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### **From the Landslide to the Coast; Thai-coast: an integrated project research looking at the links between Sediment Mobilisation in Upper Catchments to its Redistribution on the Shoreline under the Pressure of Climate Change in Thailand**

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#### **Abstract**

In Thailand erosion and flooding affect more than 11 million people living in the coastal zone. The Ministry of Natural Resources and Environment of Thailand has calculated that each year erosion causes a loss of 30 km<sup>2</sup> of coastal land in the country and predicts that sea level rise will impact at least 3,200 km<sup>2</sup> of coastal land, through erosion and flooding. This study aims at investigating the link between sediment availability from 6 river catchments in the south of Thailand and the coastal evolution directly downdrift of their mouth.

Because of the large spatial area of the study, landslide event and coastal erosion data analysis was undertaken using remote sensing methods (aerial photographs and satellite imagery). Most of the data collection and processing was done through automated machine learning tools utilising Google Earth Engine. This methodology has the advantage of rapid computing of large datasets. Thus, 20 years of data at various time scales (sub-daily, seasonal and yearly) and resolutions (sub-metric to 30m) were processed between 2000 and 2019 in a matter of days.

Additionally, core samples taken in the mangroves near the river mouths were used to identify markers of landslide events and associated sediment cascades based on grain size distribution and <sup>210</sup>Pb dating.

Preliminary results show that coastal mangroves are much more dynamic than sandy beaches with evolution rates respectively ranging from up to -70 m/year to 21.7 m/year and from -21.2 m/year to 7.9 m/year. Generally, coastal environments on the Andaman Coast are much less dynamic than those on Gulf of Thailand coast.

Grain size analysis shows variations of the D<sub>50</sub> throughout the sediment recordings indicators of landslides and rainfall events. <sup>210</sup>Pb dating allows for temporal calibration of the sediment records.

#### **Keywords**

Sediment transport, Landslide, Coastal Change, Climate change