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Biogeosciences Discussions

Interactive comment on "Southwestern Tropical Atlantic coral growth response to atmospheric circulation changes induced by ozone depletion in Antarctica" *by* H. Evangelista et al.

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1. Anonymous Referee #2 : "This article describes the plausible impact of the changing Westerly Winds in the Southern Hemisphere on Coral reefs off of the Brazilian coasts. I feel this paper may need major revisions in the writing but the hypothesis is good."

Authors : We have provided writing improvements in the revised version.

2. Anonymous Referee #2 : "Changes in the westerly winds occur because of the changes in the temperature gradient across the Sothern Ocean. This would have occurred with or without the ozone loss but is merely accelerated by it. Putting the

ozone loss in the forefront, the title, implies that these types of impacts will stop once the stratospheric ozone recovers. The Westerlies have always shifted north-south because of the level of atmospheric greenhouse gases over time, even when ozone was not a factor. Other factors may also impact the position and velocity of the Westerlies."

Authors : As the Anonynous Referee #2 has pointed, and we agree completely, it is plausible to accept that the westerlies have been accelerated as a consequence of the ozone depletion. We believe that such observed increase, due to a unique geochemical process, allowed us look very closely the interaction between the wind dynamics at the Southern Ocean and the tropical Atlantic response at lower latitudes. We believe that this impact will really stop once the stratospheric ozone recovers. The impact of past increased westerlies, due to other factors, over the tropical Atlantic still needs more evidences and was not fully described in the literature.

3. Anonymous Referee #2 : "For instance this sentence in the conclusion line 22 "Since ozone in the stratosphere is associated to exothermal chemical reactions, its depletion in the Southern Hemisphere high latitudes triggers the decrease of the Antarctic air temperature in the lower stratosphere." makes no sense. What matters is that O3 is an IR absorber. I was unsure of the exact years of NCEP analysis that were used."

Authors : We concluded that the sentence pointed by the referee is unnecessary for the text understanding and we decided to remove that. With respect the NCEP analysis database we have included the following sentence in the text: "These parameters spanned the full existing database since 1948".

Interactive comment on Biogeosciences Discuss., 12, 13193, 2015.