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Satellite monitoring of flooding duration in relation with public health (West Nile virus, South of France)

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Environment plays a major role in certain pandemics development. Studying some virus, as West Nile, allows us to measure how linked are environment and public health. The study we carried, has been done in South of France, area were West Nile virus occurred. This virus affects horse and sometimes man, to which it can also be lethal. In the USA, this virus caused death of several hundreds of people during the past years. Following its transmission chain, the West Nile is hosted by mosquitoes and birds. Abundance of mosquitoes and birds species, is heavily conditioned by flooded areas extent and their variations. The West Nile therefore seems to show a dynamic linked to environmental conditions and more specifically to submersion duration variations. In this context, surface hydrology is a determinant variable. The knowledge of flooded areas and of their spatiotemporal dynamic could be formalised using an important cover of Spot 4 and 5 images acquired during one hydrological year (between 6 to 12 images per year). A spatial knowledge of surface hydrology dynamics could be generated. This knowledge, leash together with ecological models, allowed to better understand the virus dynamic and to derive risk zones maps.