

## ***Interactive comment on “Bathymetrical distribution and size structure of cold-water coral populations in the Cap de Creus and Lacaze-Duthiers canyons (northwestern Mediterranean)” by A. Gori et al.***

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Dear Veerle, thank you very much for your detailed review of the manuscript, for the improvement of the text, and for your very useful comments. In the next sentences we tried to address them.

1 - More details about the multibeam data are now reported in the figure legend: “Fig. 2 Three-dimensional bathymetry illustrating the locations of the video tracks (T1 to T18) in (a) the Cap de Creus Canyon (CCC) and (b) the Lacaze-Duthiers Canyon (LDC).”

C8024

The CCC bathymetry has been acquired by Fugro Survey, AOA Geophysics and the Universitat de Barcelona in 2004 with the hull-mounted Kongsberg Simrad EM300 30 kHz system, emitting 135 equidistant beams spaced every 1.0 degrees. Data were processed using Kongsberg’s NEPTUNE software, and gridded with a cell size of 10x10 m. The LDC bathymetry has been acquired in 1997 by IFREMER (P.I. Serge Berne) with the hull-mounted Kongsberg Simrad EM12D 13kHz dual system, emitting 162 beams spaced from 1.0 to 1.5 degrees. Data were processed using IFREMER’s CARAIBES software, and gridded with a cell size of 20x20 m.”

2 - We completely agree with you, and thank you for highlighting this error! The text has been changed through the manuscript following the new definition of “vertical orientation”. The class 45° was not included in the analysis since it was not clearly observed in any coral colony. Indeed, coral colonies were on rocky walls (90° vertical orientation), or on the top of boulders (0° vertical orientation), or, finally, they were located just at the margin below the rocky outcrops (thus, 135° vertical orientation).

3 - A sentence has been added to the text to highlight the difference in the extent of the Lophelia cliffs in the two canyons: “The L. pertusa framework documented in LDC was very similar to the one recently observed on cliffs in the Whittard Canyon in the Bay of Biscay (Huvenne et al., 2011). Although the extent of the L. pertusa framework in LDC is 2 orders of magnitude smaller than in the Whittard Canyon (Huvenne et al., 2011).”

The cliff observed along the transect T16 in the Lacaze-Duthiers Canyon is the only cliff community that we were able to observe. However, only a very small area of the canyon head has been explored, thus it could be possible that some more Lophelia cliff could be present on some of the vertical rocky walls of the canyon head. More exploration should be undertaken in both canyons looking for this kind of framework formations...

4 - The text has been corrected: “In a similar way, also the weaker currents documented in LDC could promote coral feeding, since slow flows (2.5 cm s<sup>-1</sup>) were shown to

C8025

maximize zooplankton capture rates in *Lophelia pertusa* (Purser et al. 2010).”

5 - Pg 19056, L12: you could add Harris & Whiteway (2011, Marine Geology) in here as a reference

5 - The reference has been added to the text.

6 - Pg 19056, L12: ‘the World’s Oceans’

6 - The text has been corrected as indicated.

7 - Pg 19056, L16: “The high structural heterogeneity originating from the growth of CWC provides a complex mosaic of habitats, and promotes the presence of a highly diverse...”

7 - The text has been corrected as indicated.

8 - Pg 19057, L1: “presents unique characteristics...”

8 - The text has been corrected as indicated.

9 - Pg 19057, L26: “..., with a continental shelf width...”

9 - The text has been corrected as indicated.

10 - Pg 19058, L5: “High-resolution multibeam bathymetry from the heads of both submarine canyons was available and has been used in this study” (bathymetry doesn’t really have a plural – see also the Figure caption of Fig. 2)

10 - The text and the figure legend have been corrected as indicated, thank you for the explanation!

11 - Pg 19058, L7: “The northern flank of the canyon displays a smooth morphology, with rounded gullies and scars: a depositional regime prevails in this sector.”

11 - The text has been corrected as indicated.

12 - Pg 19058, L10: “..., with a predominantly erosive regime.”

C8026

12 - The text has been corrected as indicated.

13 - Pg 19058, L13: “..., with strong bottom currents and...”

13 - The text has been corrected as indicated.

14 - Pg 19058, L28: “The northern flank, in contrast, is steeper, and shows smooth...”

14 - The text has been corrected as indicated.

15 - Pg 19059, L23: “...in September 2007 with the manned submersible JAGO (400 operation depth, equipped with a 1080 horizontal lines colour video camera...”

15 - The text has been corrected as indicated.

16 - Pg 19060, L3: “The pair of parallel laser beams allowed demarcation of 1.5 m-wide observation transects along the path of each dive.”

16 - The text has been corrected as indicated.

17 - Pg 19060, L5: “All colonies of the studied coral species appearing within the 1.5 m-wide observational transects were counted ...”

17 - The text has been corrected as indicated.

18 - Pg 19060, L7: “... with respect to the substrate were recorded...”

18 - The text has been corrected as indicated.

19 - Pg 19063, L25: “Wienberg et al.”

19 - The text has been corrected as indicated.

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C8027