



# Morphodynamics of nearshore rhythmic sandbars in a mixed-energy environment (SW France): I. Mapping beach changes using visible satellite imagery

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Auteur	Lafon, Virginie [1], Apoluceno, D. De Melo [2], Dupuis, H�el�ene [3], Michel, Denis [4], Howa, H�el�ene [5], Froidefond, Jean-Marie [6]
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Mots-cl�s	mapping [7], spot [8]
R�sum� en anglais	<p>This paper presents a new method to analyze the morphology and migration of shallow water sandbanks based on the retrieval of maps from high-resolution Spot satellite imagery. This approach was applied to the study of intertidal ridge and runnel systems and subtidal crescents that border the southwest coast of France. Maps were obtained from 16 Spot images recorded between 1986 and 2000. Ridge and runnel shapes, with regard to a reference level, were delineated using a watercolor reflectance code parameterized and validated with field data. Crescent plan shapes, which appear on the images due to water transparency or breaking-induced foam, were directly extracted. The spatial maps show that, in conformity with field surveys, the mean alongshore spacing of intertidal systems and crescents range from <math>370 \pm 146</math> m (variability is indicated by standard deviation) to <math>462 \pm 188</math> m, and from <math>579 \pm 200</math> to <math>818 \pm 214</math> m, respectively. Several couples of images also show that ridge and runnel systems and crescents move in the longshore drift direction (southward) by about 2.4-3.1 and 1 m day<sup>-1</sup>, respectively. Alongshore migration rates of intertidal systems are confirmed by field surveys, whilst crescent dynamics cannot be validated because there is no in situ data available. To complete these measurements, an analysis of the influence of wave climate on both the shape and movements of these rhythmic sedimentary patterns is proposed in a companion paper.</p>
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- [7] [http://okina.univ-angers.fr/publications?f\[keyword\]=8261](http://okina.univ-angers.fr/publications?f[keyword]=8261)
- [8] [http://okina.univ-angers.fr/publications?f\[keyword\]=1998](http://okina.univ-angers.fr/publications?f[keyword]=1998)
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