Earth System
Science Data
Discussions

# Interactive comment on "Calibration procedures and first data set of Southern Ocean chlorophyll $a$ profiles collected by elephant seal equipped with a newly developed CTD-fluorescence tags" *by* C. Guinet et al.

**Anonymous Referee #1**

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The Guinet et al. MS presents original data and a novel approach, combining sensors and tagging of mammals which travels and dive all over the Southern Ocean. The impressive amount of data gathered over several year in a wide area of the Southern Ocean, will certainly be of important use in further assessment of the distribution and balance of phytoplankton biomass and primary productivity in the Southern Ocean. The MS is well structured and clear. The accuracy, calibration, processing and state of the art is conveniently discussed. The methodology employed is described in sufficient detail, especially concerning the calibration of fluorescence sensors, the reference and

data discrimination, as well as the data analysis. The multi-annual dataset represents a solid basis for the assessment of the impact of global change on this particularly sensitive area of the Southern Ocean. The MS is indeed appropriate to support the publication of a dataset, which is of high quality, complete, unique and accessible via the given identifier.

Hereafter authors can find some detailed remarks:

Page 855 line 20: "This paper addresses. . ." line 21: "..and presents. . ."

Page 856 line 20: ". . .under-estimate chlorophyll a (chl a hereafter). . ." lines 20-23: The limitation of the assessment of primary production in the SO is not only attributed to the possible under-estimation of chl a concentrations by satellites: there is also a lack of primary productivity measurements in the field too.

Page 857 lines 5-10: The evaluation of the distribution of chlorophyll a throughout the water column not only gives insights into the variability of primary productivity, but is also a consequence and give insights on its advection and fate. lines 23-26: References to past projects as TOPP as well as the ongoing GTOPP network would be appropriate here.

Page 860 lines 9-12: Lack of references to the chl a concentration range generally encountered within the SO.

Page 861 line 12: ". . .tags were simultaneously tested. . ." line 21:". . .series of tags. . .depployed at the Boussole. . .

Page 862 - line 12: ". . .was restrained to. . ."

Page 863 - lines 19-23: Sentence too long, please reformulate.

Page 867 - line 6: ". . .it is referred as. . ."

Page 869 - line 22: ". . .fluorescence profiles. . ."

Page 871 - lines 15-21: One could expect to read the description of the main features corresponding to figure 7 here instead of in figure 7 caption.

Page 872 - lines 6-11 : Please reformulate both sentences that are not clear.

Page 874 - line 1: Mitchell and Holm Hansen, 1991 (reference is missing)

Page 875 - lines 8-10 : Please reformulate the sentence.

Page 880 - line 15: "Yentsch, C.S. . .."

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Interactive comment on Earth Syst. Sci. Data Discuss., 5, 853, 2012.

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