Geophysical Research Abstracts
Vol. 21, EGU2019-9566, 2019
EGU General Assembly 2019

The outstanding 2015-2018 Cape Town drought and the poleward migration of moisture corridors

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Between 2015 and early 2018 the greater Cape Town area (∼3.7 million people) experienced the worst drought of the last century prompting the authorities in January 2018 to issue a "Day Zero" alert (risk of no more piped water to residential areas) and to impose very stringent water consumption restrictions. Such restrictions remain in progress, despite a closer to normal rainy season in 2018.
Here we show how a long-term decrease in rainfall totals in the greater Cape Town area has been exacerbated since 2015, particularly due to rainfall decreases in autumn and spring, thus contributing to the dramatic decrease in water availability. In particular we provide strong evidence supporting that: i) consecutive significant decreases in rainfall during the 2015-2017 winters led to the recent water crisis; ii) this record breaking drought was driven by a poleward shift of the Southern Hemisphere moisture corridor; iii) a displacement of the jet-stream and South Atlantic storm-track has imposed significantly drier conditions to this region (Sousa et al., 2018). Decreasing local rainfall trends are consistent with an expansion of the semi-permanent South Atlantic High Pressure, and reflected in the prevalence of the positive phase of the Southern Annular Mode.
Large-scale forcing mechanisms reveal the intensification and migration of subtropical anticyclones towards the mid-latitudes, highlighting the link between these circulation responses and the record warm years observed at the global scale since 2015. The multi-year Cape Town drought appears to be the African counterpart to recent multi-year droughts in other regions with similar climates (e.g., California, The Iberian Peninsula or Chile).

Sousa PM., Blamey R.C., Reason C., Ramos A.M., Trigo R.M. (2018) "The 'Day Zero' Cape Town drought and the poleward migration of moisture corridors". Environ. Res. Lett. 13 (2018) 124025.

This work was supported by project IMDROFLOOD – Improving Drought and Flood Early Warning, Forecasting and Mitigation using real-time hydroclimatic indicators (WaterJPI/0004/2014) funded by FCT. Alexandre M. Ramos was also supported by a FCT postdoctoral grant (FCT/DFRH/ SFRH/BPD/84328/2012).