Developments within the TAMSAT Group for long-term rainfall monitoring and assessment across Africa

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The African rainfall climate is highly variable, both spatially and temporally. Given that most African societies are poorly equipped to manage unexpected changes in rainfall amount, it is important for the relevant authorities to have access to both reliable historic and near-real time rainfall data to assist in (1) drought and flood monitoring across the continent and (2) analysis of long-term changes in rainfall. Since gauge records alone are too sparse and inconsistent over time across many parts of Africa, satellite-based records are the only viable alternative, especially in regions with little or no gauges. The longevity of the Meteosat programme, commencing in the late 1970s and running to the present day, thus provides over 30 years of continually updated satellite records for monitoring the current climate and assessing long-term changes in rainfall.

The TAMSAT Group, who have provided Africa-wide rainfall estimates since the 1980s based on Meteosat thermal infra-red imagery, are continually striving to improve the skill and usability of the rainfall products they create. The current dekadal (10-day total) rainfall estimates are disseminated through several streams, including GEONETCast. In this talk, we will present the latest developments to existing TAMSAT products, as well as new research-level products. In particular, we will showcase the latest Africa-wide recalibration efforts to TAMSAT’s primary rainfall dataset that greatly minimise deficiencies associated with this dataset. Given the advantage of utilising as many observations as possible and the need for estimates of uncertainty, we will also present a novel method that merges contemporaneous gauge records with satellite data while creating an estimate of the uncertainty in rainfall amount. These developments in TAMSAT are essential for improving climate services across Africa, thereby increasing resilience to hydrological related disasters.