Analysis of the rain event of 5 August 2022 in Dakar suburb using a combination of HEC HMS hydrologic model and HEC RAS 2D hydraulic model.
(Poster)

[1]Soussou SAMBOU1, Dakar, Senegal*

[2]Moustapha BA Affiliation 2, University/Institute Name, City, Country

**Corresponding author: sousamb@hotmail.fr ; soussou.sambou@ucad.edu.sn*

ABSTRACT

The city of Dakar (Senegal), like other African cities, is experiencing significant population growth, which puts pressure on land use. With climate change, the frequency of extreme events has been increasing. The combination of these two factors makes some African cities vulnerable to water-related natural disasters During the rainy event on August 5, 2022, that occurred in Senegal, an extreme one, the retention basin built in the catchment area that drains the waters of the Grand-Yoff watershed (Dakar suburb in Senegal) exceeded its capacity. Traffic on the main exit road from Dakar was stopped, and the waters flooded the surrounding neighborhoods, causing significant damage. The aim of this work is to simulate the flow dynamics that resulted in order to discuss structural and non-structural measures against flooding. The watershed was characterized using QGIS and a 50 cm resolution DEM obtained from DGID. The HEC HMS hydrological model then used this DEM and the rainfall data to determine the amount of water entering in the retention basin. This turned out to be higher than its capacity, so that the excess overflowed downstream of the retention basin. The HEC RAS 2D software was then used to simulate the 2D flood propagation and highlight the resulting flooding. Tracking the progress and spread of the flood provides a basic element for setting up an urban flood control system. This multi-model approach used can be used as a decision-making tool

Keywords: HEC RAS2D; HECHMS; Flooding