

Operational flood monitoring in Tanzania using Cold Cloud Duration (CCD) from Meteosat Satellites.

Nassoro Mnanike
Tanzania Meteorological Agency
mnanike@hotmail.com

Operational flood monitoring in Tanzania can be enhanced by the use of remotely sensed information from Meteosat satellites. Flood occurrence in Tanzania during the ENSO 1997/1998 rain season devastated landscape and other infrastructures were washed away leaving a trail of deaths and diseases. Tanzania Meteorological Agency is responsible for monitoring all atmospheric conditions and has been applying NWP models with a support of Meteosat satellite to forecast these disasters. In order to improve these activities, a new model for daily weather forecast, seasonal forecast including floods has been imposed in our systems. This paper discusses the use of CCD model in simplification of rainfall estimation in tropics. Monthly mean rainfall data from rain gauge stations from 1994 -1998 were tested with data produced in real time images from Meteosat satellite. The model assumption as observed from smoothed data pilots indicates that rainfall in tropics comes from convective clouds which precipitate when their tops reach a certain threshold temperature height h_t , cloud top height is identified by its temperature in the thermal infrared image. At certain location the quantity of rain in a given time is linearly related to the length of time the cloud top has been colder than T_t . Thus $R = a_0 + a_1 D$, where R is rainfall, D is duration and a_0 and a_1 are constants. The MOM and PDUS are ready for images capturing which could be observed as daily and ten days CCD images which are used to determine areas with convective clouds. An image illustrates the value of the calibrations produced from the satellite with day night imaging and obvious application in flood monitoring. The results of this work could be useful to the government as it will be informed in advance to prepare itself to save loss of life to people and infrastructures.