

Peer Review Report

Review Report on Formation of the Figge Maar seafloor crater during the 1964 B1 blowout in the German North Sea

Original Research, Earth Sci. Syst. Soc.

Reviewer: Craig Magee

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EVALUATION

Q 1 Please summarize the main findings of the study.

This manuscript presents geophysical images of the Figge Maar blowout, which formed in 1964, and use this data to interpret how release of overpressure from ~2900 depth led to a crater-forming event ~500 from the borehole. The authors highlight the role of uplifted sedimentary layers and normal faulting related to salt tectonics in controlled fluid pathways. Gas composition data is used to show methane is currently being released, likely linked to burial of organic material in the crater soon after its formation.

Q 2 Please highlight the limitations and strengths.

Excellent study that is well-written and generally well-illustrated. Of broad interest.

I have attached a marked-up manuscript with minor comments. The main points to address are:

- 1) Some improvements to figure clarity and accessibility
- 2) Correction of an error (I think) in Figure 5
- 3) Separation of results and interpretations
- 4) Restructuring with some material in the discussion moved to the Geological Setting

My final comment on is on data availability. It is not clear where the raw data can be accessed. Also, does the raw data include the processed data used?

Q 3 Please comment on the methods, results and data interpretation. If there are any objective errors, or if the conclusions are not supported, you should detail your concerns.

All methods, etc... are good and I see no problem in the scientific content

Q 4 Check List

Is the English language of sufficient quality?

Yes.

Is the quality of the figures and tables satisfactory?

Yes.

Does the reference list cover the relevant literature adequately and in an unbiased manner?

Yes.

Are the statistical methods valid and correctly applied? (e.g. sample size, choice of test)

Yes.

If relevant, are the methods sufficiently documented to allow replication studies?

Yes.

Are the data underlying the study available in either the article, supplement, or deposited in a repository? (Sequence/expression data, protein/molecule characterizations, annotations, and taxonomy data are required to be deposited in public repositories prior to publication)

No.

Does the study adhere to ethical standards including ethics committee approval and consent procedure?

Not Applicable.

If relevant, have standard biosecurity and institutional safety procedures been adhered to?

Not Applicable.

Q 5 Please provide your detailed review report to the editor and authors (including any comments on the Q4 Check List):

I think Q1-Q4 capture all the salient points of my review. In summary, this is an excellent and interesting piece of work, suitable for publication in ES3. I have made some minor suggestions that the authors should consider.

QUALITY ASSESSMENT

Q 6 Originality	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Q 7 Rigor	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Q 8 Significance to the field	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q 9 Interest to a general audience	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Q 10 Quality of the writing	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Q 11 Overall quality of the study	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>