

# ANALYSIS OF ALONGSHORE BUDGETS OF SEDIMENT TRANSPORT ALONG THE WEST COAST OF SRI LANKA

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**ABSTRACT:** The south-west coast of Sri Lanka has suffered serious erosion problems due to human activities such as construction of coastal structures and extractions of river bed gravels for construction materials. Since the dominant waves on the west coast of Sri Lanka are generated by south-west monsoon, resulting northward sediment transport rate should be largely reduced in the vicinity of the south west coast of Sri Lanka. While clear evidence of serious erosion is not yet well detected, erosion in the south should affect on the northern west coast of Sri Lanka. The goal of this study is thus to investigate sedimentary characteristics along the west coast of Sri Lanka based on integrated analysis of: satellite images; feldspar thermoluminescence (TL) and numerical shoreline model.

Shoreline locations at different time ranging from the year of 1956 to 2010 were first extracted based on aerial photographs and satellite images: optical and microwave. Comparisons of these shorelines revealed significant sedimentation around Kalpitiya, the northern part of the west coast, and severe erosion in the central and southern part of the coast. Due to the cloud cover constrain, analysis of ALOS PALSAR data captured the more detailed shoreline dynamics around Kalpitiya with frequencies of several months.

Sand samples were collected along shoreline of the west coast of Sri Lanka and TL of each sand grain was measured. Obtained TL showed monotonous northward decrease and this feature indicates the dominant northward sediment transports and also a lack of sediment supply in the central and northern part of the coast.

Based on all these findings, shoreline model was finally applied for predictions of the alongshore sediment budgets. The shoreline model reasonably explained the various observed features such as decrease of the northward sediment transport and extension of erosion area in the northward directions.