

Interactive comment on “The climate of desiccation in the SW Cape” by Mark R. Jury

M. Jury

mark.jury@upr.edu

Received and published: 11 July 2018

The commentator’s feedback offers guidance to improve the paper and also reveals a different research approach than taken by the author.

1. The drying trend is embedded in seasonal and year-to-year variability. Fig 3b shows that the down-trend accounts for 17% of variance in PDSI (P-E) anomalies, while Fig 3 c shows that the down-trend accounts for 4% of variance in measured streamflow. These points can be emphasized in the revision. Hence the author agrees that variability is high and trends are small but important.

2. The author uses a variety of datasets that are constrained by advances in science. The P-E gauge dataset (PDSI) provides a longer context and helps identify the late 1970s as another dry era similar to recent years. Using high resolution satellite data on soil temperature and vegetation helps identify locations around the mountainous

[Printer-friendly version](#)

[Discussion paper](#)



catchments that show desiccation. These datasets have been previously corrected for bias, as indicated in their respective references.

3. Fig 3a shows the rainfall trends per month and covers the issue of seasonality. It is clear that drying is greatest at the beginning and end of winter, (May and September), hence interpretations of a 'shorter' winter rainy season.

The remainder of the comment highlights the different approach this author takes to the study of drought. Whereas winter rainfall adds to the water budget, only summer evaporation can subtract. Therefore this author focuses on all seasons, and on the factors contributing to surface water losses. One of these is the subsidence of easterly winds that is compounded by coastal upwelling.

4. The vegetation trend aligns with the surface temperature trend, eg. warming and drying reduce the green / brown ratio. Urbanization, agriculture, alien invasion and fires all impact on vegetation and this can be revised accordingly. Notwithstanding human direct / local effects, the indirect effects of global warming that shifts the rain-bearing westerlies poleward, tends to prevail.

Additional: 1. an improved presentation of formulae can be done, 2. the author uses the MODIS 8-day land surface temperature averaged over the Hottentots Holland mountain area to rank the hottest (and driest) case, 3. minor references can be added, 4. the Dept of Water Affairs values were used to indicate total capacity, which may differ from Municipal data, 5. the writing can be extended in revision.

A final overall point is that this author believes that there is a need to study desiccation up in the mountain catchments via streamflow and area-averaged satellite-blended datasets, as opposed to a rain gauge in the Cape Flats.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2018-223>, 2018.

Printer-friendly version

Discussion paper

