

## Recent evolution of the coastline in the Gulf of Guinea. Example of Togo and Benin (2000-2015)

Pierre Ozer, Yvon-Carmen Hountondji, Florence de Longueville

The land-sea interface is an extremely fragile environment. On a global scale, coastlines are threatened by a multitude of factors sometimes natural and mostly anthropogenic. Thus, in addition to the disruptions to coastal areas by port facilities, dams, sediment sampling on the beach or urban sprawl, there are the consequences of climate change, including rising sea levels. The objective of this study is to assess recent trends (between 2000 and 2015) of the coastline in Togo and Benin where more localized studies show that sandy beaches are experiencing major changes (accretion or erosion) in recent decades. Coastal dynamics are analyzed using very high spatial resolution images available in open access on Google Earth; the coast is studied by section of 1 km on a coastline of 170 km (pk1 to pk170) by calculating the average change in meter per year since 2000. Analysis of coastal Togo and Benin shows that only 34% of the coastlines (often protected) are stable and that accretion is recorded only upstream of harbor infrastructures (14%). Elsewhere, coastlines undergo erosive processes (52%), sometimes exceeding annual average retreats of 10 m / year. In such conditions, villages have disappeared during the past decade and a large number of people have been displaced.

**Pierre Ozer** (pozer@ulg.ac.be) has a PhD in geographical sciences (University of Liège, 2000). He has worked for various institutions such as the Università degli Studi di Genova (Genoa, Italy), the University of Luxembourg, the United Nations Food and Agriculture Organisation (FAO, Rome) and the Luxembourg University Foundation. In 2009 he was elected full member of the Royal Academy for Overseas Sciences, Brussels. He led the Belgian scientific delegation to the United Nations international negotiations to combat desertification (UNCCD COP-9). Pierre's main research interests include desertification processes, natural risk and disaster management, the impacts of environmental changes on public health and adaptation strategies to climate change. Pierre Ozer teaches these subjects at the University of Liège, but also in the Università degli Studi di Genova (Italy), Università degli Studi di Sassari (Italy), the University of Angers (France), Universitatea din Bucuresti (Romania) also at the University of Parakou (Benin) and the University of Djibouti (Djibouti). In 2016, he launched the specialised Master degree in risk and disaster management at the University of Liège in collaboration with the Catholic University of Louvain. He is the author of five books and over 300 scientific and 'public' publications in those fields. Pierre is the scientific coordinator of The Hugo Observatory.

**Yvon-Carmen Hountondji** holds a Master degree in agronomy from the Abomey-Calavi University in Benin. Later, he succeeded in a specialised Master degree in natural risk management from the University of Liège and made a PhD on environmental sciences at the University of Liège and the University of Parakou, Benin. He worked for different universities and is currently Professor at the University of Parakou. Yvon-Carmen is an Associated member of The Hugo Observatory.

**Florence de Longueville** works at the Department of Geography of the University of Namur, Belgium. She holds a Master degree in Geography from the Université catholique de Louvain, a specialised Master degree in natural risk management from the University of Liège and a PhD from the University of Namur. Florence is an Associated member of The Hugo Observatory.

