

Extended abstract:

Approximately 1.47 billion people, representing 19% of the global population, are directly exposed to floods (World Bank, 2020). Among the disasters affecting regions worldwide, floods are one of the most frequent and often cause the most damage (EM-DAT, 2022). African cities are particularly affected by this phenomenon due to increased vulnerability factors. Rapid and uncontrolled urbanization is often cited as the main cause of urban floods. Douglas et al. (2008) point out that even if floods are of natural origin, their impacts in African cities are exacerbated by rapid and uncontrolled urbanization, manifested by the occupation of flood-prone wetlands. In Douala (Cameroon), Bruckmann & al. (2019) established a strong connection between flood risk and urban dynamics, showing that the unplanned occupation of outskirts spaces by poor populations increases the risk of floods. Investigating this link in Addis Ababa (Ethiopia), Tamru (2002) subtly examined urban dynamics as indicators of city dwellers vulnerability to flood risk. Additionally, urbanization, by promoting the transformation of wild natural areas on human settlements, considerably reduces the risk of flooding.

In West African cities, Gemenne & al. (2017) note that "*human activities are responsible for the worsening flooding due to urban sprawl in at-risk areas*" (page 4). Thus the impact of hydro-climatic factors becomes minimal in the process according to Nouaceur (2020), confirming that uncontrolled urbanization and the anarchic extension of West African cities, materialized by a proliferation of spontaneous neighborhoods without a pre-established development plan, promote the recurrence of floods, more than even the intensification of precipitation observed in recent decades. In Niamey (Niger), search results of Issaka & Badariotti (2013) showed that floods more affect informal neighborhoods located in undeveloped and flood-prone areas mainly occupied by the poorest populations. This is explained, according to the authors, by difficult access to land in developed neighborhoods as is also the case in Dakar (Senegal) where the poorest populations often consciously choose to occupy flood-prone peripheral areas because they cannot afford housing in developed neighborhoods (Cissé & Sèye, 2015).

This reality is even more striking in Dakar, where floods have become a regular and lasting phenomenon causing considerable human and material damage (Descroix, 2018). The capital of Senegal indeed experienced sustained urbanization after the droughts of the 70s and 80s, boosted by the massive and anarchic settlement of populations in the *Niayes*, a marshy and flood-prone area (Cissé & Sèye, 2015; Okuda, 2012). This settlement process has been so fast-

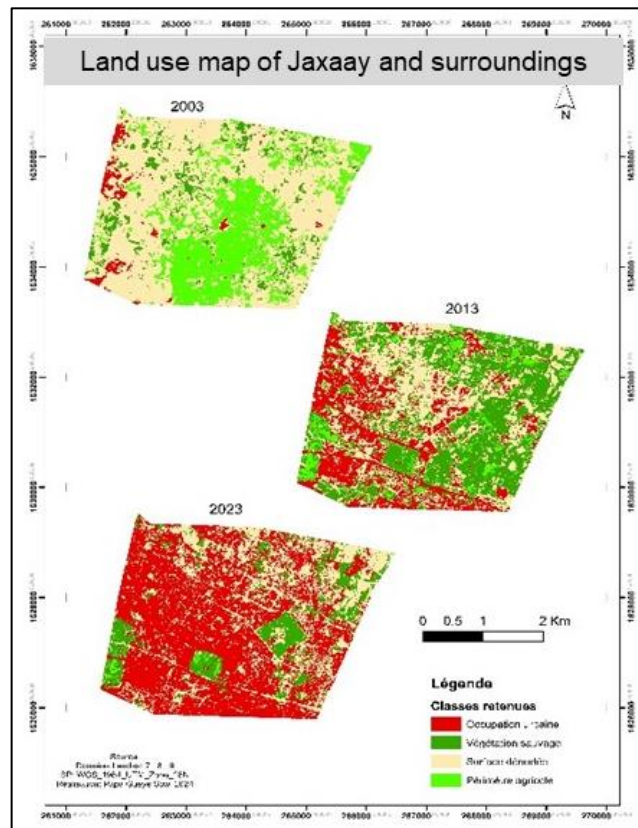
paced that the urban planning plans were quickly surpassed with the informal emergence of new neighborhoods at the city's gateway to absorb these populations (Mbow et al., 2008). This situation resulted repetitive flooding events because, according to Momar Diongue, *"floods in the suburban periphery of Dakar are mainly linked to the shortcomings of irregular urbanization that public authorities struggle to address by correcting its deficiencies."* (Diongue, 2014: 52). Furthermore, Mbow & al. (2008), by reconstructing the stages of urban dynamics evolution in Yeumbeul, demonstrated that it is the urbanization of peri-urban areas without prior control that has amplified the risks of flooding in Dakar. Thus, rapid and uncontrolled urbanization of these at-risk areas has increased the vulnerability of populations and inhabitations to flooding (Schaer, 2015).

The effect of urbanization on floods is generally well studied, calling for land-use regulation and effective flood risk management to cope with urban growth (Seemuangngam & Lin, 2024). However, it is also relevant but much less studied to analyze it under the reverse effect by examining the influence of floods on the reconfiguration of urban trajectories. This is the aim of this communication. It should be noted that one of the major consequences of floods in Dakar is the displacement of affected populations. Such displacements can be individual household initiatives or collective through resettlement programs implemented by the public authorities. The Jaxaay Plan is one of these resettlement programs launched by the Senegalese government to move around 3,000 households affected by the dramatic floods of 2005 to the urban periphery of Dakar. These population movements are thus not without consequences for the evolution of urban dynamics and, analyzing the trajectories of these victims could help apprehend the influence of floods on the reconfiguration of urban trajectories.

To achieve this, we used a plural method. First, we used remote sensing to analyze changes in land use in some Dakar neighborhoods between 2003 and 2023. Then we studied life histories of 55 people affected by severe flooding and 5 interview surveys of decision-makers. This ethno-biographical dimension of the methodology is justified both by the complexity of the problem addressed and the research objective. *Life stories*, as a narrative interview allowing an individual to recount their experience and reaction to a lived event (Bertaux, 1997) and to retrospectively reconstruct the most important stages of this experience (Demazière & Dubar, 1997), constitute a powerful tool for studying and understanding the trajectories of populations in constantly evolving contexts. The use of the ethno-biographical method was therefore of great importance in this research as it allowed for understanding the influence of floods on urbanization in Dakar through the study of the urban trajectories of flood-affected and relocated

populations. The use of life stories method is also justified by its particularity compared to other data collection methods and direct observation, as it provides the possibility to reconstruct the temporality and spatiality of the narrative through an ordering established by the narrator themselves (Demazière, 2007). This allowed to map over time and space the residential mobility of populations forced by floods, from their narratives, to better visualize the influence of floods on urbanization in Dakar.

The results of this research show that the displacement of flood-affected populations led to a reorganization of the urban fabric with the urbanization of newly landscaped areas on the outskirts of Dakar. This is exemplified by the development, starting from 2006, of eight (8) neighborhoods by the Senegalese government to relocate the populations affected by the 2005 floods to Jaxaay, an almost unoccupied peri-urban area at that time but which, in record time, ended up attracting the capital by reorienting the urban front. Over the course of a decade, Jaxaay experienced rapid urbanization, making the area and its surroundings attractive with continuous construction of housing and services (see map).



"Since 2006, 2008, and even 2009, there was absolutely nothing [in Jaxaay] except for a few scattered houses. But then the urban front developed to such an extent that areas from Almadies, Keur Ndiaye Lo to Kounoune were all occupied." Extract from the interview with Sidy Diagne, 68 years old, a victim of the 2005 floods relocated to Jaxaay in 2007 under the *Jaxaay Plan* (interview recorded on 26/07/2023).

Thus, the urban fabric of Dakar was reorganized due to the relocation of flood-affected populations. The results also show that the trajectories of populations affected by floods often punctuated, after each flood experienced, by residential changes within or between neighborhoods in Dakar, before and after *Jaxaay Plan*, contribute to constantly redefine the urbanization trajectory. Since the late 1980s, some populations impacted by floods have

temporarily or permanently abandoned their homes to move elsewhere in the city. “(...) *the first [displacement due to floods] was in 1989*”, extract from the narrative of Babacar Dièye, 70 years old, relocated to Jaxaay in 2008 (recorded on 12/10/2023). These continuous and regular urban displacements of populations fleeing the disaster influence urban development in Dakar. Either they reinforce the urbanization of already urbanized neighborhoods, or urbanize non-urbanized areas like Jaxaay, or contribute gradually to “de-urbanize” neighborhoods once urbanized as in the former neighborhoods of relocated victims where inhabitations have been demolished for the making of water retention basins and green spaces.

Bibliography

Apinan Seemuangngam and Han-Liang Lin, 2024. The impact of urbanization on urban flood risk of Nakhon Ratchasima, Thailand, *Applied Geography* Volume 162, 103152;

Cheikh Mbow, Aminata Diop, Amadou Tahirou Diaw and Cheikh Ibrahima Niang, 2008. Urban sprawl development and flooding at Yeumbeul suburb (Dakar-Senegal), *African Journal of Environmental Science and Technology* Vol. 2 pp. 075-088

Daniel Bertaux, 1997. *Les récits de vie*, Editions Nathan, Paris, 128 pages ;

Demazière Didier et Dubar Claude, 1997. *Analyser les entretiens biographiques. L'exemple de récits d'insertion*. Paris. Nathan.

Demazière Didier, 2007. « Quelles temporalités travaillent les entretiens biographiques rétrospectifs ? », *Bulletin de méthodologie sociologique* [En ligne], 93 |, mis en ligne le 01 janvier 2010,

Diongue Momar, 2014. Périphérie urbaine et risques d'inondation à Dakar (Sénégal) : le cas de Yeumbeul Nord, ResearchGate, Douglas I, Alam K, Maghenda A, McDonnell Y, McLean L, Campbell J (2008). “Unjust waters: climate change, flooding and the urban poor in Africa”. *Environment and Urbanization* 20 (1):187-205;

François Gemenne, Julia Blocher, Florence De Longueville, Sara vigil Diaz Telenti, Caroline Zickgraf, Dalila Gharbaoui & Pierre Ozer, (2017). Changement climatique, catastrophes naturelles et déplacements de populations en Afrique de l'Ouest, *Geo-Eco-Trop.*, 41, 3, pp317-337 ;

Genesis Tambang Yengoha, Zephania N. Fogweb and Frederick Ato Armah, 2017. “Floods in the Douala metropolis, Cameroon: attribution to changes in rainfall characteristics or planning failures?”, *Journal of Environmental Planning and Management*, Vol. 60, No. 2, 204230;

Hamadou Issaka et Dominique Badariotti, 2013. « Les inondations à Niamey, enjeux autour d'un phénomène complexe », *Les Cahiers d'Outre-Mer* [En ligne], 263 |, mis en ligne le 01 juillet 2016 ;

Laurent Bruckmann, Amélie Amanejieu, Maurice Olivier Zogning Moffo et Pierre Ozer, 2019. « Analyse géohistorique de l'évolution spatio-temporelle du risque d'inondation et de sa gestion dans la zone urbaine de Douala (Cameroun) », *Physio-Géo* [En ligne], Volume 13 [mis en ligne le 04 septembre 2019, consulté le 07 septembre 2024 ;

Luc Descroix, 2018. « *Processus et enjeux d'eau en Afrique de l'Ouest soudano-sahélienne* », Editions des archives contemporaines, 289 p.

Okuda Tomohito, 2012. “*Understanding Urban Flooding in Dakar, Senegal*”, Center for Sustainable Urban Regeneration;

Oumar Cissé and Moustapha Sèye, 2015. Flooding in the suburbs of Dakar: impacts on the assets and adaptation strategies of households or communities, *Environment & Urbanization*, Vol 28(1): 183–204;

Oumar Cissé and Moustapha Sèye, 2015. Flooding in the suburbs of Dakar: impacts on the assets and adaptation strategies of households or communities, *Environment & Urbanization*, Vol 28(1) 6.

Tamru Bezunesh, 2002. « L'émergence du risque d'inondation à Addis-Abeba : pertinence d'une étude des dynamiques urbaines » In: *Annales de Géographie*, t. 111, n°627-628, pp. 614-636;

Zeineddine Nouaceur, « La reprise des pluies et la recrudescence des inondations en Afrique de l'Ouest sahélienne », *Physio-Géo* [En ligne], Volume 15 | 2020, mis en ligne le 13 avril 2020 ;

Banque mondiale, November 2020: <https://blogs.worldbank.org/> The Emergency Events Database (EM-DAT), 2022: <https://cred.be/sites/default/files/2022-EMDAT-report.pdf>