



Video monitoring for Guianese beach morphodynamics and management

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The French Guyana coastline is affected by exceptional regional processes occurring offshore, where alongshore migration of Amazonian mud banks influences wave action and sediment transport towards the coast. Although offshore mud banks drift has been comprehensively studied over the last two decades, their morphodynamic impacts on the intertidal beach area are still incompletely understood, as continuous series of field measurements on the shore are missing.

The aim of this work is to collect accurate high frequency hydro- and morphodynamic measurements at the intertidal zone of one of the most eroded beaches in French Guyana. The relationships between offshore processes and coastline changes will be in focus under the context of increasing coastal vulnerability and submersion risks.

A coastal video monitoring system has been designed and implemented in November 2017, for the first time in French Guyana. The most vulnerable site of Kourou beach was chosen for the installation, acquiring high-resolution images of a coastal stretch of about 500 m alongshore. Computational efforts have concentrated on developing and validating a novel automated technique which remotely provided, simultaneously, accurate wave runup measurements and beach intertidal topography using a single type of images (Variance) on daily basis.

The ongoing monitoring project is expected to deepen understanding the correlation between offshore mud banks dynamics and beach alteration. Furthermore, the video dataset will allow the possibility of evaluating the efficiency of the artificial dune “sand bags” protection system recently built by local authorities.

Korou video station is the first system of the shore-based monitoring network that is implemented in French Guyana between coastal scientists and decision makers (French Guyana Coastal Observatory), which insures sustainable coastal management and supports coastal risk assessment.