Anonymous Referee #3

Overall its a good paper. I am happy that they treated the 2015-16 drought in context of the dryness of the previous year, this was one of the points I was looking for.

We thank the reviewer for his/her positive assessment.

1. However, given one of their introductory lines: "Few studies have investigated the hydrological impacts of ENSO events on groundwater despite its vital role in sustaining ecosystem function as well as agricultural and domestic water supplies" (line 60-62), I thought they would proceed to do that very investigation which as they mentioned is lacking. I think this statement (line 60-62) should either be removed, or they should explicitly mention that they also do not do this investigation.

Statement now removed as advised

2. Also, a brief background on how the GRACE estimates are derived would be helpful for C1 the readers who are less knowledgeable on climate issues, as this paper could have considerable interest from hydrologists

We agree and not similar comments from reviewers 1 and 2. Accordingly We have now moved the description of the methodology to retrieve GWS fro GRACE data from the supplementary material to the methods section of the manuscript (Section 2.2)

3. Line 59: Are not other phenomenon like QBO, MJO etc also major drivers. The way it is written suggest ENSO is the only major driver. Line 65: "strongest" rather than "biggest", perhaps?

We have now clarified this statement and referred directly to section S1 of the supplementary material in which we discuss the various major modes of variability across our study domain (see lines 60-61 and 68)

4. Line 91: "temporally", rather than "temporarily"?

Corrected as suggested

5. Line 221-222: the grammar needs to be corrected, perhaps: "this 2 year drought event [is] remarkably unlikely" (ie, add the word: "is")

Corrected as suggested

6. Line 315-316: It is not clear whether the r of 0.62 is for annual or seasonal? It may be instructive to calculate separate r values for Makutapora and Limpopo, since they are dealing with only 2 sites. Scatter plots would also be a helpful addition.

Clarified as suggested in lines 429-430 and 464. In order to limit the number of Figures we prefer not to show the scatterplots

7. Line 319: remove the word "least"?

Corrected as suggested

8. Line 328-329: the phrase "shows little interannual variability" should perhaps be replaced by "shows a limited interannual cyclicity"

Revised

9. Line 339: The colour scheme on Figure S1 d is a little unusual, in most color schemes red is warmer and blue is colder, this can confuse readers.

Corrected as suggested

10. Line 387-388 need to be revised gramatically.

Corrected as suggested

11. Line 402-403: further analysis is required to support this sentence: "although as our results at Limpopo show, consecutive dry years lead to marked storage reduction"; this can be achieved by for example, by comparing with the storage after another dry year that was in contrast preceded by wet conditions.

We believe that it is clear from Figure 5 that the very weak recharge during 2014-15 and 2015-16 leads to the lowest GWS values on record.

12. Line 420-432: A mention of the use of seasonal climate forecasts along with climate drivers would be helpful, as these seasonal forecast tend to try to bring together the effects of various parameters including climate modes like ENSO, IOD etc.(such forecasts as the ones here: http://www.cpc.ncep.noaa.gov/products/international/nmme/nmme_seasonal_body.html)

This is a good point and we have now included this suggestion. (lines 555-556)

13. Line 639; Fig 5b and 5c. The authors can potentially answer the question of whether GRACE GWS better estimates abstraction rates + borehole GWS by adding the two

We welcome this constructive suggestion to better compare borehole GWS to GRACE GWS. There is one important confounding factor that inhibits the success of implementing this straight-forward suggestion: transience in the response of groundwater levels (i.e. groundwater storage) to changes in pumping from the Makutapora Wellfield. Co-authors Seddon, Taylor and Cuthbert have been working on the development of a numerical model to better represent transience in groundwater-level responses and thus produce a time series record of groundwater levels for the Makutapora Wellfield in which the impacts of pumping have been removed. This work is on-going and they hope to report soon on their results. We will thus leave the observed, uncorrected groundwater-level time series in Figure 5 as it is with all of the associated commentary on the observed impacts of pumping on this groundwater-level record.