

Alfred Wegener Institute, PO Box 12 01 61, 27515 Bremerhaven, Germany

To the 'ESSD' editorial team,

23rd July 2022

RE: REVISED SUBMISSION – essd-2021-444, response to reviewers

Dear 'ESSD' editorial team,

We would like to submit to you a revised version of the ESSD submitted manuscript "**The COSMUS Expedition: Seafloor Images and acoustic bathymetric data from the PS124 expedition to the southern Weddell Sea, Antarctica**", for potential publication within your journal.

We would like to thank the editorial team and reviewers for taking the time to assess this complex data compilation. We believe we have addressed the small comments raised by reviewer 1 in the attached "track changes" version of the document, and the "list of responses" below. We have opened ALL the data to open access today, and we have checked that all DOIs are correct (as was also verified by reviewer 2) – the citations for these datasets has been revised for completeness in the reference list, as per PANGAEA requirements.

We have additionally replaced the "in press" papers indicated within the last draft of the manuscript with fully cited "published" articles throughout the text.

Kind regards, and thank you for your consideration,



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RESPONSE TO REVIEWERS:

Here we respond to the various online and .pdf comments by the reviewers:

RC1 comments (9th May 2022:)

COMMENT: “I commend the authors for making these large and valuable datasets available through PANGAEA. However, when checking some of the links I found that I was not able to access some of the datasets due to a moratorium being in place until 26th March next year. This is understandable, but there is no mention of the existence of the moratorium in the manuscript. I suggest adding a short sentence to the Data Availability section to say that some of the datasets will be released for public access after 26th March 2023“

RESPONSE: This has been corrected, the moratorium was only present until the paper was accepted – I removed the moratorium on all data a few days ago and now anyone with the link can access, not just the reviewers with the token.

COMMENT: „Most of the Data Availability section is duplicated in the Abstract, and I see no reason for this. The last paragraph of the Abstract could be replaced by a single short sentence stating that these datasets are available from PANGAEA and that links are included in the Data Availability section .“

RESPONSE: This was placed here at the request of the journal directly, so I think we have to leave it in place, until the editing by the journal is carried out.

COMMENT: ” The example images in the figures are fascinating and useful. However, I struggled to see the red points within each image representing reflections from the sizing lasers. Perhaps one or more of the images could be annotated to make these clearer?“

RESPONSE: We have added indicators of where the red dots are in the first example of the image data (Figure 4). The main problem is the small size of the image data in the journal image – the laser points are easier to spot on the actual data, though they are subtle... a design feature of OFOBS to aid with future automated mosaicing etc.

COMMENT: „Aside fro the above points I have indicated, some minor corrections and comments on an annotated version of the manuscript, which I will upload with this review.“

RESPONSE: We attach here below the „commented“ version of the manuscript with our responses, but we also list them here:

PAGE1 COMMENT 1: Doppler?

RESPONSE: in this case the DVL simply looks for the hard response of the seafloor, rather than a doppler shift in the water body... the DVL is the common abbreviation for this device in the technical literature on AUVs and mobile platforms using this system, such as our OFOBS.

PAGE1 COMMENT 2: This is almost a complete duplication of the Data Availability section. I don't think it is necessary to duplicate the links and citations in the abstract. One sentence stating that all of these data types are available from PANGAEA and that links are included in the Data Availability section would suffice here.

RESPONSE: This was requested to be inserted here by the journal editor, as a requirement for the journal.

PAGE2 COMMENT 1: Why not Filchner Shelf?

RESPONSE: This has been corrected to Filchner-Ronne Shelf, which seems the currently preferred nomenclature.

PAGE2 COMMENT 2: sea

RESPONSE: word inserted as suggested

PAGE3 COMMENT 1: You may want to add a citation to Dorschel et al. (2022) here (IBCSO2 paper, currently in press)

RESPONSE: Good idea! Done! Actually published now so cited as such.

PAGE3 COMMENT 2: strikethrough text.

RESPONSE: We modified the text here, to designate it is particularly deployed in such environments. In the group we use progressively an AUV in non-ice covered areas for this work.

PAGE3 COMMENT 3: I presume the system is not towed through solid 10/10 pack, in which case the change I have suggested is a more informative way to describe the environment in which it is used.

RESPONSE: ..actually, we do deploy in total ice cover, smashing a channel first if thick...or drifting with the pack if that is not possible.

PAGE3 COMMENT 4: with seasonal ice cover.

RESPONSE: (see previous answer)

PAGE3 COMMENT 5: Was the watch only for cetaceans or for marine mammals in general? If the latter was the case the watch should be described as a 'marine mammal watch'.

RESPONSE: Corrected as suggested - we were indeed asked to observe for all mammals.

PAGE3 COMMENT 6:with

RESPONSE:added

PAGE3 COMMENT 7:were

RESPONSE:corrected

PAGE3 COMMENT 8 Isn't DVL actually an abbreviation for Doppler Velocity Logger?:

RESPONSE: Not in the case of this slightly simpler device.

PAGE5 COMMENT 1:A

RESPONSE:sentence modified.

PAGE5 COMMENT 2: is mounted on the OFOBS, allowing

RESPONSE:corrected as suggested

PAGE5 COMMENT 3: Presumably 5 degrees below horizontal? This could be made clearer.

RESPONSE:corrected as suggested

PAGE5 COMMENT 4: 2.2.3?

RESPONSE: actually, 2.2.1 was correct here, as the forward sonar data was good at detecting the ripples - this is added more clearly in section 2.2.1 now.

PAGE5 COMMENT 5: It wasn't clear to me what this meant until I read the subsequent sections. Perhaps "interactions" would be better than "use", and in any case "fauna" should be modified to "faunal".

RESPONSE: Corrected as suggested.

PAGE5 COMMENT 6: I am not familiar with this term. Is it possible to add an explanation?

RESPONSE: ..I think the scope to do so is beyond this paper, but I added an appropriate reference for the interested reader.

PAGE5 COMMENT 7:were

RESPONSE:corrected

PAGE5 COMMENT 8:These

RESPONSE:corrected

PAGE5 COMMENT 9:Slope

RESPONSE:title modified

PAGE5 COMMENT 10:strikethrough

RESPONSE:modified

PAGE5 COMMENT 11:strikethrough

RESPONSE:modified

PAGE5 COMMENT 12:near

RESPONSE:added

PAGE5 COMMENT 13:edge

RESPONSE:added

PAGE6 COMMENT 1: The author name here should come before the open bracket symbol, with the brackets only enclosing the date.

RESPONSE: corrected formatting by removing *by*

PAGE6 COMMENT 2: and
RESPONSE: added

PAGE7 COMMENT 1:and
RESPONSE:added

PAGE7 COMMENT 2:T
RESPONSE:capitalised as suggested

PAGE7 COMMENT 3:,
RESPONSE: corrected

PAGE8 COMMENT 1: This is the sea-floor trough carved by a former seaward continuation of the Moseley Ice Stream and described by Hodgson et al. (2018) as the "Albert Trough" <https://doi.org/10.5194/tc-12-2383-2018>
RESPONSE: Excellent information! Reference added.

PAGE9 COMMENT1 : run
RESPONSE: corrected

PAGE9 COMMENT2 : cetacean only, or marine mammal more generally?
RESPONSE: corrected

PAGE9 COMMENT3 : ensured
RESPONSE: eek. Corrected!

PAGE9 COMMENT4 : a pandemic
RESPONSE: corrected

PAGE13 COMMENT1 : It would be helpful to explain in this caption that the part of the Brunt Ice Shelf that appears to overlie the easternmost study site calved shortly before this deployment.
RESPONSE: Added as suggested

PAGE15 COMMENT1 : I struggle to see these. Could one of the images be annotated to make them clearer?
RESPONSE: Done

RC2 comments (13th July 2022:)

COMMENT: Given the potential economical interest of the species in question and the fact that the study area is not within any country's jurisdiction, there is a relevant ethical question that must be addressed before publishing these data prior to establishing international protection policies and defining protection areas. Most large fishing companies will not hesitate in towing through this area, and any other areas alike, as soon as they have access to these data.

RESPONSE: we have iterated more clearly in “data use 4” on page 3 that these data should support the establishment of an MPA as soon as is possible. From our discovery of these ecosystems we have been in constant contact with the German representatives to the Antarctic Treaty and the Scientific Committee on Antarctic Research, who advised us to seek publication. Following publication, this paper can be used as a “time zero” report on the state of these ecosystems and be used in the establishment of a Marine Protected Area, in addition to the protection already provided to all ecosystems south of 60 S.