

A COMPARATIVE ANALYSIS OF WEATHER DATA FROM MANUAL AND AUTOMATIC WEATHER STATIONS IN TANZANIA

The case study of Tanzania meteorological agency at Julius Nyerere International Airport station.

By ODILLIA MICHAEL MACHA, (2017)

Abstract

In the field of meteorology, efforts has been made to transform observation technologies from conversional weather stations (CWS) to automatic weather station (AWS) to make them work more reliably, accurately and at relatively low cost.

Among other Meteorological institutions in the world , Tanzania Meteorological agency (TMA) is expanding its network of AWS nationwide in order to improve quality of its meteorological services by using data from automatic weather system. To avail this approach TMA has to clear the challenge of verification of the data from AWS which is requirement from world meteorological organization (WMO). This study used comparative analysis based on correlation analysis of data sets namely; CWS and AWS at TMA were collected from February to july 2017. One month (july) daily data of humidity and temperature from a new low cost AWS designed by weather information management in East Africa using information technology (WIMMEA-ICT) and monitored by Dar es salaam institute of Technology (DIT) was inclusive.

Results showed that there is a high correction between data obtained from CWS and AWS for the TMA'S station while moderate correlation was seen between CWA and AWS owned by DIT. A paired t-test analysis for bias revealed a systematic bias on TMA'S AWS towards CWS data. Based on this study, TMA'S AWS is comparable in performance to CWS. However, more investigations have to be done to AWS managed by DIT.

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