

## ***Interactive comment on “In situ measurement of the biogeochemical properties of Southern Ocean mesoscale eddies in the Southwest Indian Ocean, April 2014” by S. de Villiers et al***

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Response to "Major comments": 1. See Response #2 above, which also applies to one of the major comments of Reviewer #2. 2. The suggested improvements to the figures (also suggested by Reviewer #1), to help the reader identify the eddies, have been made to the relevant figures. 3. As suggested, more references pertaining to background literature have been included, included the 2 mentioned by Reviewer #2. Response to "Specific Comments": 810-3: Only one cold-core eddy was studied, so there is no "younger" or "older" cold-core eddy to reference to. Based on SSHA archives though, the cold-core eddy can be termed "old" as it has a life-span similar to that of

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the "older" warm-core eddy; text to that effect has been added in Section 2: Sampling survey design. In the remainder of the text, including the Abstract, the cold-core eddy is kept as is. 810-6: "for comparison" refers to both comparing "contrasting" eddies, and for potentially comparing in situ data with model outputs. The text have been amended to clarify this. 810-12 The sentence had been rephrased as suggested. 811-20 Additional reference (Ansorge et al., 2015) added as suggested. 812-7 Sentence amended as suggested. 812-18 Sentence deleted as recommended. 813-7-9 A short paragraph in addition to an additional figure has been included, to address this comment as well as the related major comment already mentioned. 813-14 The sampling resolution was indeed constrained by available shiptime; additionally, along the east-to-west (Line E2), weather conditions deteriorated to such an extent that the length of the transect was shortened, compared to what was originally envisioned. The text has been edited to reflect this information. 814-2 The text has been amended accordingly; briefly, the moon pool CTD provides more samples and larger volumes, but the top 20 m or so of the water column does not get sampled; so unless detailed sampling of the euphotic zone is essential, the moon pool CTD will always be the preferred option. 814-15 The text has been amended to include mention of the measurement precision for all parameters. 814-16 A turbidity sensor connected to the CTD system, the text has been amended accordingly. 814-27 The sentence had been amended to clarify how  $F_{max}$  was established. 815-12 More information has been provided about the origin of the eddy (as outlined in #1 above, in response to "major comments"), but the text here has also been changed to reflect the uncertainty about the factors responsible for the colder eddy-core temperature in the older eddy. 815-15 The sentence has been rephrased to clarify the point being made, the original sentence referred to the upper water column temperature in the cold-core eddy, being warmer than the water below in that profile. 815-20 Already addressed (see response #1 to Major Comments, above) 815-21 The sentence has been amended to put the focus on the valuable biogeochemical aspects. Response to "Technical corrections": Attended to in the text, and Tables and Figures where appropriate.

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Please see a copy of the annotated and revised manuscript, attached as a supplement pdf file to response to comments by Reviewer #1

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