



## **Radar and optic satellite imagery contributions for flooded areas cartography: example of Saint Louis (Senegal)**

**J. Kouame** (1), D. Aliou (2), S. Wade (2), J.-P. Rudant (1)

(1) Laboratoire des Géomatériaux - Institut Francilien des Géosciences - Université de Marne La Vallée France (jacob.kouame@univ-mlv.fr, rudant@univ-mlv.fr), (2) Laboratoire de Télédétection Appliquée - Institut des Sciences de la Terre - Université de Dakar Sénégal

The high risks of floods and their dramatic effects as regards to social and economic aspects in Saint Louis constitute a real problem for local authorities and organizations handling the management of Senegal River valley. In spite of regulation strategies of Senegal River flow, water's rise due to strong rains at river upstream causes most serious inundations of Senegal River basin and in Saint Louis town since 1683. The objective of this study is to evaluate the interest of optic (SPOT (1998-2002), Landsat (1979-2003) and radar (ERS (1999-2002), ENVISAT (2004)) images, used jointly with topographic data available to realize soil occupation charts (buildings areas), to identify and classify flooded areas in this agglomeration, to realize a model of characteristics related to flood and topography in order to understand flood phenomenon and determine risks incurred by inhabitants during inundations. The principal aim of realizing an elevation modelling is to represent natural topographic surface in order to apprehend Saint Louis topography and to delimit areas exposed to inundations. Floods affect infrastructures (roads), and degrade buildings. After having interpreted spot image of 1999 acquired in period of floods and having superimposed vectors layers extracted on the Digital Elevation Model, we obtained the following results: 0.7% of urban constructions of Saint Louis are in areas with altitude lower than zero meter (sea average altitude); 9.7% of urban constructions are flooded if inundations reach an altitude of 0.76m; when water reaches an altitude of 1.5m, more half of urban constructions are flooded (55.4%); the whole town of Louis Saint is submerged if inundations reach an altitude of 3.0m.

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