

# COLLOQUIUM

Pierre et Marie Curie  
UFR de Physique

## COASTLINE PATTERN FORMATION, RESPONSES TO CLIMATE CHANGE AND COUPLINGS WITH HUMAN DYNAMICS

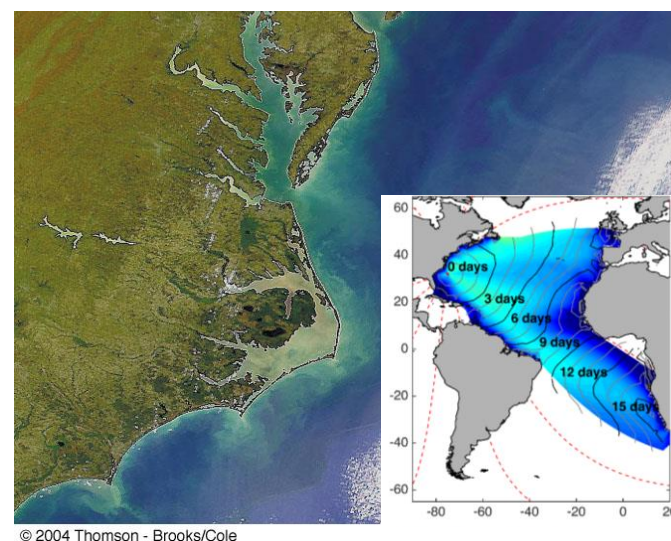
**Mardi 23 Octobre 2018**  
**à 16h30**

Campus Pierre et Marie Curie - Amphi 24

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Water waves involve fluxes of momentum and energy that transport sediment along the shore. The flux toward shore of alongshore momentum depends on coastline orientation (relative to the wave propagation direction). Spatial variations in coastline orientation, therefore, are associated with gradients in alongshore sediment flux. Divergences in alongshore sediment flux cause coastline erosion, and convergences cause accretion. i.e., coastline shape determines the pattern of sediment fluxes that in turn change coastline shape. This 'morphodynamic' feedback can produce instabilities leading to the growth of large-scale coastline features. In numerical experiments, finite-amplitude interactions then lead to a variety of coastline shapes, which are functions of wave climate (angular distribution). Changes in wave climate arising from changes in storm climate tend to reshape coastlines. In a case study, hindcasts of associated changes in shoreline erosion patterns are consistent with historical observations, opening up the possibility to forecast future coastal erosion 'hot spots.' However, on developed coastlines, couplings between human dynamics and coastline dynamics must be considered.



La conférence sera précédée d'une pause café à 16h.

Ce séminaire d'intérêt général est consacré à la physique contemporaine et aux disciplines connexes. Il est destiné à un large auditoire d'étudiants, en particulier de master ou en thèse, d'enseignants et de chercheurs.