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Overcoming the complexity of drought by phasing drought triggers; a case study of Zimbabwe

Marijke Panis[1], Aklilu Teklesadik[1], Mark Powell[2], Richard Muchena[3], and David Muchatiza[3]
[1]The Netherlands Red Cross, 510, Netherlands (mpanis@redcross.nl)
[2]Danish Red Cross Delegate, Harare, Zimbabwe
[3]Zimbabwe Red Cross Society, Harare, Zimbabwe

Historically droughts are one of the natural hazards in Zimbabwe with a significant impact on community resilience and threaten the livelihood of already vulnerable people. Agricultural activities are the primary source of income, where the dominant rain-fed agriculture is exceptionally vulnerable to climate extremes, reducing the country's agricultural productivity. The Zimbabwe Red Cross targets crop losses as the drought impact to prioritize in the drought impact-based forecasting system.

The Impact-based Forecasting project in Zimbabwe aims to reduce the impact of drought (crop losses) to the community by implementing early actions within sufficient operational lead time. Drought is a slow-onset disaster, and its impact is felt and visible at different moments the seasonal calendar. This drought impact can be categorized into primary- and secondary impacts. Primary drought impacts are directly linked to rainfall scarcity, such as reduced crop yield and water scarcity. Secondary drought impacts are directly connected to dry conditions, such as food insecurity and epidemics. These temporal differences of impacts ask for drought triggers at various moments in the calendar, leading to a more segmented approach. The segmented approach makes it possible to design the trigger in a way that the drought indicators best linked to the operational early action at that lead time. The first phase has the longest lead time in predicting the impact of a drought using a global climatological indicator (ENSO) first to identify the probability of an El Niño/La Niña year to develop into the next growing season. Secondly, the FEWSNET Food Security Seasonal Outlook can be used as a predictor of the impact of an upcoming drought and of the population exposed to an IPC-Class 3 level. The last phase exists of monitoring biophysical drought indicators over the growing season to predict accurately the effect of a drought with the shortest lead time. The aim of phasing the trigger methodology is to activate low-cost actions when the uncertainty of the impact of a drought is relatively high. By adding more seasonal information to the trigger model over time, the predictive uncertainty reduces.

As a result, the drought trigger methodology we designed can drive the discussion and be the evidence base on the selection of early actions to reduce drought impacts. Next steps in the development of the system are to calculate the forecast skill of the biophysical indicators such as standardized precipitation index (SPI) and Vegetation Condition Index (VCI) soil moisture? linked to the identified prioritized drought impacts and to select corresponding early actions.