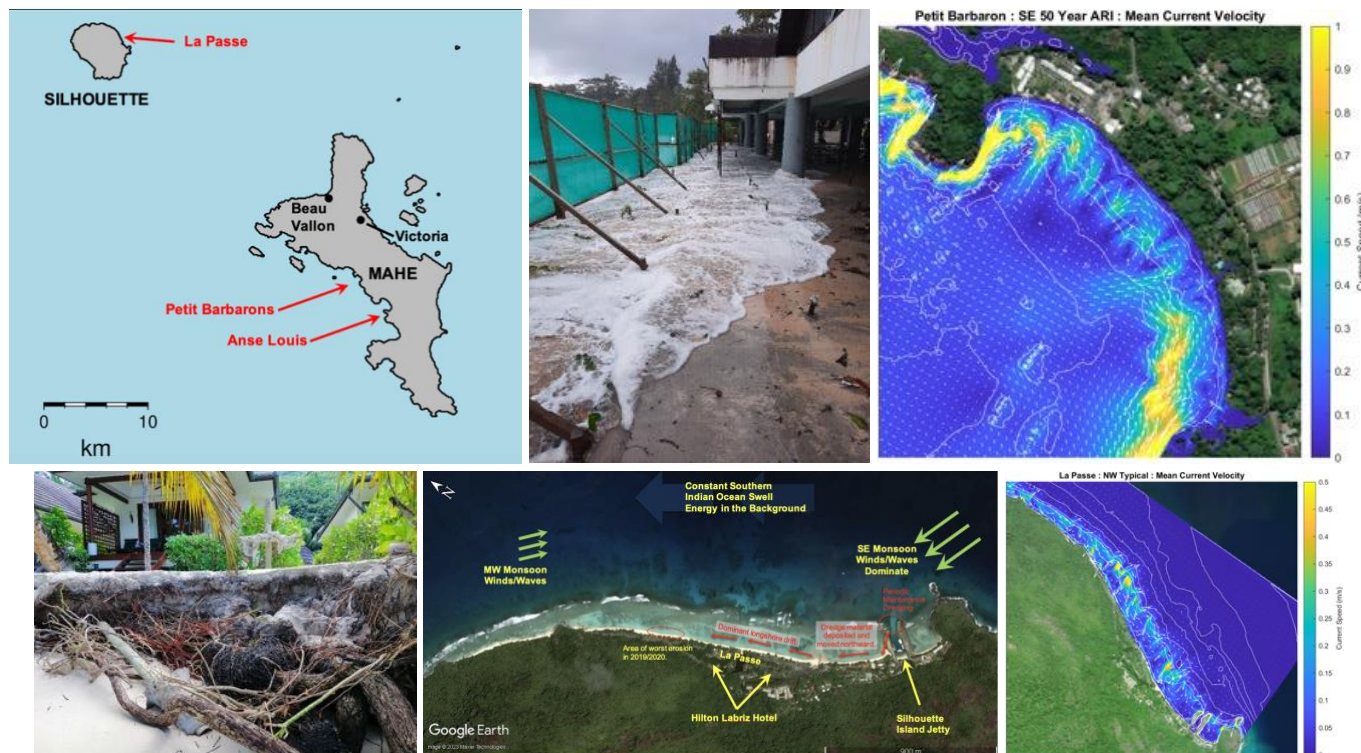


# COASTAL MODELLING AND ASSESSMENT OF SOLUTIONS FOR SITES IN SEYCHELLES

SEYCHELLES



(Top row L to R) Location of the study sites in Seychelles, overtopping at the Avani Hotel, Petit Barbarons and modelled currents. (Bottom L to R) Severe erosion at Hilton Labriz, La Passe, overview of coastal processes, modelled current patterns at La Passe.

## PROJECT INFORMATION:

**Location:** Seychelles

**Client:** SeyCCAT – Seychelles Climate Change and Adaptation Trust

**Project Date:** 2023

## SCOPE OF WORK:

- Historic Shoreline Analysis
- Numerical Modelling
- Feasibility Design
- Detailed Reporting

## PROJECT DESCRIPTION:

Following on from their landmark study of erosion and coastal flooding in Seychelles for the World Bank, the ORCAS team were engaged by the Seychelles Climate Change and Adaptation Trust (SeyCCAT) to investigate the causes of erosion and coastal flooding at three important sites: The Hilton Labriz at La Passe on Silhouette, the Maia Resort at Anse Louis and Avani Resort at Petite Barbarons. Each of these sites suffered severe erosion and/or storm wave flooding during the intense NW Monsoon season of 2019-2020. As with our other studies in Seychelles, we showed that the observed effects were the results of the combined effects of increased storminess and higher water levels acting concurrently on the Seychelles coastline. Our deterministic modelling of extreme events was able to reproduce the observed effects in terms of coastal flooding and erosion hotspots at the study sites, providing support for the methodology. One key observation from our site visit was that all of the beaches had recovered naturally in the two years since the strong erosion event.

In terms of the potential solutions, we modelled several options for each site. At Petite Barbarons, the primary issue is wave induced overtopping. This type of problem is difficult to address with a simple structure since the underlying cause is elevated sea levels caused by infragravity waves. Nevertheless, we showed that offshore breakwaters could be effective in reducing wave runup. However, we also emphasised that the resort needs to consider other large scale adaptation strategies for their facilities on land. At Anse Louis, we trialled options aimed at augmenting the wave dissipating characteristics of the natural reef. At La Passe we recommended several practical beach management activities including more targeted redistribution of the sand that is dredged each year from the marina and suggested that efforts should be focused to find access known deposits of high-quality beach sand that are located offshore for use in beach renourishment activities.