

Response to reviewers' comments – manuscript cp-2014-152

Response to Prof. Henry Hooghiemstra's comments

page 1: I have noted the first introductions of acronyms and Figures. It shows that Suppl. Fig. 4 apparently does not exist and re-numbering is required. By the way, I have not seen any of the Supplementary information, figures and tables as they were not included in the files I have downloaded.

28: The acronym 'BUS' has not been explained. Notwithstanding, I guess I have understood the text.

We have double checked all acronyms and made sure that they are defined when they first appear in the text. Fig. S4 does exist and we have checked that each Figure is cited where appropriate.

Most acronyms introduced in the Abstract do not repeat in the Abstract text and can be omitted.

We have omitted unnecessary acronyms in the Abstract

87: Another relevant comparison of terrestrial and marine pollen spectra, and an analysis how well marine pollen spectra do reflect vegetation distributions on the adjacent continent is Lézine & Hooghiemstra 1990.

We have now included this paper to the list of works on pollen-vegetation relationships along the African margin

112: It is always tricky to identify who was the first. Although Goldblatt's (1978) paper differs in scope to White (1983), Goldblatt produced with his paper an impressive understanding the biomes in southern Africa and this paper is worth mentioning.

We have reviewed and cited the paper by Goldblatt. The sentence was also rephrased to account for this change.

Fig. 1c & related text: A 'Mean Annual Precipitation' map is useful for most parts of the world. However, for southwestern Africa in particular the Mean Annual Precipitation is extremely negative and the water deficit (precipitation minus evaporation) amounts between -1700 to -3800 mm/yr (see maps on p. 17 and 18 in Barnard (ed.) 1998). Thus, the legend in Fig. 1c "Low = 0" serves better the records of meteorological stations than the understanding of vegetation distribution. For example Lüderlitz with a coastal location has a water deficit of -2600 to -2400 mm/yr whereas inland-located Keetmanshoop a water deficit of -3800 to -3600 mm/yr ! So all numbers are dramatically far from zero, making the current map almost 'incorrect' for the aim of this paper: for example, the present Fig. 1c suggests that the moisture gradient (plant available moisture) between both cities is in opposite direction. Therefore, adding a Water Deficit Map as Fig. 1d would be helpful to show the climatic constraints of biome distribution in southwestern Africa. As far as I see, such map would not lead to new arguments in reasoning and conclusions will not change.

We have now included a Water deficit map in Figure 1 based on Barnard (1998) and data from the Digital Atlas of Namibia (www.uni-koeln.de/sfb389/e/e1/download/atlas_namibia). We also added a note about water deficit in the desert biome.

231 and 184/185: information about the pollen sum is contradictory and needs attention.

One sentence refers to the pollen sum in the terrestrial surface samples, while the other sentence refers to the pollen sum in the marine sediment samples.

Clarification has been added.

Fig. 3: A technical issue: it takes some time to realise that the blue-hatched area is a continuation of the blue area. My suggestion is to fill the hatched area for ~ 80% with blue colour (instead of 50%) in order to show more clearly we are dealing with one unit of which the data originate from two different studies.

We modified the figure and increased the hatching density in the blue polygons