Review Report

Peron-Pinvidic et al., Structural Observations of the Northern North Sea: Insights into Rift Failure Dynamics, TEKTONIKA, 2023.

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1st Round of Revisions

Decision Letter

Dear authors,

We now have all reviews for your manuscript *"Structural Observations of the Northern North Sea: Insights into Rift Failure Dynamics"* submitted Tektonika. *The comments of the reviewers are included at the bottom of this letter and/or attached.*

The reviewer(s) have found the manuscript interesting, well-illustrated and, in general, well-written, which I certainly agree. Both reviewers also recommended revisions to your manuscript that are not particular complex to deal with but should help improving the understanding and impact of your study.

The reviewers' most critical comments are in the discussion, in particular: i) the link between seismic data observations with the interpretations of processes and the differentiation/choice between the different rift failure scenarios, and ii) a need of further discussion on the role of external factors and depth-dependent thinning. In general, I support their assessment and I believe they will significantly strength this already very exciting and relevant manuscript.

I also encourage the authors to consider changing the terminology of the fault classification as suggested by Reviewer 1, and to include what are the more general implications of the study to either the introduction or discussion/conclusions. I also agree with the Reviewer 2 that adding another figure with a map showing the different fault classes distribution would also be an excellent addition to the manuscript.

Best regards,
Leonardo M. Pichel

Comments by Reviewer 1

The authors used new seismic dataset to investigate the large-scale structures of the Norwegian Continental Shelf including the North Sea Rift and the More and Voring rifted margins. Based on seismic interpretation, their main result is the distinction of different type of faults which are classified and interpreted as different deformation events.

As a function of the spatial distribution of these type of faults (there is a map showing the rift domains but there is no map showing the spatial distribution of the different type of faults. Adding this map would help the reader) they attempt to argue about rift failure dynamics in the North Sea. Based on the abstract, the main take-home message of the manuscript is that depth-dependent deformation and external factors such as the orientation and rate of extension may have been the cause of rift failure in the North Sea.

I found interesting the take-home message argument as an explanation for rift failure however there is no discussion about it. The first time depth-dependent deformation is mentioned in the manuscript is five lines before the conclusion. I miss a discussion about it, first with the literature and second how does this relate with the study-area and the aim of this contribution. At the moment, it comes across as an afterthought while being the main take-home message.

I strongly suggest to deeply revise the discussion as well as to fit it with the purpose of this contribution as it is currently misleading. The implication of the results should be also clarified/added.

I believe that revising the manuscript will solve the issues above and below and lead to a contribution suitable for publication.

I think that the purpose/aim of this contribution as well as its implications should be clarified. At the moment the aim seems to be focus on listing similarities and differences between the failed rift and the successful rifted margins. While this may be interesting, I think that the implication of doing so is not discussed enough. I believe that improving this will strengthen the manuscript.

As mentioned above, the discussion should be carefully revised as well as the English and writing style throughout the whole manuscript. In the annotated word, I have provided some textual suggestions (up to the authors to decide what to do with them) and questions to clarify certain wording.

While I believe authors worked with a big dataset and are very much familiar with it, readers only get to see four seismic profiles and thus is a bit difficult to get a full picture of the study area. Adding a map showing the spatial distribution of the faults may be very helpful.

The main merits I have found are...

- Why rift failure occurs is a still debated question which is very interesting to investigate.
- An extensive interpretation of seismic dataset (even though little is shown to the reader due to confidentiality purposes).

The main points of improvement I have found are...

- The discussion. The arguments given for rift failure are not clear (see comments in the word attached). Authors believe that depth-dependent thinning may be responsible for rift failure nevertheless this comes at the end of the manuscript like an afterthought. I would like to see some discussion around this as I believe would strengthen the manuscript. Thus, conclusions should also be revised.
- Impact of the research.
  Figure 10 seem to be an extended version of Figures 1 and 2. The profiles highlighted in Figure 10 are shown in Figure 7 which are from a recent publication (Peron-Pinvidic et al 2022). By looking at these seismic profiles, seems like this contribution builds on this previous work. If that is the case, I would put Figure 10 and 7 at the beginning of the manuscript and describe how this new work builds up on the previous publication. If that is not the case, then please clarify. It seems that in the previous publication, different type of faults were already identified (same as the ones described in this manuscript but using some additional lines). How much (not only on the work shown but also the aim/implication of the results) Peron-Pinvidic et al 2022 differs from this manuscript?
- The English/wording.

Comments by Reviewer 2

This study focusses on a comparison between closely juxtaposed rift environments - the "failed" North Sea and the "successful" Norwegian margins. The proximity of the study areas provides a unique opportunity to distill potential controls on rift failure or success. Using new seismic datasets the authors show that the two settings feature many similarities and that the major difference is the existence of detachment faults classified as FC5. These are the faults that are active during the final stages of rifting in the distal domain of the margin.

The core aspect of the paper lies in the detailed comparison of newly released seismic datasets to derive the finding that the two margins are in fact very similar - despite the fact that their fate was very different. The manuscript is interesting, well-written, and the figures are instructive and very appealing. I recommend to consider acceptance after a minor revision. I describe a few minor issues I see below. I also added a few suggestions in the word file of the article using tracked changes.

Minor points:
1) I suggest to consider renaming the fault classification. Some of the features are not actually faults, such as the anastomosing shear zones. Perhaps “tectonic structures”, is a more precise name? There are also three types of detachment faults (FC2, FC3, and FC5), of which FC2 and FC5 even have identical names. This can be confusing.

2) It might be worthwhile to discuss external factors on rift failure more explicitly. In particular I think that a lost rift competition may explain the cessation of rifting in the North Sea. The success of rifting between the British islands and Greenland may have reduced the driving force of extension in the North Sea (see temporal evolution in Fig. 5 of Brune et al., 2023, https://www.nature.com/articles/s43017-023-00391-3). A similar dynamic behaviour likely occurred when the South Atlantic competed with the West African Rift System. The latter died out when the former attracted all the deformation. Rift competition is of course directly related to rift strength and the rift-internal processes described in this manuscript. Hence the argument about external factors could be nicely tied into the current discussion section.

Authors' Reply to Editors

Dear Editor,

First, many thanks for considering my contribution for Tektonika.

The two reviews together with your comments were very helpful. I have thoroughly gone through all the suggestions from the two referees and modified the manuscript text and figures accordingly. All the modifications suggested in the initial manuscript Word documents have been acknowledged and included in the revised version. The TRACK document archives all modifications that have been done to the initial submitted contribution.

In the RESPONSE-TO-REVIEW document, I answer to the comments listed in the Tektonika Peer-Review Form. I give explanations and justifications, and refer to the line numbers where the related text modifications can be cross-checked in the TRACK document.

Figures have been reshuffled according to comments and Figure 7 (formerly 10) has been modified to accompany a new section where the local results are put within the regional scale prior to discuss rift failure, as recommended by one of the reviewers.

Additionally, as you specifically recommended, focus has been set on the discussion with clarifications added on the different rift failure scenarios. The terminology of the fault classification has also been modified as suggested by Reviewer 1, from 'fault classes' to 'tectonic structures'.

I hope you will be satisfied with the new version of this manuscript.

Again, many thanks for your time and attention.

Looking forward to hearing from you,

best regards,

Prof. Gwenn Peron-Pinvidic

Authors' Reply to Reviewer 1

First, many thanks for the helpful comments and detailed suggestions.

I have thoroughly gone through all your suggestions and modified the manuscript text and figures accordingly. All the suggested modifications have been considered and included in the revised version. The TRACK Word document archives all modifications that have been done to the initial submitted contribution.

According to your comments:

- The Abstract and Introduction have been modified to avoid misleading the reader on the aim of this contribution and content of the discussion.

- The Discussion section has been revised and mention of depth-dependent deformation has been removed. Focus has been clarified and it is now clearly stated that the contribution focuses solely on the geometrical observations.

- Text modifications have been done at different places to clarify our claims and not mislead the reader on our observations, interpretations and conclusions.

- Regarding a Figure displaying a fault map: as for many seismic interpretation projects, the detailed mapping has been performed under confidentiality agreement contracts, involving several companies. Thus, a map showing the spatial distribution of the faults cannot be displayed.

The Discussion section has been revised and clarification added at various places to ease the reading and not mislead the reader on the content of the contribution. We lowered down our claims and deleted mentions to depth dependent thinning as our study is not conclusive on that point. We now clearly state that this contribution focuses solely on geometrical observations and structural interpretations.

Regarding Figures 7 and 10 (now 8 and 7, respectively): I think they are correctly placed within the contribution, coherently with the flow of the descriptions and discussion. Figure 10 (now 7) differs from Figure 1 as it displays the margin structural domains coherently with the discussion of the various TS geometries (which are directly related to the definition of the domains, as now stated in the new section 4.3) – so it does make sense to have together with the Discussion section. However, to acknowledge the comment, the figure has been modified to include a profile summarizing the definition of the structural domains so that the reader can identify the structures and domains' definition at once. Figure 7 (now 8) displays 3 profiles that have been published in 2022 in a paper dedicated to the Møre and Vøring rifted margins, as explained in the figure caption. These profiles are here re-labelled within the framework of the TS tectonic structures proposed in the contribution.

Authors' Reply to Reviewer 2

Dear Reviewers and Editors,

I would like to thank you for your considerate and constructive reviews. I highly appreciate that you have taken the time to read and comment on the manuscript in such detail. I have - to the best of my abilities - tried to honour all your comments and suggestions. They were pertinent and very useful.

Thank you.

Kind regards,

Gwenn

Below, this document lists specific replies (in green) to all your comments (in black) - related modifications are archived in the TRACK Word document.

Section A: Overview of manuscript

A1) Overall evaluation, general comments & summary

A1.1) Reviewer's comments

A1.1.1) General evaluation and publication suggestion – Required:

Please use this space to describe, in your own words, the core subject of the submission and your overall assessment of its suitability for publication.

The authors used new seismic dataset to investigate the large-scale structures of the Norwegian Continental Shelf including the North Sea Rift and the More and Voring rifted margins. Based on seismic interpretation, their main result is the distinction of different type of faults which are classified and interpreted as different deformation events.

As a function of the spatial distribution of these type of faults (there is a map showing the rift domains but there is no map showing the spatial distribution of the different type of faults. Adding this map would help the reader) they attempt to argue about rift failure dynamics in the North Sea. Based on the abstract, the main take-home message of the manuscript is that depth-dependent deformation and external factors such as the orientation and rate of extension may have been the cause of rift failure in the North Sea.

I found interesting the take-home message argument as an explanation for rift failure however there is no discussion about it. The first time depth-dependent deformation is mentioned in the

manuscript is five lines before the conclusion. I miss a discussion about it, first with the literature and second how does this relate with the study-area and the aim of this contribution. At the moment, it comes across as an afterthought while being the main take-home message.

I strongly suggest to deeply revise the discussion as well as to fit it with the purpose of this contribution as it is currently misleading. The implication of the results should be also clarified/added.

I believe that revising the manuscript will solve the issues above and below and lead to a contribution suitable for publication.

A1.1.2) What does the submission need to be publishable? (select as needed; comment for all cases)

- ☐ No changes required
- ☒ Rewriting
- ☐ Reorganising
- ☒ More data/figures
- ☐ Condensing
- ☐ Reinterpretation
- ☐ Other

Comments:

I think that the purpose/aim of this contribution as well as its implications should be clarified. At the moment the aim seems to be focus on listing similarities and differences between the failed rift and the successful rifted margins. While this may be interesting, I think that the implication of doing so is not discussed enough. I believe that improving this will strengthen the manuscript.

As mentioned above, the discussion should be carefully revised as well as the English and writing style throughout the whole manuscript. In the annotated word, I have provided some textual suggestions (up to the authors to decide what to do with them) and questions to clarify certain wording.

While I believe authors worked with a big dataset and are very much familiar with it, readers only get to see four seismic profiles and thus is a bit difficult to get a full picture of the study area. Adding a map showing the spatial distribution of the faults may be very helpful.

A1.1.3) Can the submission be improved by reducing/adding any of the following? (select as needed; comment for all cases)

- ☒ Text
- ☐ Table
- ☒ Figures

☐ Supplementary material

Comments:

See the detail above and below.

A1.1.4) Please complete the following section if you recommend that the submission is NOT appropriate for publication (select as needed; comment if a box is selected)

☐ Quality is poor

☐ Research is not reproducible

☐ Other

Comments:

A1.2) Author(s) Responses:

First, many thanks for the helpful comments and detailed suggestions.

I have thoroughly gone through all your suggestions and modified the manuscript text and figures accordingly. All the suggested modifications have been considered and included in the revised version. The TRACK Word document archives all modifications that have been done to the initial submitted contribution.

According to your comments:

- The Abstract and Introduction have been modified to avoid misleading the reader on the aim of this contribution and content of the discussion.

- The Discussion section has been revised and mention of depth-dependent deformation has been removed. Focus has been clarified and it is now clearly stated that the contribution focuses solely on the geometrical observations.

- Text modifications have been done at different places to clarify our claims and not mislead the reader on our observations, interpretations and conclusions.

- Regarding a Figure displaying a fault map: as for many seismic interpretation projects, the detailed mapping has been performed under confidentiality agreement contracts, involving several companies. Thus, a map showing the spatial distribution of the faults cannot be displayed.

A2) Summary of main merits and main points of improvement

A2.1) Reviewer's comments

Please describe below in a few sentences (100 to 300 words) the main merits of the submission and suggestions for improvements.

The main merits I have found are...

- Why rift failure occurs is a still debated question which is very interesting to investigate.
- An extensive interpretation of seismic dataset (even though little is shown to the reader due to confidentiality purposes).

The main points of improvement I have found are...

- The discussion. The arguments given for rift failure are not clear (see comments in the word attached). Authors believe that depth-dependent thinning may be responsible for rift failure nevertheless this comes at the end of the manuscript like an afterthought. I would like to see some discussion around this as I believe would strengthen the manuscript. Thus, conclusions should also be revised.
- Impact of the research.
  Figure 10 seem to be an extended version of Figures 1 and 2. The profiles highlighted in Figure 10 are shown in Figure 7 which are from a recent publication (Peron-Pinvidic et al 2022). By looking at these seismic profiles, seems like this contribution builds on this previous work. If that is the case, I would put Figure 10 and 7 at the beginning of the manuscript and describe how this new work builds up on the previous publication. If that is not the case, then please clarify. It seems that in the previous publication, different type of faults were already identified (same as the ones described in this manuscript but using some additional lines). How much (not only on the work shown but also the aim/implication of the results) Peron-Pinvidic et al 2022 differs from this manuscript?
- The English/wording.

A2.2) Author's responses:

The Discussion section has been revised and clarification added at various places to ease the reading and not mislead the reader on the content of the contribution. We lowered down our claims and deleted mentions to depth dependent thinning as our

study is not conclusive on that point. We now clearly state that this contribution focuses solely on geometrical observations and structural interpretations.

Regarding Figures 7 and 10 (now 8 and 7, respectively): I think they are correctly placed within the contribution, coherently with the flow of the descriptions and discussion. Figure 10 (now 7) differs from Figure 1 as it displays the margin structural domains coherently with the discussion of the various TS geometries (which are directly related to the definition of the domains, as now stated in the new section 4.3) – so it does make sense to have together with the Discussion section. However, to acknowledge the comment, the figure has been modified to include a profile summarizing the definition of the structural domains so that the reader can identify the structures and domains' definition at once. Figure 7 (now 8) displays 3 profiles that have been published in 2022 in a paper dedicated to the Møre and Vøring rifted margins, as explained in the figure caption. These profiles are here re-labelled within the framework of the TS tectonic structures proposed in the contribution.

Section B: Detailed evaluation of manuscript

B1) Title and abstract

B1.1) Reviewer's comments

*These statements are a **guide** to what good* Titles *and* Abstracts include*. Please select YES or NO to the statements below if you wish and detail in the free form box below your reasons for any box checked with NO, or to comment on any other matter.*

The *Title* describes the main topic of the manuscript **accurately** — [YES]

The *Title* describes the main topic of the manuscript **succinctly** — [YES]

The *Title* includes **appropriate key terms** — [YES]

The *Abstract* includes a **clear aim and rationale** — [NO]

The *Abstract* supports the rationale with **sufficient background information** — [NO]

The *Abstract* includes a **well-balanced description of the methods** — [YES]

The *Abstract* describes the **main results sufficiently and adequately** — [YES]

The *Abstract* clearly describes the **importance/impact of the study** — [NO]

The *Abstract* clearly states the **conclusions of the study** — [YES]

The *Abstract* is **clear** and **well structured** — [YES]

Comments:

While the aim is given in line 21 of the abstract, adding why addressing this problem is important would improve the abstract.

A main missing point in the abstract is the importance/impact of the study. A better link between the results and the discussion focused on rift failure should be given.

The main results are described but their impact is not clear in the current abstract.

The conclusion is that depth-dependent deformation is responsible of rift failure dynamics however after reading the manuscript, there is a lack of arguments to provide this conclusion.

B1.2) Author's responses

The Abstract has been revised to clearly summarize the contribution content, discussion and conclusions. Depth dependent deformation mention has been removed and focus is now clearly set on geometrical observations and structural interpretation.

All modification suggestions have been included in the revised version.

(lines 12-36 in the TRACK document)

B2) Introduction

B2.1) Reviewer's comments

*These statements are a **guide** to what good* Introductions *include. Please select YES or NO to the statements below if you wish and detail in the free form box below your reasons for any box checked with NO, or to comment on any other matter.*

The *Introduction* provides **sufficient background and context** for the study — [YES]

The *Introduction* describes the **aim/hypothesis/rationale** clearly, providing **sufficient context** — [NO]

The *objective/hypothesis/rationale* **flows logically from the background** information — [NO]

The *Introduction* describes the study's **objective and approach** (last paragraph) — [YES] / [NO]

The *Introduction* contains **relevant, suitable citations** — [YES]

The *Introduction* is **organized effectively** — [YES]

Comments:

Lines 57-60 give the purpose/aim of the study which lacks context in respect to the background and context given in the first part of the introduction. Also, the implication of the aim of the study should be clarified.

B2.2) Author's responses

The Introduction has been revised including all the suggested modifications by both reviewers.

Reformulation should now clearly state the aim and content of the contribution (lines 61-77 in the TRACK document).

B3) Data and methods

B3.1) Reviewer's comments

*These statements are a **guide** to what good* Method *sections include and good practices for* Dataset *accessibility. Please select YES or NO to the statements below if you wish and detail in the free form box below your reasons for any box checked with NO, or to comment on any other matter.*

The *Methods* are described **concisely and with enough detail** for reproducibility — [YES]

Necessary information about **data sources/acquisition/processing** is included — [YES]

Data used are accessible via either supplementary files or links in the data availability statement — [YES]

The *Dataset and/or Methods* are **organized effectively** — [YES]

Comments:

[Free form box]

B3.2) Author's responses

B4) Results

B4.1) Reviewer's comments

*These statements are a **guide** to what good* Result sections *include. Please select YES or NO to the statements below if you wish and detail in the free form box below your reasons for any box checked with NO, or to comment on any other matter.*

The *Results* findings are **supported by data** — [YES]

The *Results* findings are presented **clearly and succinctly** — [YES]

The text in the *Result* section **cites tables and figures appropriately** — [YES]

The *Results* directly **relate to the study objectives** — [YES] / [NO]

The *Results* present **data for all the approaches** described in the *Methods* section — [YES]

The *Results* **text belongs to the Results section**, not to *Introduction*, *Methods*, or *Discussion.* — [NO]

The *Results* section is **organised effectively** — [YES]

Comments:

Adding a map showing the different faults identified would help the reader.

FC2 and FC3 are very similar type of faults (also mentioned by the authors) and thus distinguishing between these two may not be straightforward for everyone. Could authors provide additional elements for that?

Please revise lines 215-218, some interpretation of the observations is given. This should be moved to the discussion or another new section since they are currently in observations/results section. Please revise all results section to make sure that there is no interpretation in this section.

B4.2) Author's responses

As explained above, because of confidentiality agreements with multiple companies covering several mapping projects in the study area, a detailed fault map cannot be shared.

TS2 and TS3 (formerly FC) are indeed very similar. The difference being that TS3 cuts

through the entire basement when TS2 affects only parts of it. Clarification and text modifications have been added to that section (lines 224-246). The section 4.2.3 dedicated to TS3 has been profoundly revised to better explain this point.

To facilitate the flow of the descriptions and not mislead the reader, the section has been renamed ‘Observations and first order interpretations’. Thus, some interpretations have been left as they correctly fit the flow of the descriptions (the ones related to previous published work), and some others have been removed from the section and/or claims have been reformulated.

B5) Discussion and conclusions

B5.1) Reviewer's comments

*These statements are a **guide** to what good* Discussions *and* Conclusions *include. Please select YES or NO to the statements below if you wish and detail in the free form box below your reasons for any box checked with NO, or to comment on any other matter.*

The *Discussion* is **focused on the objectives** of the study — [NO]

The *Discussion* **addresses all major results** of this study, which are shown in *Results* — [YES]

The *Discussion* section makes **comparisons with other studies** that are relevant and informative — [YES]

The *Discussion* section properly identifies all **speculative statements** — [YES]

The *Discussion* section presents the **implications of the study** persuasively — [NO]

The *Discussion* section **highlights novel contributions** appropriately — [YES] / [NO]

The *Discussion* section **addresses the limitations** of the study appropriately — [NO]

The *Discussion* section is **organised effectively** — [YES] / [NO]

The *Conclusions* are **consistent** with and **summarise** the rest of the manuscript — [NO]

The *Conclusions* are **supported by the data** in *Results* and **follow logically** from the *Discussion* — [NO]

The *Conclusions* are **clear and concise** — [NO]

Comments:

Objectives given in the abstract/introduction are to list differences and similarities of failed rift and successful rifted margins. The discussion focuses on why rift failure occurred and uses the results of this study to argue about it. I feel there is a missing step between what results/seismic observations show and the discussion topic (i.e. why rift failure may have occurred). I do not think further work is needed for that but adding a discussion section where the local results are put within the regional scale prior to discuss rift failure and the possible reasons for the northern North Sea may be sufficient.

The discussion does not convincingly state the implications of the study. There is nor/very little discussion neither many references about depth-dependent stretching and thinning. Nevertheless, authors claim that this may be the possible cause for rift failure and thus the main take-home message of this manuscript.

The limitations of the results are not discussed very much.

Conclusions give the summary/importance of the type faults identified but unclear arguments are provided for the occurrence of rift failure (please revise lines 389-399). It also remains unclear the contribution of the results into the rift failure argument.

B5.2) Author's responses

The discussion section has been revised to clarify the purpose, claims and conclusions.

The aim is reminded in the introductory section (lines 298-299): '*The exercise consists in trying to find what differentiates the North Sea rift geometries from the Mid Norwegian rifted margins'*.

Not to mislead the reader, all mentions to depth-dependent thinning have been removed as our study doesn't allow any conclusions on this point.

As recommended, a new section *where the local results are put within the regional scale prior to discuss rift failure* has been added (new section 4.3, lines 267-289).

B6) Figures, tables and citations

B6.1) Reviewer's comments

*These statements are a **guide** to what good* Figures *and* Tables *include and how they are presented. Please select YES or NO to the statements below if you wish and detail in the free form box below your reasons for any box checked with NO, or to comment on any other matter.*

Tables and *Figures* are **ordered logically** and **numbered sequentially** — [YES]

Tables and *Figures* have **captions that explain** all their major features — [YES]

Tables and *Figures* have **captions that complement** the information in the main text — [YES]

Tables and *Figures* present data that **relate** to the study objective — [YES]

Tables and *Figures* present data that are **consistent** with and support the description of results — [YES]

Tables and *Figures* have **succinct and informative titles** — [YES]

Figures are **accessible** (elements are clearly labelled, accessible colour palettes, colour contrasts, font size legible, etc.…) — [YES] / [NO]
Please, check our [Figure guidelines]

Figures with **maps or cross-sections** contain all **elements to be understood** (north arrow orientation, scale, visible coordinates, sufficient coordinate grid intercepts) — [YES]

Figures with **maps** have **sufficient location information** (in the map or caption) — [YES]

Cross-sections have clear labels for **scale and coordinates** at ends and within-section kinks — [YES]

All georeferenced elements are provided in common format (.shp, .geotiff, .kml) [in an open-access repository] — [YES] / [NO]

Citations throughout are relevant, suitable, and comprehensive — [YES]

Comments:

Please revise all figure captions, some rewording is needed.

Why not move Figure 10 into Fig 1 since shows the whole regional area? Same may apply for Figure 7. Not much discussion of Figure 8 is given.

B6.2) Author's responses

Figure captions have been revised.

As explained above, regarding Figures 7 and 10: I think they are correctly placed within the contribution, coherently with the flow of the descriptions and discussion. Figure 10 (now Figure 7) differs from Figure 1 as it displays the margin structural domains coherently with the discussion of the various TS geometries – so it does make sense to have it in the Discussion section. Figure 1 on the other hand is the standard map always displayed in all contributions related to the Norwegian Continental Shelf. It allows the reader to identify the various basin types and platform areas. However, to acknowledge the reviewers' comments, the order of the figures has been modified to facilitate the Discussion reading.

Figure 8 (now 9) is a gridded surface of a mapped seismic horizon and is cited in both sections 5.1 and 5.3 to justify the statement of the regional distribution of the lower basement reflective unit.

Section C: Additional comments

C1) Minor/line-numbered comments

C1.1) Reviewer's comments

[Free form box]

C1.2) Author's responses

[Free form box]

C2) Other remarks

C2.1) Reviewer's comments

[Free form box]

C2.2) Author's responses

[Free form box]

Section D: Feedback to improve Tektonika's review process

We kindly ask reviewers and authors to provide any feedback that can help improve this review form, or other aspects of the review process.

Feedback can also be emailed at any time to jtektonika@gmail.com

Acceptance Letter

Gwenn Peron-Pinvidic:

We have reached a decision regarding your submission to τεκτονικa, "Structural observations of the northern North Sea: insights into rift failure dynamics".

Our decision is to: Accept Submission