Recurring flooding of the World Heritage site of Jenne since 1945 in the Republic of Mali, West Africa

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The city of Jenne in Mali (West Africa) has been a UNESCO World Heritage since 1988 and is renowned because of its mud brick-made mosque from the 15th century. It is located in the central part of Mali in a geomorphological region known as the Niger Inland Delta, a very plain floodplain with a slope gradient of 2 to 5 degrees formed by the junction of the Niger River and its tributary, the Bani River. Because of this location, the city has been frequently flooded since 1945, when after the rainfall season in the upper Niger and Bani upper reaches, the water flows reach this very plane region forming numerous lakes and flooding the area. The spatial extension of this flooding is highly linked to the annual rainfall in the Niger and Bani River Watershed. We used field cartography done with the implication of the elders and local community members that help to map the spatial extension of the floods that they have experimented with to study the recurring flooding of the city. The field data were recorded using mobile GPS and Fieldpapers, an OpenStreetMap online mapping tool. The maps were made for the floods that occurred between 1945 and 2019 as before that period the memory of the flooding was scarce. The results show that the city of Jenne has been flooded for 19 years but with different locations and spatial extensions of the flooded areas inside the city. A map has been made for each flooded year. Later, a synthesis map was made combining all the flooded areas during the period of observation. It was found that the southern, southeastern, and northeastern parts of the city were the most flooded. Nowadays, although many flood management activities and actions have been undertaken, the city is still flooded especially the Southeastern part of the city.