During the work on the comments of Referee 1 we discovered two minor issues we would like to change.

AC #1 We changed the wording in Line 173 from "biased" to "skewed":

"The distribution of monitored mean depths to groundwater was heavily skewed~~biased~~ towards smaller depths (Figure 2)."

AC #2 We rephrased the first two paragraphs of section 5.1:

"To select only those PCs which are representative for the monitored region in the analysed period a series of PCAs were performed based on randomly selected subsets of the complete data set to identify the stable PCs. The stable PCs are~~, that is,~~ those ~~PCs~~ of which the assigned spatial patterns (loadings) and temporal patterns (scores) were rather insensitive to the selection of analysed observation wells and measurement dates. Only the stable PCs were considered for the further analysis.

Earlier studies which used PCA to summarize hydrological variability in a region analysed the stability of their results in a similar way (Smirnov, 1973; Lins 1985a). Those attempts were limited to the comparison of a few PCAs, respectively a few different configurations of the data set. The correlation analysis in this study extended the assessment of stability of PCs towards random selections of the analysed data in both the spatial and the temporal domain, and a substantially larger number of different configurations of the analysed data set.~~. An important difference to the aforementioned studies is that the selections did not occur en bloc but randomly among all observation wells and all measurement dates.~~"