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Hydro-Meteorological Vulnerability and Planning in Urban Area: The Case of Yaoundé City in Cameroon

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Abstract : Background and aim: The study of impacts of floods and landslides at a small scale, specifically in the urban areas of developing countries is done to provide tools and actors for a better management of risks in such areas, which are now being affected by climate change. The main objective of this study is to assess the hydrometeorological vulnerabilities associated with flooding and urban landslides to propose adaptation measures. Methods: Climatic data analyses were done by calculation of indices of climate change within 50 years (1960-2012). Analyses of field data to determine causes, the level of risk and its consequences on the area of study was carried out using SPSS 18 software. The cartographic analysis and GIS were used to refine the work in space. Then, spatial and terrain analyses were carried out to determine the morphology of field in relation with floods and landslide, and the diffusion on the field. Results: The interannual changes in precipitation has highlighted the surplus years (21), the deficit years (24) and normal years (7). Barakat method bring out evolution of precipitation by jerks and jumps. Floods and landslides are correlated to high precipitation during surplus and normal years. Data field analyses show that populations are conscious (78%) of the risks with 74% of them exposed, but their capacities of adaptation is very low (51%). Floods are the main risk. The soils are classed as feralitic (80%), hydromorphic (15%) and raw mineral (5%). Slope variation (5% to 15%) of small hills and deep valley with anarchic construction favor flood and landslide during heavy precipitation. Mismanagement of waste produce blocks free circulation of river and accentuate floods. Conclusion: Vulnerability of population to hydrometeorological risks in Yaoundé VI is the combination of variation of parameters like precipitation, temperature due to climate change, and the bad planning of construction in urban areas. Because of lack of channels for water to circulate due to saturation of soils, the increase of heavy precipitation and mismanagement of waste, the result are floods and landslides which causes many damages on goods and people.

Keywords : climate change, floods, hydrometeorological, vulnerability
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