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## The impact of hurricanes on the island of Saint-Martin (French West Indies) from 1954 to 2017: how are our society changes?

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Natural disasters lead to many victims and major damage in France and around the world. In 2017, Hurricane Irma hit the French islands of Saint-Martin and Saint-Barthélemy (West Indies), killing 11 people and causing more than €2 billion in insured damage. Ranked 5 in category on the Saffir-Simpson scale, with average winds of 287 km/h, this hurricane highlighted the vulnerability of our society to this type of phenomenon.

One can question the inability of society to face up to and recover from the consequences of these events. In this sense, this work questions the adaptation of the island of Saint-Martin to hurricanes and its entire environment. We have chosen to focus on the evolution of this island over 65 years: from 1954 to 2017 (before Hurricane Irma). We mainly used aerial images of IGN (Institut National de l'Information Géographique et Forestière) available regularly since 1947. Among the elements that have served us to characterize this evolution, we have focused on land use (buildings, infrastructure and anthropization) and demographics.

We show, in this study, that between 1954 and 2017 (before Hurricane Irma), Saint Martin had to adapt to numerous constraints, some of which were far more important than hurricanes. In 65 years, the population density of the French part of Saint Martin increased from 75 to 668 inhab/km<sup>2</sup>. The majority of this increase occurred in a five year period following the Pons law of 1986 which favoured tax breaks for real estate investment. More than 12 000 buildings have been built in Saint Martin to welcome the new inhabitants of the island as well as tourists. Many neighbourhoods experienced significant growth which started in the late 80's. However we observe differences in urban planning, a result of social and territorial segregation which exists on the island. On the one hand, there are private residences in affluent neighbourhoods, on the other hand working-class neighbourhoods with vulnerable dwellings. The effect of hurricanes on this society, which has been highly unequal since the 1960's up to the 1980's, is to reinforce inequalities. The fragile habitats of the poorest populations have been more deeply affected than the richest parts of the population which have been financially supported for reconstruction.