Dear authors and editors,

thank you again very much for your trust and invitation to review this interesting piece of work.

As you will see from my comments, I recommend publication after further improving the Discussion and Conclusion chapters.

I am of course happy to review any new version of the manuscript should it be needed.

Please do not hesitate to reach out should you have any questions.

Have a nice day and looking very much forward to seeing this work published!

Dear Sir, Madam,

thank you very much for inviting me to review this interesting work. Here are my suggestions to the authors to help improve the manuscript. Please do not hesitate to contact me, shall some comments be unclear. I look very much forward to receiving the response from the authors and, should it be needed, discussing further suggestions in

(a) potential subsequent review round(s).

Sincerely,

Summary

The present study is very interesting and presents well-founded results and interpretations. I strongly support publication pending further maturing of the title and Discussion and Conclusion chapters. The study is of high quality and will be a great addition to existing literature on Archean–Paleoproterozoic greenstone belts and orogens and includes important observations for future structural field studies in general. The high number of comments simply reflects my deep interest in this work. It is by no means meant to discourage the authors. I look very much forward to seeing a revised/published version of this great work and thank the journal editors and authors for their trust in allowing me to review this manuscript.

Comments by the reviewer

Comment 1: Line 26: Not sure what this applies to. Confusing phrasing. Rephrase or delete “respectively”?

Comment 2: Line 31: Perhaps include dominant metamorphic grade/facies?

Comment 3: Line 31: Perhaps specify fault kinematics? (dextral, top-NE, other?)

Comment 4: Line 36: Replace by en dash character? Check whole manuscript for other instances.

Comment 5: Lines 37–38: Could it be that high-grade mineral assemblages are distributed in high-strain fault zones? I.e., isograd distribution is controlled by shearing along fault-shear zones rather than by offset along the fault-shear zones.

Comment 6: Line 51: Add reference to relevant work defining the term “fold nappe”, e.g., Guardia et al. (2025; <https://doi.org/10.1016/j.jsg.2024.105314>) and references

therein (e.g., end of paragraph 1, pp. 2.

Comment 7: Line 51: Double space typo. Correct other instances further in the manuscript.

Comment 8: Line 52: Hyphenate? (“convergent-margin”)

Comment 9: Lines 60–61: Partial redundancy (“polydeformed” and “polyphase”). Potentially rephrase “polydeformed” into, e.g., “tightly deformed”, “intensely deformed”, or similar?

Comment 10: Lines 67–68: Vague. Perhaps specify a size range, e.g., “hundred-meter”, “km-scale”, “tens of km”, other?

Comment 11: Line 69: Add “i.e.,” and illustrate upright parasitic folds in Fig. 1 (i.e., design new inset 1D).

Comment 12: Line 70: Add reference to relevant work, e.g., Frehner and Schmid (2016; <http://dx.doi.org/10.1016/j.jsg.2016.04.004>)

Comment 13: Line 72: Add “Lm”, which appears in Fig. 1C and likely represents intersection lineations?

Comment 14: Line 88: The point of the authors is understandable. However, it is not obvious from Fig. 1C. In fig. 1C, only the plunge of the stretching lineations will change since the transport direction is perpendicular to the nappe fold axis. Since transport direction is not always fully perpendicular to the nappe fold axis, it is probably best to replace “orientations” by “plunge and (to a minor to moderate extent) trend” or similar.

Comment 15: Line 93: Perhaps add examples of seismic reflection studies: Ji and Long 2006 (<https://doi.org/10.1016/j.jsg.2006.05.003>), Koehl et al. 2023 (<https://doi.org/10.55575/tektonika2023.1.1.9>).

Comment 16: Line 100: Add “late”?

Comment 17: Line 102: Stick to a single referencing style, either with or without comma after “et al.” The journal may have a predetermined style?

Comment 18: Line 105: Delete “well-”?

Comment 19: Line 107: Repetition of “feature” later in the sentence. Possibly rephrase here as “structure” or “tectonic boundary” or similar.

Comment 20: Line 108: Delete “a”.

Comment 21: Line 108: Rephrase into “is characterized by”.

Comment 22: Line 108: Unspecific. What type of feature? (e.g., linear positive/negative magnetic anomaly?)

Comment 23: Line 108: Replace “defined by” by “in”.

Comment 24: Line 109: Start a new paragraph.

Comment 25: Lines 111–114: Rephrase into “. We provide a new interpretation for the IFZ and the two greenstone belts of the Grant-Suttie Bay area and argue that they form part of a regional-scale synformal anticline, which developed along the lower, overturned limb of a south-verging tectonic nappe”.

Comment 26: Line 116: Delete comma.

Comment 27: Line 117: Replace by “late” or alternatively “mid–late”.

Comment 28: Line 124: “Québec”?

Comment 29: Line 125: Central, southern, and northern domains of Baffin Island are not obvious from Fig. 2. Be more specific. Do you mean up to the Foxe fold belt?

Comment 30: Line 126: Do you mean “north of the Foxe fold belt”?

Comment 31: Line 131: Start a new paragraph.

Comment 32: Line 131: En dash.

Comment 33: Line 135: “dioritic to monzogranitic”?

Comment 34: Line 137: Missing space typo.

Comment 35: Lines 140–141: Capitalize “orogen” if official names?

Comment 36: Line 141: En dash.

Comment 37: Line 144–145: Unless “north Baffin Island” is an official denomination, stick to “northern Baffin Island”. Also update other instances of “north Baffin Island” lines 28, 515, 538, and 573.

Comment 38: Line 145: Style contrasts with, e.g., line 294: “pre-existing”. Stick to one style ,i.e., “reequilibration” and “preexisting” or “re-equilibration” and “pre-existing”.

Comment 39: Line 145–146: Be consistent: “Trans-Hudson” or “Trans-Hudsonian”?

Comment 40: Line 149: En dash.

Comment 41: Line 153: Specify metamorphic grade and type of deformation structures (e.g., “south-verging recumbent folds”, “top-NE shear zones”, others?).

Comment 42: Line 154: Inconsistency. Here “THO” refers to the “Trans-Hudson Orogeny”, whereas it refers to the “Trans-Hudson Orogen” in previous occurrences. I recommend avoiding the use of this abbreviation at all to avoid confusion. Update all instances in the manuscript.

Comment 43: Line 156: What methods were used to constrain these? U–Pb on igneous zircons/metamorphic monazite/synkinematic intrusions/others? Perhaps add a few more specifics regarding the other age constraints presented in the Background chapter?

Comment 44: Lines 157–158: Remove parenthesis, add a comma before, and replace hyphen by en dash.

Comment 45: Line 158: En dash.

Comment 46: Line 160: Rephrase. Do you mean “transition” or “change” or similar?

Comment 47: Line 163: It is quite clear in Fig. 4, but perhaps “less abrupt” or “more transitional”?

Comment 48: Line 167: Hyphenate.

Comment 49: Line 170: Already implied by “south-directed”. Delete.

Comment 50: Line 171–173: Difficult to grasp. Rephrase into something like “The IFZ was proposed to represent the northernmost segment of the northwest-directed, ca.

1850–1820 Ma Foxe fold belt” or “The IFZ was proposed to correspond to the northernmost extent of northwest-directed, ca. 1850–1820 Ma thrusts of the Foxe fold belt” or similar as appropriate.

Comment 51: Line 175: “Along the strike of the IFZ” or “along strike the IFZ”.

Comment 52: Line 176: Split into two sentences here.

Comment 53: Line 177: “late, normal reactivation”.

Comment 54: Line 177: “and offset”.

Comment 55: Line 177: Replace by “, thus resulting in”.

Comment 56: Line 181: A legend should be included in the figure (perhaps in the upper right corner?) to make it clearer and easier to understand at a glance (red arrows, purple arrow, black vs green vs purple thrust faults, nature/age of colored domains). Also the study area could be better highlighted, e.g., with a frame showing the location of Fig. 3.

Comment 57: Line 181: Another potentially confusing item is the curved black arrow indicating clockwise rotation just left of “Rinkian Orogen”. Please state explicitly what it means in the legend or caption or if one of the two red arrows is a reconstructed version of the other prior to the Late Cretaceous.

Comment 58: Line 184: Do you mean “Late Cretaceous” (i.e., entire/most of Late Cretaceous Period) or “late Cretaceous” (i.e., late part of the Cretaceous in general), or “late Late Cretaceous” (i.e., “latest Cretaceous”)? Specify or update if needed.

Comment 59: Lines 197–198: Rephrase into “and northwest-verging thrusts northwest of the Prøven Igneous Complex”.

Also please restrict the use of abbreviations to an absolute minimum to make it easier for the reader to follow your train of thoughts (one, e.g., “IFZ” is enough).

Comment 60: Lines 200–202: Partly redundant. Rephrase into something like “A southeast-verging fold-and-thrust belt developed southeast of the Prøven Igneous Complex inverts a passive margin sequence, and possibly formed in a retro arc setting”

or similar.

Comment 61: Line 207: En dash.

Comment 62: Line 207: Add reference to Fig. 2 where this correlation is shown.

Comment 63: Line 210: Rephrase into “in the north and the subvertical/sub-vertical, ENE-striking Ege Bay belt (Fig. 3)”.

Comment 64: Line 211: Be consistent: either “SE-dipping” or “southeast-dipping”. Update all other similar adjectives in the manuscript.

Comment 65: Line 213–216: Delete because not informative and does not give any specifics on the belts. Include any of the herein mentioned references in the coming paragraph(s).

Comment 66: Lines 216–218: Repetition from Introduction chapter. Delete.

Comment 67: Line 219: “sequence”, “rock unit”? “package” is rather unspecific and tends to be used in subsurface (e.g., seismic reflection) mapping.

Comment 68: Line 220: “overlain”.

Comment 69: Lines 222–223: Unspecific and uninformative. Delete and include the reference in parenthesis at the end of the following sentence.

Comment 70: Line 224: Redundant with rest of the sentence. Delete here.

Comment 71: Lines 232–236: Unnecessarily long and wordy. Rephrase into something like “Metasedimentary rocks of the Isortoq belt are thus also postulated to be part of the Paleoproterozoic Pilling Group” or similar.

Comment 72: Lines 240–241: Delete and add to legend as “proposed synformal anticline”?

Comment 73: Lines 241–242: Unnecessary because already included in the legend. Delete.

Comment 74: Line 245: Stick to either “islands in Grant-Suttie Bay” (like here) or “Grant-Suttie Islands” (e.g., line 378) and update all occurrences in the manuscript

accordingly.

Comment 75: Line 248: Add “facies”?

Comment 76: Line 249: Add “facies”? Also double-space typo.

Comment 77: Line 252: Reorganize chapters 3, 4, 5, and 6 into sub-chapters 3.1, 3.2, 3.3, and 3.4 part of a Result chapter (chapter 3) to notify the reader that the Background chapter is closed and they are about to read about your results.

Comment 78: Line 254: What type of data? magnetic? Specify.

Comment 79: Line 255: Double-space typo.

Comment 80: Line 257: “in”.

Comment 81: Line 257: According to Fig. 2, rocks of the Dexterity granulite belt are located in the footwall of the IFZ. Correct as appropriate.

Comment 82: Line 260: Add “with the Dexterity granulite belt”.

Comment 83: Line 261: Confusing term. Use “dips more gently” instead. Also consider updating other instances of this term elsewhere in the text.

Comment 84: Line 261: “shear zone” or “fault zone”? Be consistent. If not, specify why you use “shear zone” here instead of “fault zone”.

Comment 85: Line 261: Too vague. Do you mean “hundred-meter-scale”, “km-scale”, other? Specify.

Comment 86: Lines 261–262: Fig. 4B suggests that this fold is rather upright and only mildly plunges to the northeast. Consider adding “upright” to the description.

Comment 87: Line 264: Locate with a colored frame in Fig. 2.

Comment 88: Line 268: Missing “Banded”?

Comment 89: Line 271: Double-space typo.

Comment 90: Line 272: “to”.

Comment 91: Line 280: Consider replacing by “gently”.

Comment 92: Line 280: Hyphenate.

Comment 93: Lines 281–283: This is what is not adequately illustrated in Fig. 1C (see also comment 14, line 88). Possibly modify Fig. 1C to better illustrate the change of both trend and plunge of the lineations.

Comment 94: Line 287: Split into two sentences.

Comment 95: Line 287: “in”.

Comment 96: Line 289: “via/using U–Pb”.

Comment 97: Line 289: “yielded”.

Comment 98: Lines 293–295: Rephrase into something like “deform preexisting/pre-existing Archean–Paleoproterozoic/Archean or Paleoproterozoic gneissic fabrics (”.

Comment 99: Line 294: Do you mean “Archean or Paleoproterozoic” or “Archean to Paleoproterozoic”? If the former then spell it out, if the latter either spell it out or use en dash.

Comment 100: Lines 296–297: Do you mean a normal sense of shear? If so, rephrase into something like “The shear zones show down-SSE sense of shear” or similar.

Comment 101: Lines 296–297: “Planar ductile”.

Comment 102: Line 297: “schistosity” or “gneissic fabrics”?

Comment 103: Line 297–298: “Discrete high-strain shear zones observed along”.

Comment 104: Lines 299–300: “lineations”?

Comment 105: Line 301: “down-SSE”?

Comment 106: Line 303: Fig. 6D is referred to before Fig. 6B and 6C. Adjust figure numbers and/or order and figure references appropriately.

Comment 107: Line 307: “normal-sense shearing” or “normal sense of shear”?

Comment 108: Line 309: “NE-plunging intersection lineations parallel to the fold axis”?

Comment 109: Line 312: Confusing. Rephrase into “Isortoq Fault Zone” or, if

corresponding to distinct structures, “shear zone in the Isortoq belt”.

Comment 110: Lines 312–313: Separate sub-figure label from previous text with periods.

Comment 111: Line 324: Refer to the figure that illustrates this change at latitude 70N best (e.g., Fig. 3?).

Comment 112: Lines 324–325: “1–100-m-thick” or “1–100-metre-thick”.

Comment 113: Line 324: Refer to the figure that illustrates this change at latitude 70N best (e.g., Fig. 3?).

Comment 114: Line 324: What do you mean? Dismembered by tectonic offset along a fault or ductile shearing, or due to boudinage, or simply due to erosion, or intruded along stepping fault segments, other? Specify.

Comment 115: Lines 324–325: “1–100-m-thick” or “1–100-metre-thick”.

Comment 116: Line 325: “Fig. 3”.

Comment 117: Line 330: Make sure that “facing direction” and “younging direction” are adequately used and not interchangeably. “younging direction” might be more appropriate in the present instance, since the facing direction would imply local variations according to bedding/foliation attitude within a fold structure (e.g., Lisle, 1985 <https://doi.org/10.1017/S0016756800031459>).

Comment 118: Line 331: Be consistent: “Caribou fault” or “Caribou Fault”.

Comment 119: Line 332: “SE dip” or “southeastward dip” or “SE-dipping geometry”.

Comment 120: Line 332: Delete “the”.

Comment 121: Line 333: “regional” is vague and used broadly in the manuscript with a seemingly significantly varying scale. Be more specific, e.g., “The overall younging direction in the Isortoq belt is to the NW”. A photograph of the unconformity could be a nice addition or at the very least reference to relevant studies showing this unconformity.

Comment 122: Line 334: This term is correct, but not as widely used and not as informative on the shape of the described rock body as, e.g., “boudins”, “lenses”, “rhomboid”. Consider replacing it with a more specific/descriptive term in the entire manuscript.

Comment 123: Line 336: Correct, but again not widely used and possibly puzzling. Consider replacing with something like “uniform gentle dip” or similar.

Comment 124: Line 338: Hyphenate?

Comment 125: Line 338: Term too confusing and seemingly used to describe features of varying type, size, and shape. Consider replacing by “rock unit/succession”, “fold limb”, or other appropriate phrase/term.

Comment 126: Line 339: En dash.

Comment 127: Lines 340–341: Delete both commas and “the entirety of”.

Comment 128: Line 342: Delete comma.

Comment 129: Lines 342–343: Observations of what? Specify. E.g., replace by “sense of shear indicators” or “kinematic indicators”?

Comment 130: Lines 343–344: Consider rephrasing into something like “The cluster of SE-plunging folds in the area is consistent with the observed crenulations/crenulation lineations” or similar.

Comment 131: Line 345: “populations... plunge NNW appear” or “population... plunges NNW appears”.

Comment 132: Line 347: Hyphenate: “NW-dipping”.

Comment 133: Line 347: Refer to an outcrop photograph or map illustrating these field relationships.

Comment 134: Line 348: “paralleling”, “mimicking the attitude of”, “reflecting the strike of” or similar.

Comment 135: Line 349: Refer to a relevant figure and/or stereonet.

Comment 136: Line 352: “metamorphic grade”?

Comment 137: Line 352: Text coloring.

Comment 138: Line 354: Order of figure is incorrect. Fig. 7D referred to before Fig. 7A, 7B, and 7C. In addition, Fig. 7C is referred to before Fig. 7B further in the manuscript. Update order of figure subsets and figure numbers and references.

Comment 139: Line 354: Not appropriate wording since it suggests contrasting attitudes, which is not the case here since both bedding and tectonic fabrics in the lower volcanics and fabrics in the upper metasedimentary succession are subvertical. Rephrase, e.g., by shortening sentence into something like “Both bedding and tectonic fabrics in the lower volcanic succession and fabrics in the upper metasedimentary succession display subvertical to steeply NW- or SE-dipping geometries”.

Comment 140: Line 357: Hyphenate: “SE-younging”.

Comment 141: Line 357: Text coloring.

Comment 142: Line 358: Replace by “pillow lavas” or “pillow-lava tops”.

Comment 143: Line 359: Repetition of “stratigraphic”. Rephrase into “stratigraphic relationships between”?

Comment 144: Line 364: “defines a broad, 100-metre-scale”.

Comment 145: Line 365: Delete both commas.

Comment 146: Line 366: “by” or “into”.

Comment 147: Line 368: Be consistent: either spell out “south”, “east”, “north”, and “west” or abbreviate them. East is abbreviated into “E” line 316, while “south” is spelled out here.

Comment 148: Line 368: “resulting into” or “forming”.

Comment 149: Line 369: “Z-shaped geometry”.

Comment 150: Line 369: Unnecessary. Delete.

Comment 151: Lines 371–372: Add dashed lines to illustrate the shape of individual

pillows so that the reader may identify potential way up. If way up is into the outcrop, then specify in the figure caption and/or on the figure itself with an arrow labelled “up” or “way up”.

Comment 152: Line 375: Do you mean “in a/the pelitic iron formation”? If so, replace comma.

Comment 153: Line 375: “to”.

Comment 154: Line 377: Probably correctly phrased, but not reader friendly. Consider replacing by “increments of two measurements” or other appropriate?

Comment 155: Lines 379–381: This could also be mentioned somehow in the Introduction chapter (e.g., before or after the sentence lines 111 to 114).

Comment 156: Line 381: “show”.

Comment 157: Line 382: “anomaly”.

Comment 158: Line 382: Delete “of” or replace “offshore of” by “off”.

Comment 159: Line 383: Either “NE–SW-striking” or “NE-striking”, but be consistent (e.g., line 32: “ENE-striking”). Stick to one style.

Comment 160: Line 384: “hundred-metre- to km-scale” or “100-m- to km-scale”.

Comment 161: Line 384: Either choose one or the other, or rewrite into “strongly foliated, gneissic”.

Comment 162: Line 386: “NNE-plunging” or “north-northeast-plunging”.

Comment 163: Line 391: “S-shaped folds”.

Comment 164: Line 391: Move to figure caption?

Comment 165: Lines 395–396: Redundant with previous sentence. Merge the two sentences, e.g., “synform closure with the hinge zone about Ignerit Point and Imiliq Island” or similar.

Comment 166: Line 401: Refer to relevant stereonet.

Comment 167: Line 412: “an arcuate anomaly”.

Comment 168: Line 412: “hinge”.

Comment 169: Line 421: Perhaps refer to Fig. 9A to illustrate this?

Comment 170: Line 421: Rephrase into “The two belts merge/link up in the NE-plunging fold hinge within” or similar?

Comment 171: Line 421: Split into two sentences, i.e., delete “which”.

Comment 172: Lines 421–423: Rephrase into something like “Stratigraphic younging directions suggest a synformal anticline geometry with a moderately-inclined, SSE-dipping axial fold surface”.

Comment 173: Lines 423–424: Unnecessary.

Comment 174: Line 430: Add “, which is”.

Comment 175: Line 440: “the folds form” or “the train of folds forms”.

Comment 176: Line 440: How large? Specify.

Comment 177: Line 445: Do you mean “across the area”?

Comment 178: Line 446: Vague. Do you mean “individual rock units”, or “metavolcanic sequences”, other? Specify.

Comment 179: Line 447: Perhaps add the lineations in Fig. 9B if possible?

Comment 180: Line 448: “Origin of” or “Potential origin for”?

Comment 181: Line 449: “boudinaged” or “smeared” perhaps?

Comment 182: Line 453: “S-C-C’ fabrics”.

Comment 183: Line 454: Add reference to Fig. 2 and/or 3 and to figures showing outcrop-scale kinematic indicators supporting this sense of shear.

Comment 184: Line 455: “the drag-folded geometry”?

Comment 185: Lines 457–458: Potentially add after this sentence that “This is consistent with the undulating (folded?) northeastward continuation of the well-defined

boundary between the large positive and negative magnetic domains/anomalies north and south of the IFZ respectively (Fig. 4), with the truncation of the Isortoq belt by the IFZ (i.e., occurrence of Archean rocks on either sides of the fault; Fig. 3), and with the foliation attitudes on either side of the IFZ (i.e., potentially folded and located on opposite limbs of an open, upright, mildly NE-plunging fold; Fig. 4B). The magnetic boundary is thus reinterpreted as the (folded) contact between poorly-magnetic Archean rocks in the south and highly-magnetic Paleoproterozoic rocks in the north“. Then perhaps start a new paragraph.

Comment 186: Line 459: Replace by “like in”.

Comment 187: Line 460: Specify: “the down-SSE kinematics of the IFZ and [specify] geometry of fold structures”.

Comment 188: Line 464: Too vague. Specify what type of structure, e.g., basal thrust, décollement, detachment, other?

Since the IFZ crosscuts an earlier Archean to/or Paleoproterozoic foliation and since rocks of the Isortoq belt occur on either sides of the fault, can the IFZ actually represent a basal nappe structure since it appears to be oblique to bedding in the Isortoq belt? Could it not reflect shearing along the axial cleavage of the Grant-Suttie Bay synformal anticline? This could add to this already interesting Discussion section. This would require the addition of a relevant sketch in Fig. 9A or as a new inset in Fig. 9 with the IFZ paralleling the axial fold cleavage. Important to this discussion item is a comparison of the strike and dip of bedding/foliation within the Isortoq belt versus within the IFZ. A $\geq 15^\circ$ higher dip within the IFZ would suggest it reflects shearing along the axial fold cleavage.

Would naming the synformal anticline structure in Grant-Suttie Bay, e.g., “Grant-Suttie Bay synform”, not help the reader and simplify some sentences?

Comment 189: Line 465: “with the SSE vergence” or “with the SSE-directed vergence”.

Comment 190: Lines 471–473: Cf. comment line 464.

Comment 191: Line 478: Hyphenate: “late-stage”.

Comment 192: Lines 479–480: Cf. comment line 464. Simply mention that another possibility is that the IFZ’s steeper dip reflects shearing along the axial fold cleavage.

Comment 193: Line 482: Replace by “or” or “and” or “to” as appropriate.

Comment 194: Line 491: Hyphenate?

Comment 195: Line 496: Unless named by a previous study, it would be beneficial to avoid naming this structure after two of its components (IFZ and Isortoq belt) and, thus, avoid confusing the reader. Names such as “the Grant-Suttie Bay nappe”, or “Ignerit Point nappe”, or “Imiliq (Island) nappe”, pending there are no other structures named after these localities, might be less confusing and better suited.

Update other instances accordingly and be consistent with the capitalizing: “Isortoq nappe” or “Isortoq Nappe”.

Comment 196: Line 499: “(v. = volcanic)”.

Comment 197: Line 499: Is this referring to the Gillian Lake anticlinal synform in the southeast or to the synformal anticline in Grant-Suttie Bay proposed by the present study? Specify or modify.

Comment 198: Line 507: The lower part of Fig. 9B is more consistent with a formation along axial fold cleavage. A formation of IFZ and Caribou Fault as basal shear/fault zones would appear as belt-parallel shearing in the upper sketch. It could still result in boudinage and dismemberment, but rather unlikely in large normal offsets.

Comment 199: Line 508: Spell out these abbreviations.

Comment 200: Lines 511–512: “suggests that deformation is related to the Trans-Hudson Orogeny”.

Comment 201: Line 513: En dash.

Comment 202: Line 514: En dash.

Comment 203: Line 516: Refrain from using the term “complex” and any of its

derivative in manuscript unless in names, e.g., “Random Island Fault Complex”, since this term is not informative and does not add anything to the discussion. Instead, the assembly of Nuna appears quite clearly in your Fig. 2, which shows how structures in relatively young mobile belts (basins? E.g., Foxe fold belt, Rinkian Orogen, Grant-Suttie nappe, Pillattuaq nappe) all appear to verge towards cratonic centers of relatively old rocks (possibly crustal-scale, old anticlines/basement highs), i.e., the area between Grant-Suttie Bay and Foxe fold belt. To better illustrate this, a slightly more regional Fig. 2 might be beneficial, e.g., including the correlation of the Nagssugtoqidian Orogen with the Torngat Orogen in Labrador, where structures all verge towards the North Atlantic Craton (e.g., van Gool et al., 2005; <https://doi.org/10.22008/gpub/25609>).

Comment 204: Line 519: “NW-directed vergence”.

Comment 205: Line 521: “along-strike the” or “along the strike of the”.

Comment 206: Line 521: Double-space typo.

Comment 207: Line 525: Is this the same nappe as the Isortoq nappe or not? If so, then stick to a single name. If not, then specify the difference between these two structural units in a figure and in the text.

Comment 208: Line 526: Delete “occurring”.

Comment 209: Line 529: Replace by “occur”.

Comment 210: Line 529: Delete “from”.

Comment 211: Line 530: Why “although”? Is the Grant-Suttie nappe not overprinting the Dexterity granulite belt too? If so, a more appropriate phrasing might be “Similarly interpreted to” and deleting “nevertheless”.

Comment 212: Line 530: Replace by a comma.

Comment 213: Line 532: Do you mean “Grant-Suttie nappe”? Specify.

Comment 214: Line 538: Add reference to relevant figures (Fig. 2 and/or 3).

Comment 215: Lines 538–539: Do you mean the northern end of the Rinkian Orogen

or its southern end? Specify. If northern end, are there any indications in previous studies that it bends into an ENE–WSW strike, i.e., into parallelism with the Grant-Suttie and Pillattuaq nappes? If so, please include these arguments and references to relevant studies to further support this correlation.

If you mean the southern end, it seems rather unlikely since it is more likely to link up with the similarly NNW-verging Foxe fold belt.

Comment 216: Line 541: “fold-and-thrust belt, and”.

Comment 217: Line 543: These are not exceptions since structures in the Nagssugtoqidian Orogen and Torngat Orogen verge towards the northwest and west respectively. Rephrase this sentence and the rest of the paragraph accordingly.

Comment 218: Line 543: Do you mean “Baffin to Rinkian suture”? If so, then use en dash: “Baffin–Rinkian”.

Comment 219: Line 543: Is this an official name? If so, add it to Fig. 2.

Comment 220: Line 545: The conclusion needs to present concisely and clearly the results of the study and main implications. At present, it is not focused enough. Consider presenting these as numbered, one-sentence bullet points.

The second paragraph, although interesting, is particularly long and unfocused with partly redundant content.

Comment 221: Line 547: Too vague. Specify how large.

Comment 222: Line 548: “with vergence opposite to that of the nappe”?

Comment 223: Line 549: “fold-axis-parallel”.

Comment 224: Lines 551–552: “respectively as the thinned long limb and thickened short limb of a (mildly NNE-plunging,) upright synformal anticline merging together in the fold hinge zone within Grant-Suttie Bay”.

Comment 225: Lines 553–554: Partly redundant with the previous sentence. Might consider merging some of this sentence with the previous one to shorten the conclusion.

Comment 226: Lines 554–555: Add/modify according to changes following comment line 464.

Comment 227: Line 556: “along”.

Comment 228: Line 557: “and”.

Comment 229: Line 558: Do you mean “terrains”? “Terranes” does not sound right in this instance. The concept of terranes has barely been approached in the manuscript and it feels like “terrains” would fit better and remain more general.

Comment 230: Lines 558–563: Shorten into “In low-relief crystalline terrains, testing the occurrence of nappes requires”.

Comment 231: Line 564: Consider rephrasing into “characteristic structural elements” or “key structural elements”.

Comment 232: Lines 564–565: Shorten into “existing stratigraphic relationships and structural and geophysical data”.

Comment 233: Lines 566–568: Rephrase into “The occurrence of synformal anticlines and shear zones in conjunction with, e.g., oppositely verging asymmetric folds with thickened short limbs and thinned long limbs, opposite younging directions, and offset and oppositely-graded isograds may provide robust constraints on both local and regional tectonic relationships” or similar. Make sure that all the most characteristic structures supporting your interpretation as a nappe are included here.

Comment 234: Line 569: “Arctic Canada”.

Comment 235: Line 570: After finalizing the reading of the manuscript, it feels like the title is too vague and does not reflect the results of this interesting study. Here are some suggestions:

-”Identifying fold nappes in deeply eroded orogens: a case study from the Trans-Hudson Orogen in northern Baffin Island, Arctic Canada”

-”Late Paleoproterozoic fold nappes in the Trans-Hudson Orogen in northern Baffin Island, Arctic Canada: implications for field relationships and structural studies”

-”Fold nappes in the late Paleoproterozoic Trans-Hudson Orogen in northern Baffin Island, Arctic Canada: implications for orogen dynamics, regional tectonic correlations, and structural field studies”

Comments by Reviewer 2

Dear Editors and Authors,

I have read with interest the manuscript by B.M. Saumur et al., entitled “Identifying Crustal-Scale Nappes in Deeply-Eroded Orogens: A Trans-Hudsonian Case Study from northern Baffin Island, Arctic Canada”. The study integrates legacy and newly acquired field-based structural and stratigraphic observations, together with regional geological geophysical maps, to investigate the geometry of the Isortoq Fault Zone and adjacent supracrustal belts (Isortoq and Ege Bay) within the Rae Craton, northern Baffin Island, Canada.

Through this case study, the authors highlight the challenges associated with identifying fold nappes in polydeformed and deeply eroded orogenic systems, and emphasise the key structural criteria required for their recognition. The manuscript demonstrates the importance of integrating multi-scale datasets with detailed field-based kinematic analysis, which constitutes, in my view, one of the major strengths of this contribution from a methodological perspective. In addition, the study proposes a revised interpretation of regional tectonics during syn-orogenic crustal docking, with implications for the kinematics and vergence of the Trans-Hudsonian orogeny, including potential spatial variability.

Before proceeding further, I note that I am not a specialist of the study area nor of the Trans-Hudsonian Orogen. The Editors may therefore wish to seek complementary input from a regional specialist.

That being said, I found the manuscript to be very clearly written and generally easy to follow. The relationships between structures, lithological units, and domains are described with sufficient clarity to allow the reader to consistently navigate the dataset. The structural and stratigraphic observations are overall thorough, and interpretations are generally sound and well supported. I particularly commend the authors for making structural measurements (with coordinates) available as supplementary data, and for systematically locating and orienting field photographs; this represents excellent practice, especially for a contribution to *Tektonika*.

Overall, this is a high-quality contribution providing valuable insights into both structural methodology and Paleoproterozoic tectonics of the Trans-Hudsonian Orogen. **The manuscript is suitable for publication in *Tektonika*, pending minor to moderate revisions, as detailed below and in the annotated manuscript.** I hope these comments will assist the authors in strengthening their contribution and support the Editors in their decision-making.

I recommend restructuring the Results into a single section (Section 3), subdivided into subsections corresponding to the different study areas (currently Sections 3-6).

In addition to detailed line-by-line comments provided in the annotated manuscript, I identify the following major points requiring substantive revision:

- **Figure organisation:** Figures should be reorganised to clearly separate (i) maps (geological and geophysical), (ii) stereonet, and (iii) photograph plates. The current inclusion of multiple inset types within single figures reduces clarity and interpretability.
- **Insufficient illustration of kinematic indicators:** A number of kinematic interpretations rely on kinematic indicators and lineation measurements plotted on stereonet without corresponding field photographic evidence for the lineations. Similarly, key stratigraphic facing indicators are not systematically illustrated. This represents the principal limitation of the manuscript in its current form. Providing photographic documentation of these elements, area by area, would significantly strengthen the robustness of the interpretations.
- **Figure harmonisation:** Although figures are generally of high quality, their graphical consistency should be improved. Structural features should be represented using consistent symbology (symbols, colours, line thicknesses) throughout. In addition, many photographs would benefit from clearer annotation, including labelling of key structures and measurements.
- **Synthesis figure:** The final figure would benefit from the inclusion of an interpretative cross-section and/or a schematic structural framework summarising the main field observations, either replacing or complementing the current conceptual sketches.
- **Deformation history synthesis:** The resulting deformation history is complex and involves multiple stages affecting different structural domains. A summary table (e.g., structural paragenesis) would greatly improve clarity. Structural elements should also be indexed consistently across maps and photographic plates, with reference to deformation stages and spatial domains.

- No substantial reduction is required. The manuscript is concise, well written, and appropriately documented.
- Figures are all relevant; however, they would benefit from expansion and reorganisation (see comments above).
- If mention to magnetic susceptibility measurements is retained in the manuscript, these data should be included in the supplementary material (see comment in the annotated manuscript).

The principal strengths of the manuscript are:

- A thorough, multidisciplinary, and field-based investigation.
- Excellent spatial integration of observations, with clear positioning of data on maps and/or provision of coordinates.
- A comprehensive dataset, combining new and legacy information.
- Valuable methodological insights applicable to the study of deeply eroded Precambrian orogens.
- Significant implications for the tectonic evolution of the Trans-Hudsonian Orogen.

The term “fold nappes” could be explicitly included in the title, as already done in the abstract, to distinguish clearly from thrust nappes.

The use of “nappes” alone in the main text, once defined in the Introduction, is appropriate for readability.

The abstract would benefit from a clearer statement outlining why improved recognition of these structures is critical for tectonic interpretations. This aspect is central to the broader impact of the study and should be emphasised more explicitly.

References related to fold nappes and nappes more generally could be expanded (see detailed suggestions made in the annotated manuscript). It would also be useful to briefly clarify the distinction between fold nappes, thrust sheets, and overthrust systems, as not all readers may be familiar with these concepts.

The schematic geometry of fold nappes presented in Figure 1 is not unique. The figure should therefore be expanded to illustrate a broader range of possible geometries (see detailed comment and screenshot in the annotated manuscript).

Relevant methodological information is currently distributed across the Introduction and Geological Background sections. These could be consolidated into a dedicated section if required by journal guidelines.

However, from a reviewer perspective, the current organisation remains acceptable and does not hinder comprehension.

Figures should be reorganised so that panels are cited sequentially in the text.

The Results should be restructured into a single section with subsections corresponding to each of the study areas, improving readability and coherence.

Discussion and conclusion sections are thorough, well written, and interpretations are generally well supported.

However, the last figure would benefit from revision to include an interpretative cross-section

and/or a structural sketch map synthesising the proposed framework.

***** EXCERPTS FROM ANNOTATED MANUSCRIPT WITH COMMENTS *****

The recognition of fold nappes in deeply-eroded orogens relies on the identification of

A statement of why a better deciphering of these structures is required for tectonic interpretation is lacking.

Keywords

No need for that many local stratigraphic terms, keep it big picture I guess to attract a wider audience.

Fold-nappe tectonics

Mention that they are allochthonous tectonic units

First definition of a nappe: "A nappe, is a package of earth which is not in its place, which rests on a chance substratum, on a substratum which is not its original substratum" (Termier, 1922)

Fold nappes (hereafter just 'nappes') are recumbent folds characterized by shallowly-dipping to sub-horizontal axial planes and inverted and commonly highly sheared and deformed lower limbs.

Reference to Dennis et al. (1981) originally defining the concept is missing:
<https://www.lyellcollection.org/doi/abs/10.1144/gsl.sp.1981.009.01.02>

To avoid confusion for the reader, the definition of a thrust nappe (or thrust sheet) could be worth adding, before highlighting differences between these features as per the second next sentence.

Definitions of thrust sheets/nappes, overthrusts and fold-nappes have been detailed by Merle (2013) (Merle, O. (2013). *Emplacement mechanisms of nappes and thrust sheets* (Vol. 9). Springer Science & Business Media.)

It highlights that a fold-nappe can derive into a thrust nappe or sheet by tectonic rupture along the axial plane or along the highly sheared inverted limb that may disappear through rupture.

This possible continuum may be worth emphasising?

While nappes and thrust sheets shorten and thicken the crust...

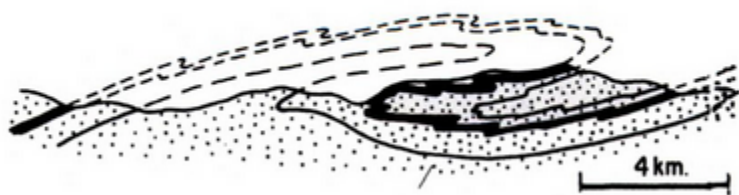
Originally, the nappe term should "be reserved for structures which showed large-scale inversion of strata" (Dennis et al., 1981). How does the current statement fit with this definition? What is the link between stratigraphy inversion and recumbent folding and thick-skinned deformation, with respect to thin-skinned deformation without basement involvement?

...with an apparent vergence opposite to the direction of nappe emplacement in the lower limb (Fig. 1B)

This is not necessarily true, depending on the geometry of the fold nappe.

e.g., the fold-nappe can describe a recumbent, asymmetric fold with vergence in agreement with the direction of the nappe emplacement. In that case scenario, asymmetric folds along the lower, inverted limb of the lower fold have an apparent vergence consistent with the direction of nappe emplacement, that would easily rupture into a thrust surface.

I am not an expert of fold nappes, so I am not sure which geometry is the most common, but I feel like the one above is more likely in geomechanical terms. Anyway, I think that both options should be described in the text and in Fig. 1b.



oriented perpendicular to a stretching lineation (Ls, Fig. 1C)

Also known as transverse lineation (e.g., Mattauer et al., 1981; Burg et al., 1987)

Finally, lateral spreading of a nappe...

What are the lateral indenters preventing from further spreading of a fold-nappe and resulting into this local compression-related features (vertical crenulation/folding and subhorizontal extensional veins)

, and/or shallowly dipping veins (Ratschbacher et al. 1989;....

What type of veins are you talking about? Shear veins or extensional veins? It is important to explicit this statement as implications are very different in terms of local, finite strain. I guess here you imply extensional vein arrays.

Figure 1

In A and B: Please insert younging and structural facing indicators to justify the change of structural facing direction from the upper to the lower, overturned limb (in A), and justify the synformal anticline and antiformal syncline geometries with downward facing direction for the lower limb (in B)

To be reviewed according to the comment made above, to emphasise a more complex (but common?) geometry in case the nappe rolls over to create a more complex folding patterns, with asymmetric fold vergence for the fold pattern and parasitic folds along the lower, overturned limb, and the upper, normal limb consistent with nappe emplacement direction.

Regional geophysical surveys and associated enhancement techniques and filters (e.g. Beauchemin et al. 2018)...

Sure, but these don't provide constraints for kinematics at all, surely?

... are key for targeting areas of interest for follow-up detailed fieldwork

Can you please be more specific? This is interesting in case anyone aims at reproducing your workflow for a different area where similar data are available.

In this contribution, we report new structural observations stemming from geological mapping of the Grant-Suttie Bay area of northwestern Baffin Island (Fig. 3),

Mention to Fig. 2 could be made, for big picture context of the study area

Section 2.1.

Inserting a Table summarizing the different deformation stages, their kinematics, the resulting structures and their absolute or relative age constraints would make it easier to follow this section.

THO occurred as a result of the convergence and collision of the upper-plate Churchill domain with the lower-plate Superior craton

Is it possible to add an inset to Fig. 1 illustrating the extent of THO, Churchill domain and Superior craton for reference?

The Piling Group is best exposed in the north-verging Paleoproterozoic Foxe fold belt (Fig. 2), where deformation was active between ca. 1.880–1.865 Ma

1.880-1.865 Ga or 1880-1865 Ma. For consistency, I suggest sticking to Ma or Ga for all dates provided, and keep the same precision (number of decimal figures) through the entire manuscript

southeast-dipping, east-northeast-striking IFZ (Fig. 3)

South-southeast-dipping, for consistency with strike direction

Also represented in Fig. 2, could be cited for lower-scale context

Figure 2 & caption

In addition to domains displayed on the map, it would be good to have as a b panel a proper geological maps as GSBs of northern BI are mentioned in the text, notably (line 104), and units are described in the Regional Framework section (lines 147-150).

What does the dark grey colour refer to? Not labelled in the figure nor described in the caption

Add mention to Canada, between brackets, for the label on the map, to match the text

Precise in the caption that coordinates drawn are normal day coordinates for Baffin Island, then.

Thelon-Inglefield is labelled Inglefield orogen on the figure, please harmonise

The rotation of vergence direction along the Rinkian Orogen should be acknowledged in the caption (what timing?)

Two greenstone belts are documented in the vicinity of the IFZ: the SE-dipping Isortoq belt and

Be consistent throughout the manuscript regarding the use (or not) of abbreviations for orientation indications

Figure 3 & Caption

The Nappe Structure legend is not very easy to read. Can you please make it larger (e.g., same font size as for the Lithology legend box)?

Maybe merge the two legend boxes into a single one displayed at the bottom of the map?

Please add the interpreted Grant-Suttie synform closure in red dashes in the legend, or as a label. Red is actually maybe not an appropriate choice of colour, as all the fold-related structural features are represented in black. Can't you use the same, thin, black, point line symbol as for the Steensby antiform closure? It would be perfect if styles of symbols used were harmonised, as the figure is of high-quality already!

Also, the gold yellow colour for the inset outline on the map is hard to pick at first sight: maybe stay consistent with the thick, black contour used for the inset?

I love that locations of subsequent photographs and figures are indicated here!

Rocks of the Ege Bay belt commonly retain primary sedimentary and volcanic features

Examples? And thus, younging indicators?

Section 3

This is the Results section, right? Maybe Implement a section 3. Results with 3 subsections corresponding to current sections 3, 4 and 5 presenting observations and measurements for the three main subareas studied.

Before the subsections, it would be good to introduce that all the structural data compiled and acquired as part of this study and presented below are available in Supp Mat (which is a great dataset to have access to, thank you for sharing!). Not sure this file has been properly introduced in the text, apologies if it is an overlook from my end.

A sharp aeromagnetic boundary between rocks southeast and northwest of the IFZ is readily observed

Already said above

Field tests with a KT-10 magnetic susceptibility meter are consistent with airborne survey results indicating a higher magnetic susceptibility in the northwest

Is it really useful here? You already explained above the reason for this contrast in mag response, not sure this brings much more to the story. If you want to keep this statement though, I would suggest you provide mag sus measurements in Supp Mat same as you did with structural measurements

Figure 4A

In Fig.4A: instead of SE- or NW of IFZ, why not introduce hangingwall (to the north) and footwall (to the south) terminology?

A colour scale for RTF values would be easier to interpret than referring to max and min values in the caption I reckon, if you don't mind editing the figure..

Figure 4B

In Fig. 4B: I suggest you present two different stereonet, one for the hangingwall, and another for the footwall, with the Kamb contours and possibly the fold geometry reconstruction, with the fold axis being pretty much the 11-->038 intersection. That would make more rigorous as they represent two different domains separated by the IFZ, although the folding pattern remains the same, associated with the nappe emplacement and IFZ development.

Figure 4 caption

Specify bedrock mapping stations along the IFZ as circles

Peak Kamb contours are not displayed, would be good to have them represented for reproducibility and assessing the significance level of clustering

To avoid any ambiguity, please precise that these are crenulation fold axes as well (not poles to axial planes). It would actually be good to have different symbols (circles, diamonds, triangles...) for poles to plane (in B) and linear features (lineations, fold axes in C-D)

What mineral does bear the lineation Lm?

Instead of coordinates here ["north of 70°N] (which was confusing at first as I thought the angle referred to a plunge value, which did not make sense obviously), mention relative position to IFZ.

S-C and S-C-C' fabrics (Fig. 6A) are consistent with down-dip, top-to-the-SSE shearing parallel to the SE-plunging stretching lineation

A photograph of the lineation in the shearing plane is required to make your point here. As far as I can tell, the S-C-C' fabric highlights apparent strike-slip kinematics on a plane-view photograph (if plane-view)

Figure 6

Rearrange the panels in Fig. 6 so that they are first introduced in the right order in the text.

As it stands, the inset in 6B is not very helpful... either provide a thorough sketch enhancing why looking down the plunge is required to unravel true kinematics with respect to misleading, apparent kinematics otherwise, or delete.

Better outline structural features (S, C, C', F axial plane, fold axis, fold limbs) in a consistent manner through all your panels and provide measurements as labels, as this information is key to understanding of the kinematics analysis made

When possible, it would be good to have insets with photographs of lineation to unravel true kinematics (in A and B)

Fig. 6c: please outline the amphibolite body contours, elongated and outlined along some sort of a penetrative shear band cleavage. Also, annotate and label surrounding rocks.

Two main groups of lineations, which are orthogonal to each other, were identified in the IFZ along traverses IQ-A and IQ-B:

No pictures of these lineation sets, which are critical to interpretations made. Please include them to the current photograph plates, or add another one

1-100 metre thick panels of amphibolitic rocks

Metre-thick instead of metre thick, if I am not mistaken?

The Isortoq belt and surrounding units, which are largely subparallel to the IFZ and associated SE-dipping faults (and of which the Caribou fault is the most significant), have a moderate SE-dip...

This is key, but documented by field measurements visible on the maps provided. It is great, but pictures showing the younging indicators (if any) or the unconformity and the change of attitude on both limbs would be great to make your point more convincing

consistently ENE-plunging lineation representing the regional fold axis

Intersection lineation, then?

and a subordinate perpendicular lineation that generally plunges

Stretching/mineral lineation? A photograph plate with examples of all these lineation types is required.

is determined from pillow-tops (Fig. 7A) and stratigraphic relationships

Please, better annotate the photograph to highlight this critical observation!

Similar evidence is missing in Fig. 6 for the IB.

Figure 7 & caption

Comments on Fig. 6 apply here. Please harmonise the style in annotations and labels between figures, including the maps presented above.

Also, it is a bit weird to have a stereonet as a panel to this figure. It would maybe be more relevant to have all the stereonets lumped into a single, independent figure, instead of having them as inset on maps and photograph plates, for sake of legibility.

Please outline the pillow shapes and provide younging direction

To be fair, I struggle seeing any of these structures on this picture, can you maybe zoom in? Also, what is the plane we are looking at?

S1 foliation data For the Ege Bay belt?

Also, it would be good for the entire manuscript to introduce indexing of structure generations / deformation events, with suffix indicating the spatial extent affected by the related deformation stage (EBB +/- IB +/- IFZ). It would greatly help the reader as the structural record is complex, with some features affecting only some domains, and later deformation affecting all of them. A summary table would be welcome to (structural paragenesis, with key structural features highlighted).

Figure 8 & caption

Rearrange the figure panels so that they are introduced in the right order in the text.

I don't quite understand why the grav map is included in this figure. Please keep separate figures for maps (geol and geophysics), stereonet and photograph plates, it would make the manuscript much clearer to read.

Also, the synform closure is not represented with the same symbol as in Fig. 3. Please harmonise nomenclatures (generation indexing and suffixes, as per suggestion above), symbols and colours used for different structural features in their representation in maps, photograph plates and stereonets.

Annotate [perpendicular fabrics within IFZ] directly on the photograph. In what plane are these lineation lying? What is the mineral bearing the Lm?

Abbreviations used for units need to be spelled out in the caption, or replaced by their full names in the figure

predominantly ductile north of 70°, where C-S-C' fabrics and asymmetric folds are consistent with

S-C-C'

IFZ characterizes the overturned limb of the nappe, and is genetically linked to nappe propagation

I agree with this model, supported by your data. You could introduce the concept of progressive deformation (Fossen et al., 2020) as part of your discussion. I think it would connect pretty well with the last subsection of the discussion in terms of the complex, protracted tectonic record of the THO.

Figure 9

Rather than this schematic representation, or in addition to it, your discussion requires a proper cross-section and interpreted map summarising your observations and supporting your interpretation, highlighting the discriminative features observed (as listed in the introduction and discussed in the text).

Data collected by the authors and utilized in this manuscript is included as supplemental data.

Can you please insert a similar statement within the text, to introduce the results section, please? It would be great to maximise the readers' awareness. If you were to consider keeping this statement about mag susceptibility measurements you collected in the

field, consider including the measurements in the supp mat too, please.

Authors' Reply to Reviewer 1

Response - thank you to R1 for their positive assessment. We feel that we have adequately addressed their concerns, in particular with respect to aspects of the Discussion and Conclusion. Most of the comments have been incorporated into the manuscript.

Comment 1: Line 26: Not sure what this applies to. Confusing phrasing. Rephrase or delete “respectively”?

Response: rephrased

Changes: replaced with “a stretching lineation that records the nappe transport direction and which is coeval with and perpendicular to a fold axis-parallel lineation”.

See line 27–28

Comment 2: Line 31: Perhaps include dominant metamorphic grade/facies?

Response: added metamorphic grade

Changes: inserted “to upper amphibolite to granulite facies” **See line 33–34**

Comment 3: Line 31: Perhaps specify fault kinematics? (dextral, top-NE, other?)

Response: added displacement direct

Changes: “top-to-the-southeast”, **line 34**

Comment 4: Line 36: Replace by en dash character? Check whole manuscript for other instances.

Response: ok

Changes: Hyphen converted to en-dash **where appropriate** in the manuscript (i.e., ranges, connections).

Comment 5: Lines 37–38: Could it be that high-grade mineral assemblages are distributed in high-strain fault zones? I.e., isograd distribution is controlled by shearing along fault-shear zones rather than by offset along the fault-shear zones.

Response: Possibly, but mapping by us as well as in previous studies show that the isograds are offset.

Changes: **No change** at the end of the abstract

Comment 6: Line 51: Add reference to relevant work defining the term “fold nappe”, e.g., Guardia et al. (2025; <https://doi.org/10.1016/j.jsj.2024.105314>) and references therein (e.g., end of paragraph 1, pp. 2).

Response: the suggested citation (Guardia et al) addresses the very specific question of what are the “processes and properties that favour thrusting over folding”. This seems inappropriate to our manuscript in which we are simply laying out the observations that are consistent with the presence of a nappe, and we already provide a general reference to orogenic nappes (McClay and Price, 1981), as well as citing the primary work of Bailey (1930) on nappe theory. We also added the references suggested by R2.

Changes: **Not implemented**

Comment 7: Line 51: Double space typo. Correct other instances further in the manuscript.

Response: Acknowledged.

Changes: **Double spaces removed** throughout the manuscript, where appropriate.

Comment 8: Line 52: Hyphenate? (“convergent-margin”)

Response: a review of the convergent margin literature, which is voluminous, does indeed reveal a small number of papers in which ‘convergent margin’ is hyphenated. However, the term is almost never hyphenated. We have previously used the term ‘convergent margin’ (sans hyphen) and prefer to stick with this usage.

*Changes: **No change***

Comment 9: Lines 60–61: Partial redundancy (“polydeformed” and “polyphase”). Potentially rephrase “polydeformed” into, e.g., “tightly deformed”, “intensely deformed”, or similar?

Response: agreed

*Changes: deleted “and polyphase” (**line 64**)*

Comment 10: Lines 67–68: Vague. Perhaps specify a size range, e.g., “hundred-meter”, “km-scale”, “tens of km”, other?

Response: agreed - parasitic folds occur at all scales.

*Changes: deleted ‘meso-scale’ (**lines 70-71**)*

Comment 11: Line 69: Add “i.e.,” and illustrate upright parasitic folds in Fig. 1 (i.e., design new inset 1D).

Response: agreed, sentence clarified and reworded along these suggestions.

*Changes: **see modified text line 71-74**; inset added to Fig 1C. Former 1C moved to 1D, with corresponding changes made in the text. Modified explanatory caption **lines 90-95***

Comment 12: Line 70: Add reference to relevant work, e.g., Frehner and Schmid (2016; <http://dx.doi.org/10.1016/j.jsg.2016.04.004>)

Response: The Frehner and Schmid paper addresses the question can “a pre-existing geometrical asymmetry (e.g., from sedimentary structures or folds from a previous tectonic event) can be inherited during buckle folding to form parasitic folds with wrong vergence.” We do not consider this relevant to our manuscript. Parasitic folds on the lower, inverted limbs of nappes do not have the ‘wrong vergence’. These lower limb parasitic folds verge toward the nappe hinge, but they are distinguished by having a thickened short limb whereas parasitic folds on the upright limb have a thinned short limb. To more clearly make this point we have revised the sentence

*Changes: as per previous comment, **see lines 71-74; 90-95 and updated Fig. 1***

Comment 13: Line 72: Add “Lm”, which appears in Fig. 1C and likely represents intersection lineations?

Response: agreed. And Lm is shown in Fig 1 without being defined in the caption, which has also been fixed.

*Changes: added “including a fold-axis parallel mineral lineation (Lm)” to the Fig 1 caption (**line 97**) and added (Lm) to **line 74***

Comment 14: Line 88: The point of the authors is understandable. However, it is not obvious from Fig. 1C. In fig. 1C, only the plunge of the stretching lineations will change since the transport direction is perpendicular to the nappe fold axis. Since transport direction is not always fully perpendicular to the nappe fold axis, it is probably best to replace “orientations” by “plunge and (to a minor to moderate extent) trend” or similar.

Response: agreed

*Changes: replaced ‘orientations’ with ‘plunge’, **line 99***

Comment 15: Line 93: Perhaps add examples of seismic reflection studies: Ji and Long 2006 (<https://doi.org/10.1016/j.jsg.2006.05.003>), Koehl et al. 2023 (<https://doi.org/10.55575/tektonika2023.1.1.9>).

Response: Seismic reflection profiles are generally not ‘regional’; they are necessarily local covering only a short 2-D strip of ground. Hence, we do not consider such studies relevant herein, especially with respect to the identification of nappes in remote areas as per this study.

*Changes: **not implemented***

Comment 16: Line 100: Add “late”?

Response: there is no defined “late Paleoproterozoic” and even if there was one, the Trans-Hudson orogen would likely not qualify as it is largely a product of Osorian tectonism.

*Changes: **none***

Comment 17: Line 102: Stick to a single referencing style, either with or without comma after “et al.” The journal may have a predetermined style?

Response: agreed - moved to a single style

Changes: revised al. to al, for citations within brackets, throughout manuscript.

Comment 18: Line 105: Delete “well-”?

Response: agreed

Changes: deleted

Comment 19: Line 107: Repetition of “feature” later in the sentence. Possibly rephrase here as “structure” or “tectonic boundary” or similar.

Response: agreed

*Changes: revised ‘structural feature’ to ‘structure’ **line 120***

Comment 20: Line 108: Delete “a”.

Response: agreed

Changes: deleted (but deleted anyway in response to comment 21)

Comment 21: Line 108: Rephrase into “is characterized by”.

Response: agreed

*Changes: replaced ‘has been identified’ with ‘is characterized ...’ **line 121***

Comment 22: Line 108: Unspecific. What type of feature? (e.g., linear positive/negative magnetic anomaly?)

Response: agreed

*Changes: replaced ‘feature defined by airborne magnetics’ with ‘aeromagnetic anomaly’. **line 121***

Comment 23: Line 108: Replace “defined by” by “in”.

Response: already deleted (see comment 22)

Changes: n/a

Comment 24: Line 109: Start a new paragraph.

Response: agreed

Changes: inserted new paragraph **line 122**

Comment 25: Lines 111–114: Rephrase into “. We provide a new interpretation for the IFZ and the two greenstone belts of the Grant-Suttie Bay area and argue that they form part of a regional-scale synformal anticline, which developed along the lower, overturned limb of a south-verging tectonic nappe”.

Response: agreed

Changes: revised to read as “We provide a new interpretation for the IFZ and the two greenstone belts of the Grant-Suttie Bay area and argue that they form part of a regional-scale synformal anticline, which developed along the lower, overturned limb of a south-verging tectonic nappe” **line 124-127**

Comment 26: Line 116: Delete comma.

Response: a comma is required at that point in that sentence.

Changes: **none**

Comment 27: Line 117: Replace by “late” or alternatively “mid–late”.

Response: These terms are not formally defined, but then again neither is ‘early’ which was the term we had used. We will correct our earlier statement.

Changes: deleted ‘early’ **line 130**

Comment 28: Line 124: “Québec”?

Response: Disagree. Quebec without the accent is considered appropriate spelling in English

Changes: *none*

Comment 29: Line 125: Central, southern, and northern domains of Baffin Island are not obvious from Fig. 2. Be more specific. Do you mean up to the Foxe fold belt?

Response: Agreed to be more specific.

Changes: replaced with “the Foxe fold belt and more southerly parts of Baffin Island.”
line 137-138

Comment 30: Line 126: Do you mean “north of the Foxe fold belt”?

Response: yes

Changes: replaced with “north of the Foxe fold belt”. **line 139**

Comment 31: Line 131: Start a new paragraph.

Response: okay

Changes: inserted paragraph break **line 145**

Comment 32: Line 131: En dash.

Response: see previous comment

Changes: implemented where appropriate, such as here (**line 145**)

Comment 33: Line 135: “dioritic to monzogranitic”?

Response: okay

Changes: to “dioritic to monzogranitic” **line 149**

Comment 34: Line 137: Missing space typo.

Response: agreed

Changes: space added

Comment 35: Lines 140–141: Capitalize “orogen” if official names?

Response: interestingly, we debated this topic while writing the manuscript. Most Canadian earth scientists follow the style guide provided by the Geological Survey of Canada which recommends ‘orogen’, and that is the lead that we have followed.

*Changes: **None.***

Comment 36: Line 141: En dash.

Response: previously addressed

Changes: where appropriate

Comment 37: Line 144–145: Unless “north Baffin Island” is an official denomination, stick to “northern Baffin Island”. Also update other instances of “north Baffin Island” lines 28, 515, 538, and 573.

Response: agreed

*Changes: ‘north’ revised to ‘northern’ as requested and where indicated, **line 158***

Comment 38: Line 145: Style contrasts with, e.g., line 294: “pre-existing”. Stick to one style ,i.e., “reequilibration” and “preexisting” or “re-equilibration” and “pre-existing”.

Response: agreed

*Changes: changed to “reequilibration” (**line 158**) and “preexisting” (**line 314**)*

Comment 39: Line 145–146: Be consistent: “Trans-Hudson” or “Trans-Hudsonian”?

Response: Agreed

Changes: changed Hudsonian to Hudson throughout (including in updated manuscript title)

Comment 40: Line 149: En dash.

Response: addressed previously

Changes: changed where appropriate

Comment 41: Line 153: Specify metamorphic grade and type of deformation structures (e.g., “south-verging recumbent folds”, “top-NE shear zones”, others?).

Response: agreed

*Changes: revised to read “imbricated and isoclinally folded and metamorphosed at upper greenschist to granulite facies conditions during the THO” **line 166-168***

Comment 42: Line 154: Inconsistency. Here “THO” refers to the “Trans-Hudson Orogeny”, whereas it refers to the “Trans-Hudson Orogen” in previous occurrences. I recommend avoiding the use of this abbreviation at all to avoid confusion. Update all instances in the manuscript.

Response: Agreed that there is a need to ensure that THO refers to Trans-Hudson Orogen throughout the manuscript

Changes: we have revised the manuscript as needed to ensure that THO always stands for Trans-Hudson Orogen

Comment 43: Line 156: What methods were used to constrain these? U–Pb on igneous zircons/metamorphic monazite/synkinematic intrusions/others? Perhaps add a few more specifics regarding the other age constraints presented in the Background chapter?

Response: This is not our work, and we have provided relevant references throughout. It is unclear why this would require clarification here but not in other instances where such age constraints are provided.

In general age constraints are determined with U-Pb zircon ages primarily on syn-orogenic magmatic suites. This is a pretty straightforward and standard way of proceeding, and we consider that readers should be familiar with this. Adding such a detail here would distract from the main story.

Changes: **not implemented.**

Comment 44: Lines 157–158: Remove parenthesis, add a comma before, and replace hyphen by en dash.

Response: agreed

Changes: made the requested punctuation revisions

Comment 45: Line 158: En dash.

Response: addressed previously

Changes: changed where appropriate

Comment 46: Line 160: Rephrase. Do you mean “transition” or “change” or similar?

Response: break = change.

Changes: changed to “change”, **line 175**

Comment 47: Line 163: It is quite clear in Fig. 4, but perhaps “less abrupt” or “more transitional”?

Response: “less clear” can indeed be clarified

Changes: changed to: is more diffuse and difficult to pinpoint (Fig. 4A), **line 178**

Comment 48: Line 167: Hyphenate.

Response: agreed

Changes: hyphenated

Comment 49: Line 170: Already implied by “south-directed”. Delete.

Response: agreed

Changes: ‘south-verging’ deleted at **line 184-186**

Comment 50: Line 171–173: Difficult to grasp. Rephrase into something like “The IFZ was proposed to represent the northernmost segment of the northwest-directed, ca. 1850–1820 Ma Foxe fold belt” or “The IFZ was proposed to correspond to the northernmost extent of northwest-directed, ca. 1850–1820 Ma thrusts of the Foxe fold belt” or similar as appropriate.

Response: Okay

Changes: replaced with “The IFZ was proposed to correspond to the northernmost extent of northwest-directed, ca. 1850–1820 Ma thrusts of the Foxe fold belt” **line 187-188**

Comment 51: Line 175: “Along the strike of the IFZ” or “along strike the IFZ”.

Response: ok for “Along the strike...”

Changes: **line 190**

Comment 52: Line 176: Split into two sentences here.

Response: okay

Changes: inserted sentence break - "... by brittle/cataclastic deformation. The Caribou ..." **line 191**

Comment 53: Line 177: "late, normal reactivation".

Response: the suggestion is to remove 'normal-sense' but we think that 'sense' is required to ensure the reader understands that we are referring to the sense of displacement during reactivation.

Changes: **none, line 192**

Comment 54: Line 177: "and offset".

Response: We do not understand the proposed revision.

Changes: **none, line 192**

Comment 55: Line 177: Replace by ", thus resulting in".

Response: I see the problem in this sentence that prompted this comment

Changes: inserted 'explaining', **line 193**

Comment 56: Line 181: A legend should be included in the figure (perhaps in the upper right corner?) to make it clearer and easier to understand at a glance (red arrows, purple arrow, black vs green vs purple thrust faults, nature/age of colored domains). Also the study area could be better highlighted, e.g., with a frame showing the location

of Fig. 3.

Response: *Given this comment and those from R2, we could not implement everything without making the figure too complicated/detailed and had to make a choice. The nature of the coloured domains is explained in the caption and less relevant to the manuscript than the other proposed changes. Adding this would require a complicated legend, and we elected not to do so.*

Changes: **Changes to Figure 2** include (a) better highlighting the study area (Figs. 3 and 4a), (b) adding a simple legend explaining the meaning of vergence directions (arrows); (c) the framework of the Trans-Hudson orogen as bottom left inset (as per R2's request).

Comment 57: *Line 181: Another potentially confusing item is the curved black arrow indicating clockwise rotation just left of "Rinkian Orogen". Please state explicitly what it means in the legend or caption or if one of the two red arrows is a reconstructed version of the other prior to the Late Cretaceous.*

Response: *Clarified in figure caption.*

Changes: **Line 201-202:** *In the Rinkian orogen, displacement vectors for the lower plate were first WSW-ENE, and rotated to NW-SE at ca. 1825 Ma (Grocott et al., 2023), as highlighted by the curved black arrow.*

Comment 58: *Line 184: Do you mean "Late Cretaceous" (i.e., entire/most of Late Cretaceous Period) or "late Cretaceous" (i.e., late part of the Cretaceous in general), or "late Late Cretaceous" (i.e., "latest Cretaceous")? Specify or update if needed.*

Response: *No - we mean, as stated 'pre-Late Cretaceous'. But the wording can be clarified.*

Changes: *revised the caption to state 'prior to the Late Cretaceous', line 199*

Comment 59: Lines 197–198: Rephrase into “and northwest-verging thrusts northwest of the Prøven Igneous Complex”.

Also please restrict the use of abbreviations to an absolute minimum to make it easier for the reader to follow your train of thoughts (one, e.g., “IFZ” is enough).

Response: agreed with the rephrasing. With regards to acronyms we have kept them to a minimum throughout the manuscript. PIC is only used in this paragraph, and not using it here would involve 4 repetitions of the full name, making the text cumbersome. We therefore consider its use justified and helpful to the flow of the paragraph.

*Changes: deleted “that characterize the orogen” and other minor stylistic changes, **lines 216-226.***

Comment 60: Lines 200–202: Partly redundant. Rephrase into something like “A southeast-verging fold-and-thrust belt developed southeast of the Prøven Igneous Complex inverts a passive margin sequence, and possibly formed in a retro arc setting” or similar.

Response: The suggestion is almost verbatim what is already stated and in our view is not an improvement.

*Changes: **none.***

Comment 61: Line 207: En dash.

Response: previously addressed

Changes: changed where appropriate

Comment 62: Line 207: Add reference to Fig. 2 where this correlation is shown.

Response: agreed

*Changes: inserted Fig. 2, **line 229***

Comment 63: Line 210: Rephrase into “in the north and the subvertical/sub-vertical, ENE-striking Ege Bay belt (Fig. 3)”.

Response: ok

*Changes: added “in the north”, **line 231***

Comment 64: Line 211: Be consistent: either “SE-dipping” or “southeast-dipping”. Update all other similar adjectives in the manuscript.

Response: agreed

Changes: changed to full spelling throughout the manuscript

Comment 65: Line 213–216: Delete because not informative and does not give any specifics on the belts. Include any of the herein mentioned references in the coming paragraph(s).

Response: Disagree with the suggested change. These sentences acknowledge the previous mapping completed in the area. Our mapping built upon the knowledge base developed during these previous studies, and not highlighting the significance of these critical studies would be unfair.

*Changes: **None***

Comment 66: Lines 216–218: Repetition from Introduction chapter. Delete.

Response: Agreed

*Changes: deleted the offending sentence (**line 239**)*

Comment 67: Line 219: “sequence”, “rock unit”? “package” is rather unspecific and

tends to be used in subsurface (e.g., seismic reflection) mapping.

Response: *ok*

Changes: *sequence, **line 240***

Comment 68: *Line 220: “overlain”.*

Response: *This change would repeat overlain in the sentence. We consider “followed by” to be clear in context.*

Changes: *none*

Comment 69: *Lines 222–223: Unspecific and uninformative. Delete and include the reference in parenthesis at the end of the following sentence.*

Response: *agreed*

Changes: *sentence deleted as requested, reference moved to the end of the following sentence. **Line 243-246***

Comment 70: *Line 224: Redundant with rest of the sentence. Delete here.*

Response: *agreed*

Changes: *deleted “metavolcanic” at, **line 243***

Comment 71: *Lines 232–236: Unnecessarily long and wordy. Rephrase into something like “Metasedimentary rocks of the Isortoq belt are thus also postulated to be part of the Paleoproterozoic Pilling Group” or similar.*

Response: *We rephrased to something similar to R1’s suggestion*

Changes: ***line 251-254***

Comment 72: Lines 240–241: Delete and add to legend as “proposed synformal anticline”?

Response: **Edit to Fig. 3 made** in accordance to R2’s suggestion of identifying the fold closure directly on the map.

Changes: **n/a**

Comment 73: Lines 241–242: Unnecessary because already included in the legend. Delete.

Response: agreed

Changes: deleted

Comment 74: Line 245: Stick to either “islands in Grant-Suttie Bay” (like here) or “Grant-Suttie Islands” (e.g., line 378) and update all occurrences in the manuscript accordingly.

Response: agreed

Changes: changed to “Grant-Suttie Bay islands” throughout the manuscript

Comment 75: Line 248: Add “facies”?

Response: agreed

Changes: ‘facies’ added, **line 267**

Comment 76: Line 249: Add “facies”? Also double-space typo.

Response: agreed

Changes: ‘facies’ added; **line 268**. Double-space previously deleted

Comment 77: Line 252: Reorganize chapters 3, 4, 5, and 6 into sub-chapters 3.1, 3.2, 3.3, and 3.4 part of a Result chapter (chapter 3) to notify the reader that the Background chapter is closed and they are about to read about your results.

Response: Okay

Changes: changed sections 3, 4, 5, and 6 into sub-sections 3.1, 3.2, 3.3, and 3.4 as part of a “Field Data and Observations” section, **line 271**

Comment 78: Line 254: What type of data? magnetic? Specify.

Response: the sentence starts with “A sharp aeromagnetic boundary ...” so it seems clear that the data are aeromagnetic data.

Changes: **None**

Comment 79: Line 255: Double-space typo.

Response: previously responded to

Changes: done

Comment 80: Line 257: “in”.

Response: okay

Changes: replaced ‘on’ with ‘in’, **line 275**

Comment 81: Line 257: According to Fig. 2, rocks of the Dexterity granulite belt are located in the footwall of the IFZ. Correct as appropriate.

Response: agreed, good catch.

Changes: replaced ‘hanging’ with ‘foot’, **line 276**

Comment 82: Line 260: Add “with the Dexterity granulite belt”.

Response: okay

*Changes: added “with the Dexterity granulite belt”. **line 280***

Comment 83: Line 261: Confusing term. Use “dips more gently” instead. Also consider updating other instances of this term elsewhere in the text.

Response: okay

*Changes: replaced shallow with “dip more gently”. **line 280.** We did not find other instances of the use of the term ‘shallow’ as a verb.*

Comment 84: Line 261: “shear zone” or “fault zone”? Be consistent. If not, specify why you use “shear zone” here instead of “fault zone”.

Response: the ‘fault zone’ was defined by Jackson (2000) and Jackson & Berman (2000), as is indicted on line 106 (original line numbers), but as we indicate right in the abstract the “IFZ and associated faults represent a brittle-ductile shear zone”. Hence we provide upfront an explanation of the terms fault and shear zone, respectively.

*Changes: **none.***

Comment 85: Line 261: Too vague. Do you mean “hundred-meter-scale”, “km-scale”, other? Specify.

Response: ‘map-scale’ is a commonly used term to describe structures. More importantly, ‘map-scale’ is followed almost immediately by (Fig 4) in which the geophysical map is shown and the scale provided.

*Changes: **none***

Comment 86: Lines 261–262: Fig. 4B suggests that this fold is rather upright and only mildly plunges to the northeast. Consider adding “upright” to the description.

Response: This would make the assumption that the fold is symmetrical. We do not have information on the axial plane of this fold. Only the fold axis. It is more likely that the fold is asymmetrical - as they are observed elsewhere at Isortoq.

Changes: **none**

Comment 87: Line 264: Locate with a colored frame in Fig. 2.

Response: agreed

Changes: **Added outline of Fig. 4A in Fig. 2**

Comment 88: Line 268: Missing “Banded”?

Response: okay

Changes: inserted ‘Banded’, **line 288**

Comment 89: Line 271: Double-space typo.

Response: previously dealt with

Changes: deleted space

Comment 90: Line 272: “to”.

Response: okay

Changes: replaced ‘of’ with ‘to’, **line 292**

Comment 91: Line 280: Consider replacing by “gently”.

Response: “shallowly plunging” is a common means of describing structures that plunge less than 30 degrees.

Changes: **None**

Comment 92: Line 280: Hyphenate.

Response: okay

Changes: inserted hyphen

Comment 93: Lines 281–283: This is what is not adequately illustrated in Fig. 1C (see also comment 14, line 88). Possibly modify Fig. 1C to better illustrate the change of both trend and plunge of the lineations.

Response: We’re not 100% sure what “This” refers to in the statement “This is what is not adequately illustrated”. The manuscript was revised as requested in response to comment 14 (**line 99**).

Changes: Attempted to clarify statement. Reworded to state “rotated” instead of “folded” (**line 303**), and added reference to Figure 1D inset (**line 304**), as well as an update to the caption (**lines 99-101**). Figure 1 updated in line with previous comment.

Comment 94: Line 287: Split into two sentences.

Response: okay

Changes: inserted ‘period’ splitting text into two sentences. **line 308**

Comment 95: Line 287: “in”.

Response: okay

Changes: deleted ‘on’ and replaced with ‘in’ **line 308**

Comment 96: Line 289: “via/using U–Pb”.

Response: okay

*Changes: inserted ‘using’ as suggested **line 310***

Comment 97: Line 289: “yielded”.

Response: okay

*Changes: inserted ‘which yielded’ as was required by the sentence structure **line 310***

Comment 98: Lines 293–295: Rephrase into something like “deform preexisting/pre-existing Archean–Paleoproterozoic/Archean or Paleoproterozoic gneissic fabrics (”.

Response: I see the problem

*Changes: inserted ‘attributable to’ **line 315***

Comment 99: Line 294: Do you mean “Archean or Paleoproterozoic” or “Archean to Paleoproterozoic”? If the former then spell it out, if the latter either spell it out or use en dash.

Response: It means that it is not known. Added “or” for consistency with GSC maps

*Changes: **or (line 315)***

Comment 100: Lines 296–297: Do you mean a normal sense of shear? If so, rephrase into something like “The shear zones show down-SSE sense of shear” or similar.

Response: We find the suggested revision more confusing than it is helpful. It is stated that the sense of slip is ‘down-dip’ and the direction is provided.

*Changes: **none***

Comment 101: Lines 296–297: “Planar ductile”.

Response: there is no justification provided for changing ductile planar to planar ductile.

Changes: **none**

Comment 102: Line 297: “schistosity” or “gneissic fabrics”?

Response: the word gneissosity is, like schistosity, an acceptable and common descriptive word in Geology

Changes: **none**

Comment 103: Line 297–298: “Discrete high-strain shear zones observed along”.

Response: okay

Changes: moved the word ‘discrete’ from after to before ‘high-strain’ **line 319**

Comment 104: Lines 299–300: “lineations”?

Response: no ... lineation should remain singular, as written

Changes: **none**

Comment 105: Line 301: “down-SSE”?

Response: the requested revision would remove the observation that the movement was down-dip.

Changes: **none**

Comment 106: Line 303: Fig. 6D is referred to before Fig. 6B and 6C. Adjust figure numbers and/or order and figure references appropriately.

Response: I see the problem

*Changes: inserted (Fig. 6A-D) above the reference to 6D. **line 313***

Comment 107: Line 307: “normal-sense shearing” or “normal sense of shear”?

Response: ‘normal sense of shear’ does not fit grammatically

*Changes: **no change***

Comment 108: Line 309: “NE-plunging intersection lineations parallel to the fold axis”?

Response: the line is grammatically correct as written

*Changes: **none***

Comment 109: Line 312: Confusing. Rephrase into “Isortoq Fault Zone” or, if corresponding to distinct structures, “shear zone in the Isortoq belt”.

Response: the word ‘belt’ is confusing here

*Changes: **deleted ‘belt’***

Comment 110: Lines 312–313: Separate sub-figure label from previous text with periods.

Response: agreed

*Changes: **done***

Comment 111: Line 324: Refer to the figure that illustrates this change at latitude 70N best (e.g., Fig. 3?).

Response: okay

*Changes: inserted 'Fig. 4A' as most representative of the change, **line 347***

Comment 112: Lines 324–325: “1–100-m-thick” or “1–100-metre-thick”.

Response: what is written is ‘metre-thick’

*Changes: **changed to 1–100-m-thick, line 348***

Comment 113: Line 324: Refer to the figure that illustrates this change at latitude 70N best (e.g., Fig. 3?).

Response: we already refer to Fig. 3 at the end of this sentence

*Changes: **none***

Comment 114: Line 324: What do you mean? Dismembered by tectonic offset along a fault or ductile shearing, or due to boudinage, or simply due to erosion, or intruded along stepping fault segments, other? Specify.

Response: the amphibolite panels are dismembered, probably by a number of processes.

This is a descriptive term, not a process.

*Changes: **none***

Comment 116: Line 325: “Fig. 3”.

Response: missing period

Changes: period inserted

Comment 117: Line 330: Make sure that “facing direction” and “younging direction” are adequately used and not interchangeably. “younging direction” might be more appropriate in the present instance, since the facing direction would imply local variations according to bedding/foliation attitude within a fold structure (e.g., Lisle, 1985 <https://doi.org/10.1017/S0016756800031459>).

Response: Facing direction (the younging direction of folded strata) is used appropriately here.

Changes: none

Comment 118: Line 331: Be consistent: “Caribou fault” or “Caribou Fault”.

Response: previously revised throughout to ‘fault’

Changes: done

Comment 119: Line 332: “SE dip” or “southeastward dip” or “SE-dipping geometry”.

Response: okay

Changes: changed to ‘southeastward’, line 355

Comment 120: Line 332: Delete “the”.

Response: the change would be grammatically flawed.

Changes: none

Comment 121: Line 333: “regional” is vague and used broadly in the manuscript with a seemingly significantly varying scale. Be more specific, e.g., “The overall younging direction in the Isortoq belt is to the NW”. A photograph of the unconformity could be a nice addition or at the very least reference to relevant studies showing this

unconformity.

Response: *okay*

Changes: *deleted 'at the regional scale' and added 'overall' earlier in the sentence. **line 355***

Comment 122: *Line 334: This term is correct, but not as widely used and not as informative on the shape of the described rock body as, e.g., "boudins", "lenses", "rhomboid". Consider replacing it with a more specific/descriptive term in the entire manuscript.*

Response: *boudins implies that you know that amphibolites are boudins, and lens and rhomboid imply that you know the 3-D shape. Panels is, as indicated, correct and best reflects what we know about the amphibolites.*

Changes: ***none***

Comment 123: *Line 336: Correct, but again not widely used and possibly puzzling. Consider replacing with something like "uniform gentle dip" or similar.*

Response: *homoclinally is a common term in structural geology*

Changes: ***none***

Comment 124: *Line 338: Hyphenate?*

Response: *addressed in previous comment*

Changes: *hyphens added where appropriate*

Comment 125: *Line 338: Term too confusing and seemingly used to describe features of varying type, size, and shape. Consider replacing by "rock unit/succession", "fold*

limb”, or other appropriate phrase/term.

Response: *We do not understand what is confusing about the term ‘panel’. It is a common term in structural geology*

Changes: **none**

Comment 126: *Line 339: En dash.*

Response: *addressed in previous comment*

Changes: *hyphens and en dashes added/modified where appropriate*

Comment 127: *Lines 340–341: Delete both commas and “the entirety of”.*

Response: *okay*

Changes: *commas and ‘the entirety of’ deleted, **line 364-365***

Comment 128: *Line 342: Delete comma.*

Response: *grammatically incorrect suggestion*

Changes: **none**

Comment 129: *Lines 342–343: Observations of what? Specify. E.g., replace by “sense of shear indicators” or “kinematic indicators”?*

Response: *okay*

Changes: *inserted ‘structural’ **line 367***

Comment 130: *Lines 343–344: Consider rephrasing into something like “The cluster of SE-plunging folds in the area is consistent with the observed*

crenulations/crenulation lineations” or similar.

Response: *We consider the sentence at **line 366-368** perfectly understandable. An explanation for changing it is not provided.*

Changes: ***none.***

Comment 131: *Line 345: “populations... plunge NNW appear” or “population... plunges NNW appears”.*

Response: *As per the previous comment the sentence is perfectly legible as is. No explanation provided of why it needs to be changed.*

Changes: ***none.***

Comment 132: *Line 347: Hyphenate: “NW-dipping”.*

Response: *okay*

Changes: *inserted hyphen*

Comment 133: *Line 347: Refer to an outcrop photograph or map illustrating these field relationships.*

Response: *Agreed. Although this is part of the Isortoq Belt that we didn’t visit - we are relying on previously collected data and reinterpretations of the map. Therefore we can not provide a photograph*

Changes: ***Locality K added to Figure 3 + Fig. 3 caption (263-264), and included here in the text at line 372***

Comment 134: *Line 348: “paralleling”, “mimicking the attitude of”, “reflecting the strike of” or similar.*

Response: *We do not find any of the suggested revisions in this paragraph helpful. The lineation represents the fold axis. That is a clear straight-forward statement.*

Changes: *none, line 373*

Comment 135: *Line 349: Refer to a relevant figure and/or stereonet.*

Response: *okay*

Changes: *inserted 'Fig. 4', line 374*

Comment 136: *Line 352: "metamorphic grade"?*

Response: *appears to be R1's wording preference. However, there is nothing ambiguous about 'grade of metamorphism'.*

Changes: *none*

Comment 137: *Line 352: Text coloring.*

Response: *We think the reviewer is referring to a red period that we missed from drafting stages.*

Changes: *colour changed to black*

Comment 138: *Line 354: Order of figure is incorrect. Fig. 7D referred to before Fig. 7A, 7B, and 7C. In addition, Fig. 7C is referred to before Fig. 7B further in the manuscript. Update order of figure subsets and figure numbers and references.*

Response: *We see the problem*

Changes: *changed Fig. 7 to Fig. 7A - D at the first mention of Fig. 7. line 377*

Comment 139: *Line 354: Not appropriate wording since it suggests contrasting*

attitudes, which is not the case here since both bedding and tectonic fabrics in the lower volcanics and fabrics in the upper metasedimentary succession are subvertical. Rephrase, e.g., by shortening sentence into something like “Both bedding and tectonic fabrics in the lower volcanic succession and fabrics in the upper metasedimentary succession display subvertical to steeply NW- or SE-dipping geometries”.

Response: *we state that “bedding and tectonic fabric ... are generally NE-striking and sub-vertical”, so we don’t understand the requested revision, nor what is complicated or “not appropriate” by an “overall SE-younging direction”.*

RI’s suggested revision is inconsistent with what is stated in the paper.

Changes: ***not implemented***

Comment 140: *Line 357: Hyphenate: “SE-younging”.*

Response: *okay*

Changes: *inserted hyphen, **line 383***

Comment 141: *Line 357: Text coloring.*

Response: *stray red comma.*

Changes: *changed to black.*

Comment 142: *Line 358: Replace by “pillow lavas” or “pillow-lava tops”.*

Response: *okay*

Changes: *inserted ‘-lava’, **line 384***

Comment 143: *Line 359: Repetition of “stratigraphic”. Rephrase into “stratigraphic relationships between”?*

Response: *yes - stratigraphic repeated*

Changes: *deleted 2nd 'stratigraphic', line 384*

Comment 144: *Line 364: "defines a broad, 100-metre-scale".*

Response: *okay*

Changes: *changed to 'defines a broad, 100-metre-scale' line 389*

Comment 145: *Line 365: Delete both commas.*

Response: *the commas are correctly employed.*

Changes: *none*

Comment 146: *Line 366: "by" or "into".*

Response: *'folded about' is the correct description*

Changes: *none, line 391*

Comment 147: *Line 368: Be consistent: either spell out "south", "east", "north", and "west" or abbreviate them. East is abbreviated into "E" line 316, while "south" is spelled out here.*

Response: *this request was made and acted upon previously*

Changes: *already done.*

Comment 148: *Line 368: "resulting into" or "forming".*

Response: *In our view, the suggested revisions here would 'yield' a less-understandable sentence.*

Changes: **None, line 394**

Comment 149: Line 369: “Z-shaped geometry”.

Response: ‘shaped’ is not necessary. Structural geologists use Z-folds and S-folds all the time without having to constantly insert ‘shaped’.

Changes: **None, line 394**

Comment 150: Line 369: Unnecessary. Delete.

Response: Disagree. If the structure isn’t viewed downplunge then you cannot determine whether it is an S or Z fold.

Changes: **None, line 394**

Comment 151: Lines 371–372: Add dashed lines to illustrate the shape of individual pillows so that the reader may identify potential way up. If way up is into the outcrop, then specify in the figure caption and/or on the figure itself with an arrow labelled “up” or “way up”.

Response: done

Changes: See **Fig. 7A modifications**.

Comment 152: Line 375: Do you mean “in a/the pelitic iron formation”? If so, replace comma.

Response: okay

Changes: inserted ‘in’ in caption, **line 401**

Comment 153: Line 375: “to”.

Response: *okay*

Changes: *replaced with 'to' in caption, **line 402***

Comment 154: *Line 377: Probably correctly phrased, but not reader friendly. Consider replacing by “increments of two measurements” or other appropriate?*

Response: *the suggested revision is not consistent with what is written, and ‘standard deviations’ is the statistically correct way of stating this.*

Changes: *none.*

Comment 155: *Lines 379–381: This could also be mentioned somehow in the Introduction chapter (e.g., before or after the sentence lines 111 to 114).*

Response: *We already state in the Introduction that the ‘greenstones of the Grant-Suttie Bay area, form part of a regional-scale synform’. But while the Introduction does not require editing, this comment is correct that this is written as if part of the Introduction.*

Changes: *changed to ‘Regional gravity data (NRCan, 2020), which defines an arcuate pattern offshore of the western ends of the Isortoq and Ege Bay belts, may indicate the presence of a regional fold closure in Grant-Suttie Bay.’ (**line 486**)*

Comment 156: *Line 381: “show”.*

Response: *Comment unclear: No explanation of the suggested insertion of the word ‘show’.*

Changes: *none*

Comment 157: *Line 382: “anomaly”.*

Response: *Unclear comment, but we believe the reviewer is suggesting that we replace*

pattern with anomaly.

Changes: ***changed to anomaly, line 406***

Comment 158: Line 382: Delete “of” or replace “offshore of” by “off”.

Response: Doing so would remove information (that the source of the arcuate anomaly is not exposed).

Changes: ***none***

Comment 159: Line 383: Either “NE–SW-striking” or “NE-striking”, but be consistent (e.g., line 32: “ENE-striking”). Stick to one style.

Response: okay, addressed previously.

Changes: revised to northeast-striking (***line 409***)

Comment 160: Line 384: “hundred-metre- to km-scale” or “100-m- to km-scale”.

Response: okay

Changes: inserted ‘metre’, ***line 410***

Comment 161: Line 384: Either choose one or the other, or rewrite into “strongly foliated, gneissic”.

Response: okay

Changes: changed to ‘foliated to gneissic’ ***line 410***

Comment 162: Line 386: “NNE-plunging” or “north-northeast-plunging”.

Response: okay

Changes: changed to “north-northeast-plunging” **line 416**

Comment 163: Line 391: “S-shaped folds”.

Response: No - S-folds is the correct structural term.

Changes: **none.**

Comment 164: Line 391: Move to figure caption?

Response: We disagree with this suggestion. The relevant photo in Fig 8 is taken looking to the NW and hence does not show the folds looking downplunge. As explained previously, one has to state ‘viewed downplunge’, otherwise the S and Z asymmetry is meaningless.

Changes: none (**line 417-418**; viewed downplunge to the NE)

Comment 165: Lines 395–396: Redundant with previous sentence. Merge the two sentences, e.g., “synform closure with the hinge zone about Ignerit Point and Imiliq Island” or similar.

Response: okay

Changes: deleted the sentence **line 421**

Comment 166: Line 401: Refer to relevant stereonet.

Response: okay

Changes: inserted ‘Figs. 4C-D’. **line 426**

Comment 167: Line 412: “an arcuate anomaly”.

Response: ok for adding qualifier.

Changes: **done, line 437**

Comment 168: Line 412: “hinge”.

Response: okay

Changes: replaced ‘core’ with ‘hinge’ **line 438**

Comment 169: Line 421: Perhaps refer to Fig. 9A to illustrate this?

Response: agree to figure reference, but we feel it is early to introduce Fig. 9

Changes: added “Fig. 8”. **Line 447**

Comment 170: Line 421: Rephrase into “The two belts merge/link up in the NE-plunging fold hinge within” or similar?

Response: okay

Changes: broke into two sentences so that it now reads “A northeast-plunging fold hinge joins the two belts within Grant-Suttie Bay (Fig. 8). Stratigraphic younging directions on the two limbs indicate that the fold is a synformal anticline that is characterised by a moderately inclined axial surface that dips to the south-southeast.”
line 446-449

Comment 171: Line 421: Split into two sentences, i.e., delete “which”.

Response: made this exact revision in response to the previous comment

Changes: **line 446-449**

Comment 172: Lines 421–423: Rephrase into something like “Stratigraphic younging directions suggest a synformal anticline geometry with a moderately-inclined, SSE-

dipping axial fold surface”.

Response: *also already done in response to comment 170*

Changes: *line 446-449*

Comment 173: *Lines 423–424: Unnecessary.*

Response: *Disagree. It is absolutely essential that the fold be viewed downplunge, within a framework that does not generate apparent geometries (see similar response to R2 comments on downplunge observations of folds).*

Changes: *none. (line 450)*

Comment 174: *Line 430: Add “, which is”.*

Response: *there was a need for a comma*

Changes: *inserted comma*

Comment 175: *Line 440: “the folds form” or “the train of folds forms”.*

Response: *okay*

Changes: *added ‘s’ to form*

Comment 176: *Line 440: How large? Specify.*

Response: *okay*

Changes: *changed ‘larger-scale’ to ‘map-scale’ line 469*

Comment 177: *Line 445: Do you mean “across the area”?*

Response: *agreed - not clear.*

Changes: changed 'throughout' to 'throughout the structure', **line 475**

Comment 178: Line 446: Vague. Do you mean "individual rock units", or "metavolcanic sequences", other? Specify.

Response: no, but see the problem

Changes: deleted 'of layers' and inserted 'limb' before rotation, **line 477**

Comment 179: Line 447: Perhaps add the lineations in Fig. 9B if possible?

Response: The orientation of the lineations is already provided in the upper-left corner of the figure (FA and Ls shown with arrows representing their respective orientations)

Changes: **Made Ls green so that they are clearer. See updated Fig. 9B**

Comment 180: Line 448: "Origin of" or "Potential origin for"?

Response: okay

Changes: changed to "Origin of", **line 478**

Comment 181: Line 449: "boudinaged" or "smeared" perhaps?

Response: no - boudinaged is a specific type of structure; "smeared" is vague and does not improve the text in our view.

Changes: **none**

Comment 182: Line 453: "S-C-C'fabrics".

Response: okay

Changes: *changed to S-C-C', line 488*

Comment 183: *Line 454: Add reference to Fig. 2 and/or 3 and to figures showing outcrop-scale kinematic indicators supporting this sense of shear.*

Response: *we already reference Fig 3, and we have already presented and referenced figures documenting the IFZ shear sense.*

Changes: *none*

Comment 184: *Line 455: “the drag-folded geometry”?*

Response: *ok*

Changes: *line 490*

Comment 185: *Lines 457–458: Potentially add after this sentence that “This is consistent with the undulating (folded?) northeastward continuation of the well-defined boundary between the large positive and negative magnetic domains/anomalies north and south of the IFZ respectively (Fig. 4), with the truncation of the Isortoq belt by the IFZ (i.e., occurrence of Archean rocks on either sides of the fault; Fig. 3), and with the foliation attitudes on either side of the IFZ (i.e., potentially folded and located on opposite limbs of an open, upright, mildly NE-plunging fold; Fig. 4B). The magnetic boundary is thus reinterpreted as the (folded) contact between poorly-magnetic Archean rocks in the south and highly-magnetic Paleoproterozoic rocks in the north”. Then perhaps start a new paragraph.*

Response: *The reviewer does not specifically indicate why this addition is necessary. That said, we infer that R1 indicates a need to explicitly link the Grant-Suttie area with the northeastern extension of the nappe along the IFZ. However, some of this paragraph cannot be incorporated as is, either because we disagree (upright folds, see Comment 86 above), is incorrect (“Archean to the south, Paleoproterozoic to the north”) or*

because it is repetitive. We also feel that this content belongs higher in the paragraph.

Changes: **Added lines 482-486:** *The sharp aeromagnetic boundary (Fig. 4A), interpreted as the continuation of the IFZ, is now also interpreted as the base of the nappe, consistent with the truncation of the Isortoq belt by the IFZ (Fig. 3) and foliation attitudes on either side of the IFZ indicating an mildly NE-plunging fold (Fig. 4B) similar to geometries inferred at Grant-Suttie Bay. New paragraph created thereafter.*

Comment 186: *Line 459: Replace by “like in”.*

Response: *We don't see how 'like in' is in any way better than 'consistent with'. No explanation of what the reviewer sees as a shortcoming is provided.*

Changes: **none**

Comment 187: *Line 460: Specify: “the down-SSE kinematics of the IFZ and [specify] geometry of fold structures”.*

Response: *We feel that the kinematics of the IFZ have already been adequately described, and we don't understand what is meant by 'specify'*

Changes: **none**

Comment 188: *Line 464: Too vague. Specify what type of structure, e.g., basal thrust, décollement, detachment, other?*

Since the IFZ crosscuts an earlier Archean to/or Paleoproterozoic foliation and since rocks of the Isortoq belt occur on either sides of the fault, can the IFZ actually represent a basal nappe structure since it appears to be oblique to bedding in the Isortoq belt? Could it not reflect shearing along the axial cleavage of the Grant-Suttie Bay synformal anticline? This could add to this already interesting Discussion section. This would require the addition of a relevant sketch in Fig. 9A or as a new inset in Fig. 9 with the

IFZ paralleling the axial fold cleavage. Important to this discussion item is a comparison of the strike and dip of bedding/foliation within the Isortoq belt versus within the IFZ. A $\geq 15^\circ$ higher dip within the IFZ would suggest it reflects shearing along the axial fold cleavage

Would naming the synformal anticline structure in Grant-Suttie Bay, e.g., “Grant-Suttie Bay synform”, not help the reader and simplify some sentences?

Response:

- “too vague” - ok. Addressed by adding “detachment”. **Line 499**
- *The obliqueness of the IFZ with respect to the Isortoq Belt, and the fact that the IFZ cross-cuts the belt, is inconsequential to whether the IFZ is (or not) a basal structure. RI’s suggestion (that the IFZ crosscuts the basal structure matters) implies that they understood that the belts have a specific structural position within the nappe. However, the supracrustal belts don’t necessarily have a specific “stratigraphic” position within the fold, especially given that we are looking at Archean/Paleoproterozoic rocks with deformation and metamorphic histories previous to nappe deformation. The belts they are merely objects deformed within it (like the wall rock gneisses are). Admittedly, given our description and some of the figures, we do understand how one could come to such conclusions. Wording has been clarified (lines 504-507).*
- *We find the reviewer's discourse on the IFZ being “sheared axial fold cleavage” somewhat difficult to understand. However, we think they are referring specifically to the anastomosing strands that cut the Isortoq belt and are thus steeper than the belt, and thus not portions parallel to the fold limb. It is true that the axial plane documented at Ege Bay (Fig. 7B) could be parallel to these strands. Notwithstanding this, the problem with implementing this fully is that such an axial planar cleavage is not documented or well developed elsewhere. We nevertheless include this here (lines 509-513) and have updated Figure 9. However, we do not see the need to repeatedly state*

this at other portions of the manuscript, as other comments by R1 appear to suggest (comments 190, 192, 198, 226).

Changes: inserted 'detachment (**line 499**). Several modifications and clarifications at lines **504-507 and 509-513**. **Fig 9A** modified to include axial plane (AP).

Comment 189: Line 465: "with the SSE vergence" or "with the SSE-directed vergence".

Response: okay

Changes: inserted 'the', **line 500**

Comment 190: Lines 471–473: Cf. comment line 464.

Response: with regards to axial planar cleavage. Addressed previously

Changes: **line 509-513**

Comment 191: Line 478: Hyphenate: "late-stage".

Response: okay

Changes: inserted hyphen

Comment 192: Lines 479–480: Cf. comment line 464. Simply mention that another possibility is that the IFZ's steeper dip reflects shearing along the axial fold cleavage.

Response: see response to comment 188

Changes: **line 509-513**

Comment 193: Line 482: Replace by "or" or "and" or "to" as appropriate.

Response: *okay*

Changes: *replaced / with 'to'*

Comment 194: *Line 491: Hyphenate?*

Response: *okay*

Changes: *hyphenated throughout*

Comment 195: *Line 496: Unless named by a previous study, it would be beneficial to avoid naming this structure after two of its components (IFZ and Isortoq belt) and, thus, avoid confusing the reader. Names such as “the Grant-Suttie Bay nappe”, or “Ignerit Point nappe”, or “Imiliq (Island) nappe”, pending there are no other structures named after these localities, might be less confusing and better suited.*

Update other instances accordingly and be consistent with the capitalizing: “Isortoq nappe” or “Isortoq Nappe”.

Response: *yes - ‘Isortoq nappe’ is already named in a previous publication (Johnston et al., 2024)*

Changes: *have revised to ‘Isortoq nappe’ throughout*

Comment 196: *Line 499: “(v. = volcanic)”.*

Response: *(v.) immediately follows ‘volcanic’. It would be redundant to state volcanic again.*

Changes: *none*

Comment 197: *Line 499: Is this referring to the Gillian Lake anticlinal synform in the southeast or to the synformal anticline in Grant-Suttie Bay proposed by the present*

study? Specify or modify.

Response: *agreed - confusing sentence*

Changes: *deleted reference to the antiformal syncline*

Comment 198: *Line 507: The lower part of Fig. 9B is more consistent with a formation along axial fold cleavage. A formation of IFZ and Caribou Fault as basal shear/fault zones would appear as belt-parallel shearing in the upper sketch. It could still result in boudinage and dismemberment, but rather unlikely in large normal offsets.*

Response: *Disagree. The dip of the IFZ is too low. And if the entire IFZ is cleavage then we don't understand why shearing would be present along one limb of the nappe. We have nonetheless conceded that more steeply dipping anastomosing strands may be linked to axial planar structures (as indicated previously)*

Changes: *none here, change made at line 509-513 and in Fig. 9A.*

Comment 199: *Line 508: Spell out these abbreviations.*

Response: *agreed*

Changes: *revised to read 'high temperature (HT) footwalls against low temperature (LT) hangingwalls.' **lines 544 and 548***

Comment 200: *Lines 511–512: “suggests that deformation is related to the Trans-Hudson Orogeny”.*

Response: *the suggestion is to remove information (that involvement of the Piling Group implies deformation was syn- to post-Paleoproterozoic) that weakens our interpretation of the deformation being a product of the Trans-Hudson orogeny.*

Changes: ***None.** Note that the sentence was changed in response a previous comment.*

Comment 201: Line 513: En dash.

Response: already responded to.

Changes: applied where appropriate in the manuscript

Comment 202: Line 514: En dash.

Response: already responded to.

Changes: none

Comment 203: Line 516: Refrain from using the term “complex” and any of its derivative in manuscript unless in names, e.g., “Random Island Fault Complex”, since this term is not informative and does not add anything to the discussion. Instead, the assembly of Nuna appears quite clearly in your Fig. 2, which shows how structures in relatively young mobile belts (basins? E.g., Foxe fold belt, Rinkian Orogen, Grant-Suttie nappe, Pillattuaq nappe) all appear to verge towards cratonic centers of relatively old rocks (possibly crustal-scale, old anticlines/basement highs), i.e., the area between Grant-Suttie Bay and Foxe fold belt. To better illustrate this, a slightly more regional Fig. 2 might be beneficial, e.g., including the correlation of the Nagssugtoqidian Orogen with the Torngat Orogen in Labrador, where structures all verge towards the North Atlantic Craton (e.g., van Gool et al., 2005; <https://doi.org/10.22008/gpub/25609>).

Response: We consider this an over-reach. R1 asks us not to use the word “complex” because of structural relationships documented in the Nagssugtoqidian and Torngat orogens, and to provide an expanded figure 2 to make their point. It is beyond the scope of the manuscript to discuss the North Atlantic craton.

Changes: **None.**

Comment 204: Line 519: “NW-directed vergence”.

Response: inserting ‘directed’ is redundant as vergence means ‘direction of transport’

Changes: **none**

Comment 205: Line 521: “along-strike the” or “along the strike of the”.

Response: ‘along strike’ is a common structural geology phrase

Changes: **none**

Comment 206: Line 521: Double-space typo.

Response: okay

Changes: deleted

Comment 207: Line 525: Is this the same nappe as the Isortoq nappe or not? If so, then stick to a single name. If not, then specify the difference between these two structural units in a figure and in the text.

Response: agreed

Changes: nappe referred to as the Isortoq nappe throughout, **line 577**

Comment 208: Line 526: Delete “occurring”.

Response: okay

Changes: deleted ‘occurring’

Comment 209: Line 529: Replace by “occur”.

Response: no, the nappes ‘are’ along strike

Changes: **none**

Comment 210: Line 529: Delete “from”.

Response: This change would result in a grammatically flawed sentence

Changes: **none**

Comment 211: Line 530: Why “although”? Is the Grant-Suttie nappe not overprinting the Dexterity granulite belt too? If so, a more appropriate phrasing might be “Similarly interpreted to” and deleting “nevertheless”.

Response: Agreed

Changes: Deleted the sentence that began with “Although...” which had no bearing on the discussion, and indicated in the previous sentence that these nappes may be correlative with the Isortoq nappe. **Line 577-599**

Comment 212: Line 530: Replace by a comma.

Response: sentence already deleted (see comment 211)

Changes: **not applicable**

Comment 213: Line 532: Do you mean “Grant-Suttie nappe”? Specify.

Response: sentence already deleted

Changes: **not applicable**

Comment 214: Line 538: Add reference to relevant figures (Fig. 2 and/or 3).

Response: okay

Changes: added (Fig. 2).

Comment 215: Lines 538–539: Do you mean the northern end of the Rinkian Orogen or its southern end? Specify. If northern end, are there any indications in previous studies that it bends into an ENE–WSW strike, i.e., into parallelism with the Grant-Suttie and Pillattuaq nappes? If so, please include these arguments and references to relevant studies to further support this correlation.

If you mean the southern end, it seems rather unlikely since it is more likely to link up with the similarly NNW-verging Foxe fold belt.

Response: we meant ‘southern’. The reviewer suggests this is unlikely because the southern Rinkian is ‘more likely to link up with the similarly NNW-verging Foxe fold belt’. But the southern Rinkian orogen is characterized by southeast-verging structures, not northwest-verging structures. See for example Grocott et al., 2023.

Changes: inserted ‘southern’, **line 578**

Comment 216: Line 541: “fold-and-thrust belt, and”.

Response: while some authors do hyphenate fold and thrust belt, most do not. There is no reason provided for hyphenating this phrase and hence it appears to be simply a matter of preference.

Changes: **none**

Comment 217: Line 543: These are not exceptions since structures in the Nagssugtoqidian Orogen and Torngat Orogen verge towards the northwest and west respectively. Rephrase this sentence and the rest of the paragraph accordingly.

Response: the reviewer is referring to orogens that are to the south and have never been viewed as correlative with orogenic belts of central and northern Baffin island.

Changes: *none*

Comment 218: Line 543: Do you mean “Baffin to Rinkian suture”? If so, then use en dash: “Baffin–Rinkian”.

Response: see response to comment 219

Changes: Deleted ‘-Rinkian’.

Comment 219: Line 543: Is this an official name? If so, add it to Fig. 2.

Response: it is not an official name

Changes: Deleted ‘-Rinkian’.

Comment 220: Line 545: The conclusion needs to present concisely and clearly the results of the study and main implications. At present, it is not focused enough. Consider presenting these as numbered, one-sentence bullet points.

The second paragraph, although interesting, is particularly long and unfocused with partly redundant content.

Response: agreed that the conclusion should be improved, but disagree that the main points should be presented as bullets.

Changes: Rewrote and reorganized the conclusion.

- First paragraph summarizes our findings and direct implications for north Baffin.
- The second paragraph, shortened and more focused compared to the original, calls back on the identification of structural elements characteristic of the base of nappes (brought up in the introduction and Fig. 1) and implications on the lack of thematic studies in remote arctic terrains.

See **lines 585-612**. These changes make some of the comments below moot.

Comment 221: Line 547: Too vague. Specify how large.

Response: To remove. “Mesoscopic” doesn’t matter - the folds are scale independent.

Changes: Removed mesoscopic-scale; now reads “asymmetric parasitic folds”, **line 603**

Comment 222: Line 548: “with vergence opposite to that of the nappe”?

Response: agreed

Changes: **change implemented, line 604**

Comment 223: Line 549: “fold-axis-parallel”.

Response: ok

Changes: **change implemented, line 605**

Comment 224: Lines 551–552: “respectively as the thinned long limb and thickened short limb of a (mildly NNE-plunging,) upright synformal anticline merging together in the fold hinge zone within Grant-Suttie Bay”.

Response: Rejected: a bit too detailed for the conclusion, and this would remove the point that it is one continuous belt

Changes: **none**

Comment 225: Lines 553–554: Partly redundant with the previous sentence. Might consider merging some of this sentence with the previous one to shorten the conclusion.

Response: Disagree that there is redundancy with previous sentence. Furthermore, other parts of the conclusion have been removed to shorten the section.

Changes: **none**

Comment 226: Lines 554–555: Add/modify according to changes following comment line 464.

Response: no change required, given the uncertainty the possibility of axial planar cleavage playing an active role does not belong in the conclusion. We have already made changes as per R1's comments (line 509-513)

Changes: **none here**

Comment 227: Line 556: “along”.

Response: Disagree. Replacing “generated by” with “along” changes the meaning of the sentence.

Changes: **none**

Comment 228: Line 557: “and”.

Response: Disagree. “As well as” is fine and provides more emphasis than “and”

Changes: **none**

Comment 229: Line 558: Do you mean “terrains”? “Terranes” does not sound right in this instance. The concept of terranes has barely been approached in the manuscript and it feels like “terrains” would fit better and remain more general.

Response: Good point.

Changes: replaced terranes with the more general “terrains” at two instances in the conclusion (**line 597, 600**)

Comment 230: Lines 558–563: Shorten into “In low-relief crystalline terrains, testing the occurrence of nappes requires”.

Response: The suggested revision removes too much context.

Changes: none, lines 599-601; but the following portion has been removed, which we consider meandered too much: Once such elements have been identified at least preliminarily, testing of a “nappe hypothesis” requires detailed fieldwork targeting structural elements expected in such systems, and revisiting established stratigraphic relationships, legacy data and geophysical interpretations in light of the hypothesis. Synformal anticlines and shear zones, for instance, are not evidence for nappes on their own; However, their occurrence in conjunction with key structural elements is consistent with such a model.

Comment 231: Line 564: Consider rephrasing into “characteristic structural elements” or “key structural elements”.

Response: deleted

Changes: n/a

Comment 232: Lines 564–565: Shorten into “existing stratigraphic relationships and structural and geophysical data”.

Response: deleted

Changes: n/a

Comment 233: Lines 566–568: Rephrase into “The occurrence of synformal anticlines and shear zones in conjunction with, e.g., oppositely verging asymmetric folds with thickened short limbs and thinned long limbs, opposite younging directions, and offset and oppositely-graded isograds may provide robust constraints on both local and

regional tectonic relationships” or similar. Make sure that all the most characteristic structures supporting your interpretation as a nappe are included here.

Response: *reworded, with important elements identified*

Changes: *line 601-608*

Comment 234: *Line 569: “Arctic Canada”.*

Response: *moot; sentence changed during rewording of the 2nd paragraph of the conclusion*

Changes: *n/a*

Comment 235: *Line 570: After finalizing the reading of the manuscript, it feels like the title is too vague and does not reflect the results of this interesting study. Here are some suggestions:*

- “Identifying fold nappes in deeply eroded orogens: a case study from the Trans-Hudson Orogen in northern Baffin Island, Arctic Canada”

- “Late Paleoproterozoic fold nappes in the Trans-Hudson Orogen in northern Baffin Island, Arctic Canada: implications for field relationships and structural studies”

- “Fold nappes in the late Paleoproterozoic Trans-Hudson Orogen in northern Baffin Island, Arctic Canada: implications for orogen dynamics, regional tectonic correlations, and structural field studies”

Response: *In the vein of these suggestions, as well as those from R2, we propose a new, shorter title that emphasizes the focus of the paper.*

Changes: *Title changed to: “A Crustal-Scale Fold Nappe from the Trans-Hudson Orogen, Northern Baffin Island, Arctic Canada”*

Other changes

Added contributions of peer-reviewers R1 and R2 to the Acknowledgements

Authors' Reply to Reviewer 2

line 17 - Specify fold nappes?

Response: Title modified and includes this suggestion, **line 1-2; 18-19**

line 22 - A statement of why a better deciphering of these structures is required for tectonic interpretation is lacking.

Response: Statement added, **lines 22-23**

line 45 - No need for that many local stratigraphic terms, keep it big picture I guess to attract a wider audience.

Response: modified keyword list, but kept a mix of general terms (wide general audience) and local terms such as Isortoq Fault Zone, Mary River Group and Piling Group at the end of the list; all three are well known in Arctic geoscience circles and we want these researchers to find our paper as well **lines 48-49**

line 46 - Fold-nappe tectonics

Response: "Fold nappe" is now in the updated title. In principle it is not necessary to have keywords identical to the title. Similarly redundancy with "Trans-Hudson Orogen". Removed both keywords, and replaced with "Paleoproterozoic tectonics" and "crystalline basement nappes". (**lines 48-49**)

Series of comments at line 49:

line 49 - Reference to Dennis et al. (1981) originally defining the concept is missing.

Response: We feel that the references that we provided at the start of the paragraph are more appropriate. The reviewer is incorrect by stating that the concept was defined by Dennis et al. (1981). We cite Bailey (1930), published 50 years before the Dennis et al paper. We also cite what is, in our view, a more informative paper published in the same book as the Dennis et al paper - McClay and Price (1981). Dennis et al has been cited 14 times; the McClay and Price paper >90 times.

Nevertheless, given that the Dennis et al paper is called "What is a nappe? What is a thrust", we have added the reference lower in the paragraph where nappes *and* thrust sheets are brought up. **See change line 58 + added to reference list**

line 49 - To avoid confusion for the reader, the definition of a thrust nappe (or thrust sheet) could be worth adding, before highlighting differences between these features as per the second next sentence.

Response: It is not within the scope of this paper to restate the long settled

nature of thrust sheets and nappes. We consider the readers of Tektonika to be familiar with these concepts, and would not require such basic definitions.

That said we have added pertinent references suggested by R2 **at lines 58-59**

line 49 - Definitions of thrust sheets/nappes, overthrusts and fold-nappes have been detailed by Merle (2013) (Merle, O. (2013). Emplacement mechanisms of nappes and thrust sheets (Vol. 9). Springer Science & Business Media.)

It highlights that a fold-nappe can derive into a thrust nappe or sheet by tectonic rupture along the axial plane or along the highly sheared inverted limb that may disappear through rupture.

This possible continuum may be worth emphasising?

Response: As indicated above, we have cited the relevant primary literature on nappes and nappe tectonics. That said, to address this and a previous comment by R2 we have added the Merle 2013 reference where the term “thrust sheet” is introduced. **Lines 58-59**

line 49 - Mention that they are allochthonous tectonic units.

Response: Disagree with the suggested change. We feel that we adequately define nappe as well as citing the primary literature. An allochthonous origin is implicit, and the readers of Tektonika would be familiar with this. **No change.**

line 49 - First definition of a nappe: “A nappe, is a package of earth which is not in its place, which rests on a chance substratum, on a substratum which is not its original substratum” (Termier, 1922)

Response: There is no revision explicitly requested. Furthermore we could not find the exact Termier (1922) paper that R2 is referring to. That said, we have added “and references therein” to Bailey, 1930, which covers the pioneering work of 19th continental European geologists. **See line 57**

line 54 - Originally, the nappe term should “be reserved for structures which showed large-scale inversion of strata” (Dennis et al., 1981). How does the current statement fit with this definition? What is the link between stratigraphy inversion and recumbent folding and thick-skinned deformation, with respect to thin-skinned deformation without basement involvement?

Response: There is no discrepancy between our text and the Dennis et al statement. Stratigraphic inversion is more clearly demonstrated in revised Figure 1 - especially with the modifications pertaining to younging directions, see **replies to comment line 69 for changes to Fig. 1**

The reviewer then asks a question about thin-skinned deformation without

basement involvement. However, our paper focuses solely on lower basement crystalline nappes - thin-skinned deformation is beyond scope. In order to make this clearer at the outset, we reworded the abstract at **line 22**, i.e. that the paper deals with crystalline basement nappes (which are fold nappes; e.g., Escher et al. 1993),

line 69 - This is not necessarily true, depending on the geometry of the fold nappe. e.g., the fold-nappe can describe a recumbent, asymmetric fold with vergence is in (sic) agreement with the direction of the nappe emplacement. In that case scenario, asymmetric folds along the lower, inverted limb of the lower fold have an apparent vergence consistent with the direction of nappe emplacement, that would easily rupture into a thrust surface.

I am not an expert of fold nappes, so I am not sure which geometry is the most common, but I feel like the one above is more likely in geomechanical terms. Anyway, I think that both options should be described in the text and in Fig. 1b.

e.g., Matte (1968) --> in Galicia

Response: The original text pertained to interpreting vergence based on the occurrence of S- or Z- folds, and how looking at this shape alone could yield incorrect vergence interpretations. Our wording may have been ambiguous, in particular what we meant by “apparent vergence”, and Fig. 1 did not adequately convey what we meant.

In response to this comment (and some from R1):

- **the statement has been clarified (line 71-74)**; reworded “upright” parasitic folds to “typical” parasitic folds / removed statement on incorrect vergence interpretation (moved elsewhere...)
- **Figure 1C added**, showing the distinct geometries of hypothetical S-folds formed in nappes vs. flexural shear. Former 1C has become 1D, and associated changes have been made in the main text.
- **Fig 1C figure caption (line 90-95)**; to avoid the confusion generated in the previous draft, the statement on how incorrect vergence could be interpreted by looking solely at the S (or Z) shape has been relegated to the figure caption (**line 94-95**).

Our use of “apparent vergence” in the previous manuscript appears to have been interpreted differently by R2, possibly linked to refolding. The reviewer cites Matte’s 1968 thesis, which summarizes 6 years of work - as stated by Matte “Several variscan phases of superposed folding have been set up, each one characterized by a peculiar tectonic style”. Matte (1968) goes on to document fold interference patterns attributable to refolding. Younger folds and

refolding can affect nappes (as they can any structure) but that doesn't change the primary geometry of parasitic folds. Discussing the geometries of (re-)folded nappes would be beyond scope of the manuscript.

line 73 - Also known as transverse lineation (e.g., Mattauer et al., 1981; Burg et al., 1987)

Change made, **see line 76**. One reference for this minor point should be sufficient. Burg appears to be a more direct reference. Added Burg et al., 1987 **to the reference list**.

line 76 - What are the lateral indenters preventing from further spreading of a fold-nappe and resulting into this local compression-related features (vertical crenulation/folding and subhorizontal extensional veins)

Response: There are no indentors. None are mentioned in the text and none are required. **No change.**

line 80 - What type of veins are you talking about? Shear veins or extensional veins? It is important to explicit (sic) this statement as implications are very different in terms of local, finite strain. I guess here you imply extensional vein arrays

Response: Both shear and extensional veins can be generated. We do not stipulate but rather provide references to papers on the types of veins generated in this setting (Ratschbacher et al. 1989; Zhang et al. 2000; Davis and Maidens 2003). **No change.**

line 83 - In A and B: Please insert younging and structural facing indicators to justify the change of structural facing direction from the upper to the lower, overturned limb (in A), and justify the synformal anticline and antiformal syncline geometries with downward facing direction for the lower limb (in B)

Response: Younging symbols added in A and B, and the caption has been revised to indicate that the green\yellow stratigraphic sequence is upright. **See lines 86-90 and updated Figures 1A and 1B.**

line 84 - To be reviewed according to the comment made above, to emphasise a more complex (but common?) geometry in case the nappe rolls over to create a more complex folding patterns, with asymmetric fold vergence for the fold pattern and parasitic folds along the lower, overturned limb, and the upper, normal limb consistent with nappe emplacement direction

Response: Addressed previously (see response to comment at line 69).

line 92 - Sure, but these don't provide constraints for kinematics at all, surely?

Response: We don't claim that geophysical surveys provide kinematic data.

Added “geometry” at line 107 to clarify this.

line 95 - Can you please be more specific? This is interesting in case anyone aims at reproducing your workflow for a different area where similar data are available.

Response: Added the following: “on the distribution and geometry of crustal units”, **line 107**

line 110 - Mention to Fig. 2 could be made, for big picture context of the study area

Response: Done, line 123.

line 119 - Inserting a Table summarizing the different deformation stages, their kinematics, the resulting structures and their absolute or relative age constraints would make it easier to follow this section.

Response: Although we agree with the reviewer that a table would be the best way of summarizing the tectonic history of Arctic Canada, we have kept the historical review to a minimum emphasizing only those elements that are necessary for understanding our interpretation. We would rather avoid such a digression to keep the emphasis of the manuscript on Paleoproterozoic nappe deformation and the recognition of crystalline nappes at large. **No change.**

line 119 - Note to the editors: I think this section is very thorough and I have learned a lot. Please not (sic) that I am not a specialist of the area, though...

Response: We appreciate the reviewer’s positive feedback. R2’s opinion that the section is thorough and informative demonstrates that we have provided sufficient background information for a non initiated reader, and that it is understandable as is (i.e. without a table, see previous comment).

line 120 - Is it possible to add an inset to Fig. 1 illustrating the extent of THO, Churchill domain and Superior craton for reference?

Response: We agree that such a panel would make sense. However, it would not make sense to add an inset geological map to Fig. 1 as that figure represents a review of the structure of nappes at large. We have provided a **new inset showing the extent of the THO in Figure 2, + Figure Caption lines 210-212.**

line 156 - 1.880-1.865 Ga or 1880-1865 Ma. For consistency, I suggest sticking to Ma or Ga for all dates provided, and keep the same precision (number of decimal figures) through the entire manuscript.

R: Agreed partly. Switched to Ga where possible in the manuscript and restricted precision to 2 decimal places (for orogens in particular, see **lines 152-154**). We made an exception for the age brackets of the greenstone belts

(Mary River and Tuktuliavik Groups) for which 4 digits are warranted given the recent thorough age constraints established by Saumur et al. (2025) - we wish to avoid an apparent contradiction in print.

line 157 - South-southeast-dipping, for consistency with strike direction

R: Agreed - inserted 'south-'

line 157 - Also represented in Fig. 2, could be cited for lower-scale context

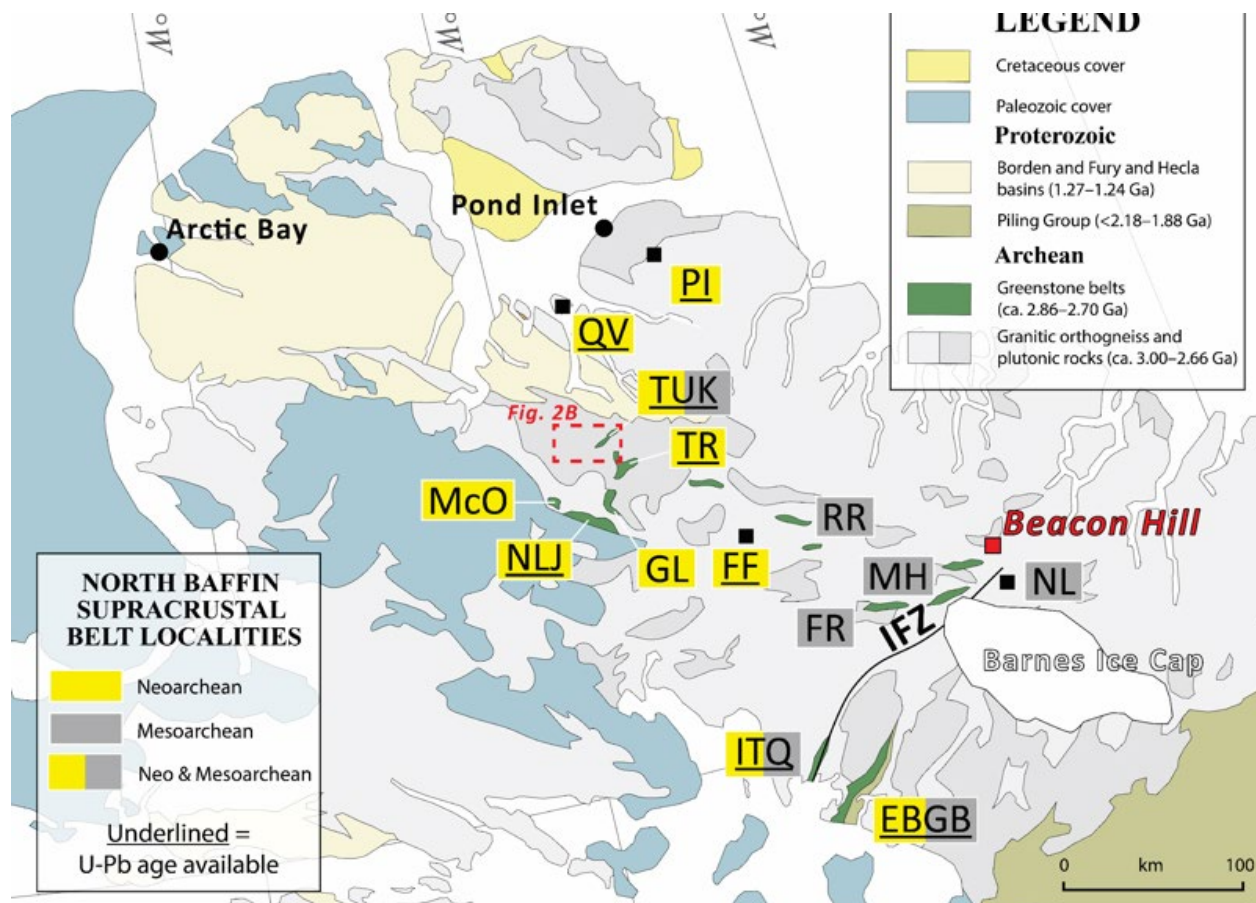
R: Agreed - inserted Fig. 2

line 180 (Figure 2) - In addition to domains displayed on the map, it would be good to have as a b panel a proper geological maps as GSBs of northern BI are mentioned in the text, notably (line 104), and units are described in the Regional Framework section (lines 147-150).

R: Although the suggestion has merit in principle, another figure/inset showing the distribution of Tuktuliavik Group, Mary River Group and Piling Group within the Rae Craton would not add much:

- (1) The spatial footprint of TG and MRG is quite restricted (see Fig. 2 of Saumur et al., 2025) provided below;
- (2) The belts are generally far afield from the Ege Bay area and do not provide much additional constraints on the structure of the Isortoq area;
- (3) It would distract from the point of regional vergence directions which is one of the major points of Figure 2.

As a compromise, we added to **Fig 2 the positions of panels of MRG and TVG** (b) the Isortoq and Ege Bay belts in the immediate Isortoq area. Figure caption modified at **lines 208-209**



From Saumur et al., 2025.

line 180 (Figure 2) - What does the dark grey colour refer to? Not labelled in the figure nor described in the caption.

A: Paleozoic sedimentary rocks. Added in Figure 2 and in the caption (**line 207**)

line 181 - Add mention to Canada, between brackets, for the label on the map, to match the text

Response: Added 'Canada' after Baffin Island in the caption, **line 196**

line 183 - Precise (sic) in the caption that coordinates drawn are normal day coordinates for Baffin Island, then.

Response: Added in figure caption: "lines of latitude and longitude refer to the current position of Baffin Island", **line 199-200**

line 185 - Labelled Inglefield orogen on the figure, please harmonise

R: Deleted 'Thelon' from the caption. **Line 200**

line 185 - The rotation of vergence direction along the Rinkian Orogen should be acknowledged in the caption (what timing?)

R: line 201-203: In the Rinkian orogen, displacement vectors for the lower plate were

first WSW-ENE, and rotated to NW-SE at ca.1825 Ma (Grocott et al., 2023), as highlighted by the curved black arrow.

line 209 - Be consistent throughout the manuscript regarding the use (or not) of abbreviations for orientation indications

R: A comment also made by R1. **Agreed** - moved to consistently spelling out directions (northeast, etc.) throughout the manuscript.

line 237 (Fig. 3) - Please add the interpreted Grant-Suttie synform closure in red dashes in the legend, or as a label. Red is actually maybe not an appropriate choice of colour, as all the fold-related structural features are represented in black. Can't you use the same, thin, black, point line symbol as for the Steensby antiform closure? It would be perfect if styles of symbols used were harmonised, as the figure is of high-quality already!

Also, the gold yellow colour for the inset outline on the map is hard to pick at first sight: maybe stay consistent with the thick, black contour used for the inset?

The Nappe Structure legend is not very easy to read. Can you please make it larger (e.g., same font size as for the Lithology legend box)?

Maybe merge the two legend boxes into a single one displayed at the bottom of the map?

R: Figure 3 modifications made: Modification made for the fold. Text size in legends is made larger. Gold/orange colour made thicker around inset boxes.

line 237 (Fig 3) - I love that locations of subsequent photographs and figures are indicated here!

R: Thanks. No revision requested.

line 247 - Examples? And thus, younging indicators?

R: Inserted (graded bedding and pillow lavas, respectively) **line 266**

line 252 - This is the Results section, right? Maybe Implement a section 3. Results with 3 subsections corresponding to current sections 3, 4 and 5 presenting observations and measurements for the three main subareas studied.

R: Done (in response to near-identical comments by Reviewer 1). Section called "Field Data and Observations", **line 271**

line 252 - Before the subsections, it would be good to introduce that all the structural data compiled and acquired as part of this study and presented below are available in Supp Mat (which is a great dataset to have access to, thank you for sharing!). Not sure this file has been properly introduced in the text, apologies if it is an overlook from my end.

R: We are not opposed to adding one sentence stating “Structural data utilized in this study is available as Supporting Information (see “Data Availability statement” for further details”, below section 3.0. It might look a bit strange but it could work.

However, a ‘Data Availability’ statement is provided at the end of the manuscript (prior to the References section), which we consider standard practice and acceptable. Furthermore, as we understand tektonika’s online platform, it is clear at the outset that supplemental data is present by looking at the left-side pane. The data can be made available at the click of a button. This might relinquish the need for an explicit statement in the manuscript as suggested here.

This said. We will follow the preference of the editors of the journal on the matter.

No change (for now)

line 253 - Already said above

R: Worth rementioning here because this was a subtle point presented among many others in the regional data. Reworded slightly at **line 273-274**

line 254 - Is it really useful here? You already explained above the reason for this contrast in mag response, not sure this brings much more to the story. If you want to keep this statement though, I would suggest you provide mag sus measurements in Supp Mat same as you did with structural measurements.

R: Agree that there is redundancy and that field measurements could be less of a point of emphasis. We have reworded the sentence and cited Saumur et al., 2018 which discusses the field measurements in further detail. **Line 274-276**

line 259 - Refer to comment on Fig. 4B

R: Response provided below to the comment on Fig. 4B, line 263. **No change**

line 263 (Fig. 4) - In Fig.4A: instead of SE- or NW of IFZ, why not introduce hangingwall (to the north) and footwall (to the south) terminology?

R: The fault orientation is not well constrained in many places, especially towards the NE and farther afield where it may flatten. Hence it is preferable to stick to direction, not structural interpretation. **No change**

Line 263 (Fig. 4) - A colour scale for RTF values would be easier to interpret than referring to max and min values in the caption I reckon, if you don’t mind editing the figure. **Done, colour scale added to Fig. 4A**

line 263 (Fig. 4) - In Fig. 4B: I suggest you present two different stereonet, one for the hangingwall, and another for the footwall, with the Kamb contours and possibly the fold geometry (sic) reconstruction, with the fold axis being pretty much the 11-->038 intersection. That would make more (sic) rigorous as they represent two different domains separated by the IFZ, although the folding pattern remains the same, associated with the nappe emplacement and IFZ development.

R: Although it can be argued that the IFZ separates different domains, the stereonets demonstrate that the fault is syn-kinematic with the folding, as shown by the calculated fold axis lying essentially in the fault plane. Also Kamb contours would unnecessarily clutter the figure. **No change**

line 265 (Fig. 4 caption) - Specify, as circles

R: Added 'circles' to the Fig. 4 caption. **Line 290**

line 273 (Fig. 4 caption) - Not displayed, would be good to have them represented for reproducibility and assessing the significance level of clustering

R: The Kamb contours are not displayed as they would result in too much clutter and are not required to see the data clusters. **No change.**

line 275 (Fig. 4 caption) - To avoid any ambiguity, please precise (sic.) that these are crenulation fold axes as well (not poles to axial planes). It would actually be good to have different symbols (circles, diamonds, triangles...) for poles to plane (in B) and linear features (lineations, fold axes in C-D).

R: All of the data shown here are geological lineations (as indicated at the top of figs C and D), including the crenulation axes. Added "Axis" in the figure caption to specify. **Line 296**

line 280 (Fig. 4 caption) - What mineral does bear the lineation?

R: The mineral lineation is not restricted to a single mineral. **No change.**

line 281 - Instead of coordinates here (which was confusing at first as I thought the angle referred to a plunge value, which did not make sense obviously), mention relative position to IFZ.

R: As explained in the text, data from Bethune and Scammel was collected south of 70N degrees latitude. The IFZ crosses this latitude, and were restricted to work north of 70N during our fieldwork with the Geological Survey of Canada This is not something over which we had any control. We added "latitude" in the figure caption to specify what 70N refers to. **Line 302**

line 300 - A photograph of the lineation in the shearing plane is required to make your point here. As far as I can tell, the S-C-C' fabric highlights apparent strike-slip kinematics on a plane-view photograph (if plane-view)

R: The photograph is not in plane view; it is on a subvertical face facing SE (the symbol refers to this). Also the YZ face (where lineation occurs as spots) is visible on the bottom left, on a face nearly perpendicular to this one.

These points are clarified on the Figure itself (updated Fig. 6A) and in the revised figure caption. **Lines 335-339**

line 303 - Rearrange the panels in Fig. 6 so that they are first introduced in the right order in the text

R: Previously dealt with in response to R1. No additional revisions.

line 306 - As it stands, the inset is not very helpful... either provide a thorough sketch enhancing why looking down the plunge is required to unravel true kinematics with respect to misleading, apparent kinematics otherwise, or delete.

R: We disagree with the premise of this comment, which appears to be that we need to explain why looking downplunge is important.

It is universally agreed upon that the geometry and kinematics of folds are to be described within a consistent framework based on viewing them downplunge. Otherwise, we're looking at apparent geometries. This does not need to be explained to the readers of tektonika.

In the manuscript, we confirm for the readers that the view is downplunge, and provide the downplunge direction so that the reader can ascertain the fold kinematics themselves. **No change.**

line 307 - No pictures of these lineation sets, which are critical to interpretations made. Please include them to the current photograph plates, or add another one

R: 4D shows the crenulation set (it was erroneously identified as 4C). Appropriate references to figure 4B was also added. **Line 325, 331.**

line 311 (Fig. 6) - Better outline structural features (S, C, C', F axial plane, fold axis, fold limbs) in a consistent manner through all your panels and provide measurements as labels, as this information is key to understanding of the kinematics analysis made
When possible, it would be good to have insets with photographs of lineation to unravel true kinematics (in A and B)

R: Various changes made to the field photos of figs. 6-8 to better highlight the structures observed.

line 311 (Fig. 6) - Fig. 6c: please outline the amphibolite body contours, elongated and outlined along some sort of a penetrative shear band cleavage. Also, annotate and label surrounding rocks.

R: the amphibolite boudin is labeled, and the sharp contact with surrounding rocks obvious from the photo. The request to outline 'some sort of shear band cleavage' cannot be done as it is unclear what the reviewer is referring to. The surrounding rock is tonalitic gneiss - this was added to the figure and caption (caption update: **lines 341-343**).

line 325 - Metre-thick instead of metre thick, if I am not mistaken?

R: hyphen inserted as requested.

line 330 - This is key, but documented by field measurements visible on the maps provided. It is great, but pictures showing the younging indicators (if any) or the unconformity and the change of attitude on both limbs would be great to make your point more convincing

R: We have illustrated the structures and field relationships as best we could. Furthermore, much of the work in the Isortoq Belt involves a reinterpretation of previous maps. We could not access the area ourselves. It appears that this point was not clear to R2. We therefore have **clarified this at lines 236-239**.

line 349 - Intersection lineation, then?

R: the intersection most often manifests as a mineral lineation, as is described in the manuscript. **No change.**

line 350 - Stretching/mineral lineation? A photograph plate with examples of all these lineation types is required.

R: Two points:

- This specific comment pertains to structures documented at the Isortoq belt south of 70N, which we could not visit ourselves. The point is that we are reinterpreting data collected by others. **See lines 236-239 and 124.**
- In a broader sense, we would disagree that such photos are a requirement. Geologists do their best to obtain field photos of structures, but nature is not always forthcoming.

No change.

line 359 - Please, better annotate the photograph to highlight this critical observation!

R: change made, **added pillow geometries to figure 7A** (same comment made by R1).

line 359 - Similar evidence is missing in Fig. 6 for the IB.

R: See reply to comments above. We could not visit the IB (Isortoq Belt) and therefore do not have such photos. Our analysis of the IB relies on the reinterpretation of previous maps and data. **No change.**

line 371 (Fig. 7) - Comments on Fig. 6 apply here. Please harmonise the style in annotations and labels between figures, including the maps presented above.

Also, it is a bit weird to have a stereonet as a panel to this figure. It would maybe be more relevant to have all the stereonets lumped into a single, independent figure, instead of having them as inset on maps and photograph plates, for sake of legibility.

R: It is not clear what R2 means by “harmonizing. Legend in Figure 3 was updated as requested. And we have made appropriate changes to figures to make the structures clearer and within the same line colours and formats...

With regards to R2’s second point: We disagree with the figure format being “weird”. The figures (images and stereonets) are divided by field area (Isortoq, Ege, Ignerit) and are designed to flow with the main text of the manuscript. Having one stereonet figure, 1-2 image plates, and a “geophysics figure”, would require the reader to go back and forth and call back to previous figures. In our view it would introduce complications and affect the flow of the entire manuscript. **No change.**

line 373 (Fig. 7, caption) - Please outline the pillow shapes and provide younging direction

R: addressed in comment above, Fig 7 modified.

line 374 (Fig. 7, caption) - To be fair, I struggle seeing any of these structures on this picture (7C), can you maybe zoom in? Also, what is the plane we are looking at?

R: Figure modified to highlight the lineations. Changes made to **figure caption lines 399-401.**

line 374 (Fig. 7, caption) - For the Ege Bay belt?

R: Yes. Added ‘for the Ege Bay belt’ to the caption for clarity, and started the caption with ‘Ege Bay belt’. **Line 402**

line 374 (Fig. 7, caption) - Also, it wuld (sic.) be good for the entire manuscript to introduce indexing of structure generations / deformation events, with suffix indicating the spatial extent affected by the related deformation stage (EBB +- IB +- IFZ). It would greatly help the reader as the structural record is complex, with some features affecting

only some domains, and later deformation affecting all of them. A summary table would be welcome to (structural paragenesis, with key structural features highlighted).

R: The reviewer appears to have mistakenly understood that “some features affect only some domains”. It is unclear to us how this inference was made. Yes some structure are only observed at some localities, they are all related to the same event.

While it is understood that an orogen has boundaries, penetrative deformation is assumed for the extent of a study area, or for an individual structure such as the nappe being described here. The Isortoq nappe is related to the same penetrative deformation stage, and the EBB, IB and IFZ are elements within this nappe. We do not consider that anything would be gained by artificially subdividing the nappe into apparent spatial domains in which some elements are slightly more visible than others.

That being said, we introduce **Table 1 which summarizes the structural elements observed by locality**. This partially addresses R2's concerns.

line 383 - Rearrange the figure panels so that they are introduced in the right order in the text.

R: Already revised in response to R1 comments.

line 384 - Same comment as above, please harmonise abbreviations vs full-text for quadrant orientation indications

R: previously done.

line 403 (Fig. 8) - 6D: I don't quite understand why the grav map is included in this figure. Please keep separate figures for maps (geol and geophysics), stereonet and photographe (sic.) plates, it would make the manuscript much clearer to read.

R: The reviewer is requesting that we keep geological and geophysical data separated. There is no reason provided other than that the reviewer finds it confusing having to deal with both geological and geophysical data at the same time; it appears to be a matter of personal preference.

At lines 406-408; 418-420 we explain that the gravity survey is consistent with the occurrence of a synformal closure in Grant-Suttie Bay. From our perspective, it seems redundant to state that combining datasets (i.e., geological and geophysical data results in better interpretations) - an implicit point of the paper is to look at different data sets together!

Moreover, this figure pertains to the subsection specific to Grant-Suttie Bay / Ignerit point. As indicated previously (in response to the comment at line 371),

the figures are designed by locality, to flow with the main text. We would find it counterproductive and inconsistent with the construction of the manuscript to re-arrange the figures according to data type.

The new Table 1 summarizes the geological elements observed by locality and by type of structure. We include this as a compromise to R2's request for wholesale figure reorganization.

line 403 (Fig. 8) - 6D: Also, the synform closure is not represented with the same symbol as in Fig. 3. Please harmonise nomenclatures (generation indexing and suffixes, as per suggestion above), symbols and colours used for different structural features in their representation in maps, photograph plates and stereonet.

R: This is a good suggestion - we have added synforms and antiform symbols to **Figure 8D**. Could not use the same colour as new Fig. 3 as black would not stand out. But we feel the readers will get it.

line 405 (Fig. 8 caption) - Annotate directly on the photograph (sic.). In what plane are these lineation lying? What is the mineral bearing the Lm?

R: A pencil and a pen were used in the field to help emphasize the lineations - this was already indicated in the figure caption. Added in "gneiss fabric" in the figure caption at **line 430**, as well as further details in **Fig. 8A** (Lm, cren. identified) and in the figure caption **line 430-432**

line 409 (Fig. 8 caption) - Abbreviations used for units need to be spelled out in the caption, or replaced by their full names in the figure

R: All of the units have proper abbreviations in the caption (GSI, IP, see lines 433). We therefore do not understand the nature of this comment. **No change.**

line 454 - S-C-C'

R: Change made.

line 464 - I agree with this model, supported by your data. You could introduce the concept of progressive deformation (Fossen et al., 2020) as part of your discussion. I think it would connect pretty well with the last subsection of the discussion in terms of the complex, protracted tectonic record of the THO.

R: We are not sure what Fossen et al paper is referred to here. Full reference is not provided.

The only such paper we can find is "Fossen, H., Cavalcante, C., Konopásek, J., Meira, V.T., de Almeida, R.P., Hollanda, M.H.B. and Trompette, R., 2020. A critical discussion of the subduction-collision model for the Neoproterozoic Araçuaí-West Congo orogen. *Precambrian Research*, 343, p.105715.". I

don't see what this paper has to do with our manuscript.

No change.

line 479 - Late-stage

R: hyphen inserted

line 494 (Fig. 9) - Rather than this schematic representation, or in addition to it, your discussion requires a proper cross-section (sic.) and interpreted map summarising your observations and supporting your interpretation, highlighting the discriminative features observed (as listed in the introduction and discussed in the text).

R: We would disagree that all such manuscripts require 'a proper cross-section'. Also we do not know what an 'interpreted map summarizing ... observations and supporting interpretation, highlighting the discriminative features observed' is or how such a map is distinguishable from a normal geological map.

The 2D schematic representation and the 3D diagram show the cross-section and overall geometry of the nappe structure as we understand it. Given the size of the nappe combined with the paucity of exposure and mapping, we would consider it misleading to produce a 'proper cross-section'.

However, we do appreciate the need for Fig. 9A to better convey, in 2D (downplunge) the distribution of structural elements we observed at both limbs of the nappe. Following changes made to 9A.

Lower limb:

- **Asymmetric S-folds were redrawn to show a thickened short limb**
- **Asymmetric boudins added**
- **Shear zone more explicitly added**

Upper limb

- **Axial plane (AP) added**
- **Z-folds drawn more clearly**

We feel that these changes represent the essence of what is requested. See associated changes in **Fig. 9 caption, lines 534-541.**

line 511 - Thank you for this very comprehensive section, I've learned a lot 😊

R: You are welcome.

line 596 - Can you please insert a similar statement within the text, to introduce the results section, please? It would be great to maximise the readers' awareness. If you were to consider keeping this statement about mag sus measurements you collected (sic.) in the field, consider including the measurements in the supp mat too, please.

R: Dealt with this above (see line 252 comment and response). A “Data Availability” section is quite common, especially nowadays. We will follow the advice of Tektonika’s editorial team on the matter, and make changes in the text if deemed necessary.

2nd Round of Revisions

Decision Letter

Benoit M Saumur, Stephen T Johnston, Diane R Skipton, Marc R St-Onge:

We have reached a decision regarding your submission to *tektonika*, "Identifying Crustal-Scale Nappes in Deeply-Eroded Orogens: A Trans-Hudsonian Case Study from northern Baffin Island, Arctic Canada: Crustal-scale Nappes of Baffin Island".

The two Reviewers have currently completed their second-round revisions. Both are satisfied of how their previous comments have been taken into consideration and therefore recommend publication of the manuscript.

However, as you can read in the attached file, one of the Reviewers is still concerned about a few points, raised during the first round of review, and rebutted by you.

In particular, main concerns are related to the insufficient illustration of kinematic indicators, to the mineral lineations data, to the magnetic susceptibility measurements and to Figure 1 and Table 1.

We suggest that you go through the points raised by the Reviewer and see if they can be addressed in the manuscript. If not, please discuss your choice in the cover letter.

We look forward to hearing from you soon, to proceed with publication.

Best wishes

The Editorial Board

Comments by Reviewer 1

Dear authors,

thank you very much for your detailed response to my comments, including highlighting the shortcoming of the phrasing of some of my comments.

It has been a pleasure engaging with you on this interesting work and a learning experience in terms of the region's geology and peer-review communication. Thank you very much for pointing out where my comments were not clear enough. This will help tremendously in any future peer-review assignments, especially considering present-day's neurodiverse communities.

I look very much forward to seeing this work published on Tektonika's webpage and wish you all luck with your ongoing and future projects!

All the best,

Comments by Reviewer 2

Dear Editors and Authors,

I was pleased to have the opportunity to review the revised manuscript by Saumur et al., entitled "A Crustal-Scale Fold Nappe from the Trans-Hudson Orogen, Northern Baffin Island, Arctic Canada." The authors have addressed the first round of reviews thoroughly and in good faith, whether by implementing changes or by providing clear, well-reasoned rebuttals, and I appreciate the care taken in doing so.

A few points raised during the first round of review, and rebutted by the authors, remain points of disagreement for me (see below). I have also highlighted in yellow below those that do not require any changes, pending the Editors' confirmation.

Upon consideration of these minor comments by the authors and the Editors' approval of the points highlighted below, I confirm this manuscript is ready for publication.

Best regards,

I do not have new concerns regarding additions and changes made by the authors. Below, I only address comments they rebutted for which I remain unconvinced.

Figure organisation: I understand the authors' wish to arrange figures by locality rather than by data type. I still think this is not the most readable approach (I would rather compare stereonet of the same fabric across areas on a single figure than swap between several), but this may well be a matter of personal preference, as the authors note. **If the editors have no objection and this fits Tektonika's guidelines, I am satisfied with the authors' choice.**

Introduction and General Background organisation: **provided the Editors are comfortable**

with methodological information being distributed across the Introduction and Geological Background sections, which makes sense given that this work relies heavily on published maps and prior data.

Insufficient illustration of kinematic indicators: I appreciate the effort made to improve this where possible, and I understand that part of this work relies on reinterpretation of existing maps and reports for areas not covered by the authors' own fieldwork. That said, I would be surprised if the source material contained no illustrations of these kinematic indicators at all. If that is genuinely the case, this is worth stating explicitly, e.g., noting that some kinematic interpretations cannot be independently verified, since the relevant areas were not visited during this study and the legacy sources relied upon do not provide supporting illustrations. I am not questioning the validity of these interpretations, only flagging that some are thoroughly documented while others rest solely on prior interpretations that neither the authors nor the reader can independently check. This is a matter of transparency and reproducibility worth addressing more explicitly. The sentences added to the manuscript do not clearly convey this difference in confidence; they only note the mixed nature of the dataset between new and legacy map-based data. This point needs to be made clearer, in agreement with Tektonika's guidelines.

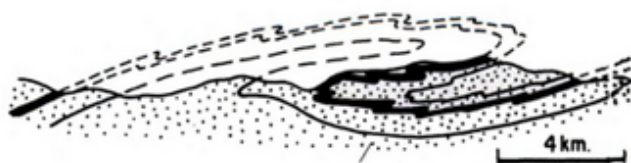
Lineations: I consider the lack of information on which mineral(s) define Lm a genuine caveat, as this would provide an important basis for future tectono-metamorphic work on this nappe (also, how is a mineral lineation defined if the mineral(s) bearing the lineation is (are) not identified?). I raised this at several points in my first review without a fully satisfying resolution, and would encourage the authors to reconsider including it, as I believe it would be a valuable addition for future studies in the area.

Figure harmonisation: I want to acknowledge the excellent job done by the authors in improving the figures. One additional comment on Fig. 1: I still think it does not cover the entire range of fold-nappe geometries. The alternative geometry I had in mind, referenced in a comment on the annotated manuscript during my first review, is reproduced below for consideration.



Julien Perret

e.g., Matte (1968) --> in Galicia



23 March 2026 at 8:31 AM

Magnetic susceptibility: The manuscript still refers to magnetic susceptibility measurements that have not been included in the supplementary material. Please add these, or remove the

reference to them.

Deformation history synthesis: Table 1 addresses this well and is a welcome addition. My original comment may not have been clearly phrased; this table was exactly what I had in mind. I agree that nappe emplacement is a single event I simply saw value in also conveying the progressive nature of that process, which the data support. The Fossen et al. paper about progressive deformation that the authors I referred to in my first review, and the authors could not retrieve, is the following: <https://www.sciencedirect.com/science/article/pii/S0191814118300142> . This is my bad, I got the date mixed up (2019 and not 2020). Feel free to mention it, I think there's value in introducing the concept of progressive deformation and emplacement of the fold nappe in one sentence.

An extra note: many, if not all, of my comments pushing for more definitions of terms have been discarded on the grounds that this is standard structural-geology convention/terminology that doesn't need over-explaining, especially for Tektonika's readership. I understand this reasoning and it is not unreasonable. However, I think it would be a shame not to make the manuscript more accessible to non-specialists (e.g., students, or researchers from adjacent fields) especially given the quality of this study. Doing so would likely increase its visibility and would sit well with Tektonika's stated philosophy. I therefore think there is value in reconsidering these comments, which would require only very minor additions, **but if the editors consider the manuscript appropriate as it stands, I am satisfied either way.**

Authors' Reply to Reviewer 1

No changes necessary

Authors' Reply to Reviewer 2

Figure organisation: I understand the authors' wish to arrange figures by locality rather than by data type. I still think this is not the most readable approach (I would rather compare stereonet of the same fabric across areas on a single figure than swap between several), but this may well be a matter of personal preference, as the authors note. **If the editors have no objection and this fits Tektonika's guidelines, I am satisfied with the authors' choice.**

As indicated by the reviewer, this is a matter of preference. We will retain the format of the revised manuscript for the reasons provided in our previous response.

Introduction and General Background organisation: **provided the Editors are comfortable with methodological information being distributed across the Introduction and Geological Background sections**, which makes sense given that this work relies heavily on published maps and prior data.

No change.

Insufficient illustration of kinematic indicators: I appreciate the effort made to improve this where possible, and I understand that part of this work relies on reinterpretation of existing maps and reports for areas not covered by the authors' own fieldwork. That said, I would be surprised if the source material contained no illustrations of these kinematic indicators at all. If that is genuinely the case, this is worth stating explicitly, e.g., noting that some kinematic interpretations cannot be independently verified, since the relevant areas were not visited during this study and the legacy sources relied upon do not provide supporting illustrations. I am not questioning the validity of these interpretations, only flagging that some are thoroughly documented while others rest solely on prior interpretations that neither the authors nor the reader can independently check. This is a matter of transparency and reproducibility worth addressing more explicitly. The sentences added to the manuscript do not clearly convey this difference in confidence; they only note the mixed nature of the dataset between new and legacy map-based data. This point needs to be made clearer, in agreement with Tektonika's guidelines.

*The reviewer would be surprised by how little information exists from previous literature! This work is from an extremely remote setting and does not benefit from decades of devoted thematic studies as do other orogenic systems worldwide (Johnston et al., 2024 discusses this issue). The only real thematic study is by Bethune and Scammell. They published one map (1997) with structural data as supplementary information (no associated images). And their two papers stemming from the work (2003a, b) have a few plates of photos. Their "2003b" paper (Distinguishing between Archean and Paleoproterozoic tectonism, and evolution of the Isortoq fault zone, Ege Bay area, north-central Baffin Island, Canada) contains photo plates and photomicrographs highlighting metamorphic assemblages in deformed fabrics. **To highlight this we added details on the nature of the thematic studies of Bethune and Scammell (see lines 234-235; 365-367; 376-378; 518-521).***

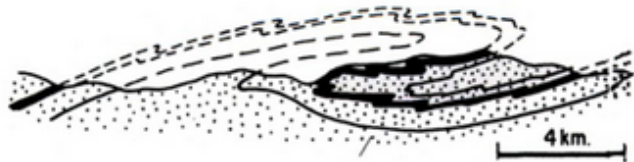
*However, it is unclear to us what exactly the reviewer is looking for. Data is not a kinematic indicator – field observations are. Previous workers did not focus on this, nor did they need to. Given this context it is not clear to us what kinematic interpretations exactly "cannot be independently verified". We use data and map relationships that do not have an inherent interpretation. **To make the point clearer, as suggested by R2 here, we state this explicitly at lines 239-241 – ultimately it reintroduces a statement similar to what had been removed following suggestions from R1.***

Lineations: I consider the lack of information on which mineral(s) define Lm a genuine caveat, as this would provide an important basis for future tectono-metamorphic work on this nappe (also, how is a mineral lineation defined if the mineral(s) bearing the lineation is (are) not identified?). I raised this at several points in my first review without a fully satisfying resolution, and would encourage the authors to reconsider including it, as I believe it would be a valuable addition for future studies in the area.

It is fair that the mineralogy of the lineations should be indicated where appropriate.

- *Some of what is asked by the reviewer was already present (see lines 321-322 highlighted in green).*
- *We've added lineation mineralogy for Grant-Suttie Islands and Ignerit Point (lines 416; 429-431; 436-437).*
- *For the portion of the Isortoq Belt that we did not visit, Bethune and Scammell (2003b) indicate that some lineations are defined "by medium- to high-grade metamorphic minerals" (p. 1117). We added this at lines 365-367*

Figure harmonisation: I want to acknowledge the excellent job done by the authors in improving the figures. One additional comment on Fig. 1: I still think it does not cover the entire range of fold-nappe geometries. The alternative geometry I had in mind, referenced in a comment on the annotated manuscript during my first review, is reproduced below for consideration.



23 March 2026 at 8:31 AM

Thank you for the acknowledgement. However, the nature of this suggestion is not clear to us: what is there to add exactly, and how it would fit thematically?

Figure 1 and our updates to it are only relevant for the overturned limb of the nappe, which is part of the figure R2 provided (see circled portion) and is already included in Figure 1 (the geometries are even analogous!). Any other portion of this nappe (e.g. the portions to the lower-right and left of the highlighted zone) are not part of the overturned limb.

No change made.



Magnetic susceptibility: The manuscript still refers to magnetic susceptibility measurements that have not been included in the supplementary material. Please add these, or remove the reference to them. *Removed, see line 276*

Deformation history synthesis: Table 1 addresses this well and is a welcome addition. My original comment may not have been clearly phrased; this table was exactly what I had in mind. I agree that nappe emplacement is a single event I simply saw value in also conveying the progressive nature of that process, which the data support. The Fossen et al. paper about

progressive deformation that the authors I referred to in my first review, and the authors could not retrieve, is the following: <https://www.sciencedirect.com/science/article/pii/S0191814118300142> . This is my bad, I got the date mixed up (2019 and not 2020). Feel free to mention it, I think there's value in introducing the concept of progressive deformation and emplacement of the fold nappe in one sentence. **Fossen et al., 2019 is indeed an appropriate reference. Statement added at line 470-472. Reference added, line 705-707.**

An extra note: many, if not all, of my comments pushing for more definitions of terms have been discarded on the grounds that this is standard structural-geology convention/terminology that doesn't need over-explaining, especially for Tektonika's readership. I understand this reasoning and it is not unreasonable. However, I think it would be a shame not to make the manuscript more accessible to non-specialists (e.g., students, or researchers from adjacent fields) especially given the quality of this study. Doing so would likely increase its visibility and would sit well with Tektonika's stated philosophy. I therefore think there is value in reconsidering these comments, which would require only very minor additions, **but if the editors consider the manuscript appropriate as it stands, I am satisfied either way.**

We appreciate the reviewer's enthusiasm. However, on top of the objections stated in our previous response, we disagree this would require "only very minor additions". Definitions have evolved over time, and doing this properly involves adding historical context on debates on the origins of nappes, and thus opens a Pandora's box – where does it stop? Such content is relevant for a formal review paper, which this paper is not (especially given suggestions from R1 that we implemented, including the title of the manuscript, which narrows its focus slightly).

We feel that the references provided are sufficient and students/other researchers can consult these for additional context.

We also consider it a bit of a stretch that adding definitions would boost the visibility of the paper.

Additional changes made by authors:

- **replacement of Qz-Fp-Bt with quartz-feldspar-biotite.**
- **Acknowledgements of funding (updated affiliation) line 632-634**

Acceptance Letter

From: "Laura Federico" <laura.federico@unige.it>

To: "Benoit M Saumur" <saumur.benoit-michel@uqam.ca>, "Stephen T Johnston" <stjohnst@ualberta.ca>, "Diane R Skipton" <DianeSkipton@gov.nl.ca>

Subject: [Tektonika] Editor Decision

Benoit M Saumur, Stephen T Johnston, Diane R Skipton, Marc R St-Onge:

We have reached a decision regarding your submission to tektonika, "Identifying Crustal-Scale Nappes in Deeply-Eroded Orogens: A Trans-Hudsonian Case Study from northern Baffin Island, Arctic Canada: Crustal-scale Nappes of Baffin Island".

Our decision is to: Accept Submission