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Forecasting agropastoral water deficits in West Africa to support food insecurity early warning

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West Africa (WA) is prone to food insecurity due to climate-, economic-, conflict-related shocks, as well as high population growth and lack of proper adaptation strategies. As per the USAID's Famine Early Warning Systems Network, which uses Integrated Phase Classification to classify acute food insecurity (AFI), between 2011 and early 2020, several parts of WA reported the "Stressed" phase of AFI >30% of the time. Food security and livelihood in the region relies substantially on rainfed farming and small-scale water holes. Droughts lead to water deficits resulting in adverse impacts on food production, human and livestock health and agricultural labor opportunities, leading to or worsening of food insecurity. Thus far, the focus of climate, drought outlooks and their impacts, to support food insecurity early warning in this region has mainly been on the seasonal scale (i.e., 3-6 months in future) forecasts whereas use of subseasonal scale (2-4 weeks in future) forecasts has been negligible. Recent advances in routine production (i.e. weekly) and open access to subseasonal forecasts provide an unprecedented opportunity to improve the existing climate services in the region by focusing on the impacts of subseasonal climate characteristics on food insecurity in the region. Here we report on an ongoing project with the AGRiculture HYdrology and METeorology Regional Centre (SERVIR's WA Hub) that aims to develop a subseasonal water deficit forecasting system to support food insecurity early warning in the region. The presentation will describe (i) the results of an ongoing analysis examining the influence of subseasonal climate characteristics (e.g. monthly climate variability, length of dry or wet spell) on food insecurity, as measures by different food insecurity indicators (such as vegetation index, food insecurity reports and household level health and malnutrition reports) and (ii) the major accomplishments towards implementation of the water deficit forecasting system, including development and evaluation of prototype products, (iii) capacity building and stakeholder engagement activities with National Meteorological and Hydrological

Services across the region.