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Under an apparent uniformity, the 230 kilometers of the Aquitanian sandy coast presents many nuances/differences in terms of geomorphological evolutions at event, seasonal, annual and pluriannual time scales. The Aquitanian Coast Observatory (OCA), through various measurement protocols, tracks and characterizes these evolutions at regional scale, focusing on sedimentary sub-cells and in view of hydro-meteorological forcing.

As part of a partnership with the National Geographic Institute (IGN), the OCA has and shares LiDAR data covering the entire Aquitanian coast for the years 2011, 2014, 2016 and 2017. The surveys are carried out in autumn, during low spring tides, allowing the maximum cross-shore coverage. The continuous coverage of the entire coast as well as the regular frequency of the surveys make these data highly valuable for large-scale analysis and the establishment of geomorphological indicators to describe spatial variability of the inter-annual evolutions of the intertidal and supratidal beach systems along the coast.

This contribution highlights the work carried out recently on the basis of LiDAR data for the implementation of semi-automatic methods to determine the coastline position as a synthetic indicator commonly used for beach evolution description. The advantages and limits related to automatic detection of coastline position will be developed. Other indicators of geomorphological evolution are studied at the scale of the sedimentary sub-cells of the Aquitanian sandy coast, in particular the differences in volumes between two years in the form of a sedimentary budget, the appearance of dune erosion scarps and, conversely, the formation of incipient foredunes, or the evolution of the dry beach width. These various indicators are related to the hydrodynamic variables and show the complexity of responses of the subaerial part of beach systems at regional scale.

Mots clés : Aiborne LiDAR, coast line, dune foot, erosion, Observatoire de la côte Aquitaine