



Severe Storms in the Lake Victoria Basin

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Severe and often nocturnal thunderstorms over Lake Victoria in East Africa pose a significant threat to the local population, reportedly causing several thousand fatalities in the fishing and lake transportation industry each year. The “HIGH Impact Weather lAke sYstem” (HIGHWAY) Project was initiated by the UK Aid-funded Weather and Climate Information Services for Africa (WISER) programme, and is led by the World Meteorological Organization (WMO) World Weather Research Program (WWRP) in partnership with the Met Office and east Africa NMHS stakeholders (Kenya, Tanzania, Uganda, Rwanda, East Africa Community, Lake Victoria Basin Commission) to develop, validate, and improve high impact weather forecasts and warnings with initial focus on the Lake Victoria Basin (LVB). The LVB is home to 30 million people including around 200,000 fishermen.

With an eye toward implementing a sustainable observation network and Early Warning System to improve Very Short-Range Forecasts (Nowcasts) and Warnings, in 2019 the HIGHWAY Project conducted a Special Observation Period (mini field campaign) during the March–May rainfall season and June–September, a relatively dry period to gain a better understanding of the initiation and evolution of severe storms across the LVB with more intensive focus on storms formation, intensification, and propagation across Lake Victoria. Data collected and archived (<http://catalog.eol.ucar.edu/highway>) during this period included traditional in-situ meteorological measurements, imagery and derived products and new forecaster tools from the Meteosat Second Generation geostationary satellite, dual-polarization radar data from the TMA Mwanza radar at the southern end of the lake, and total (in-cloud and cloud-to-ground) lightning data across LVB from the Earth Networks Global Lightning Network (ENGLN). The observations encompassed the domain of Met Office high resolution 4 km convection-permitting model among others. The information they provide are key elements in preparing for the transformational Meteosat Third Generation (MTG) Imaging (MTG-I) and Sounding (MTG-S) missions with planned launch in 2021 and sustained near real-time operations for the coming decades. MTG will be a transformational advancement for weather services throughout Africa providing 10-min full disk imagery with greater spatial, temporal and spectral information from its Flexible Combined Imager (FCI), total lightning from its Lightning Imager (LI), and full disk soundings from its InfraRed Sounder (IRS).

Here we report on select case studies of high impact weather and severe storms occurring over Lake Victoria from November 2018 to September 2019.