Data Article

Data on nearshore wave process and surficial beach deposits, central Tamil Nadu coast, India

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ABSTRACT

The chronicles of nearshore morphology and surficial beach deposits provide valuable information about the nature of the beach condition and the depositional environment. It imparts an understanding about the spatial and temporal relationship of nearshore waves and its influence over the distribution of beach sediments. This article contains data about wave and sediment dynamics of the ten sandy beaches along the central Tamil Nadu coast, India. This present dataset comprises nearshore wave parameters, breaker wave type, beach morphodynamic state, grain size distribution and weight percentage of heavy and light mineral distribution. The dataset will figure out the beach morphology and hydrodynamic condition with respect to the different monsoonal season. This will act as a field reference to realize the coastal dynamics in an open sea condition. The nearshore entities were obtained from the intensive field survey between January 2011 and December 2011, while characteristics of beach sediments are examined by the chemical process in the laboratory environment.

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Specifications Table

Subject area	Earth science
More specific subject area	Oceanography
Type of data	Table, figure
How data was acquired	Field survey, sample collection and laboratory analysis
Data format	Raw data collection and Analysis
Experimental factors	The raw sediment samples were dried overnight at 105 °C and treated by H_2O_2 and Dil. HCl for removal of organic and inorganic matters. Further, about 100 g of sediments were refined by coning and quartering method for the purpose of grain size analysis.
Experimental features	Computational process: breaker wave type, beach morphodynamic state were computed from nearshore data by using ONWET statistical tool. Mechanical process: The size of grain distribution is classified by sieving the sample using Ro-top sieve shaker. Chemical process: Heavy and light minerals were isolated by addition of Bromoform ($CHBr_3$) heavy liquid.
Data source location	A 51 km coastal stretch between Thirukadaiyur and Velankanni, central Tamil Nadu coast, India
Data accessibility	Data is with this article

Value of the data

- This dataset will act as guide for researchers, scientists, engineers, and environmentalists to realize the beach and nearshore process in a year under different monsoonal conditions.
- The nearshore wave data reveals the dominating forces that act on the shoaling region and its impact on the beach morphology.
- The breaker wave type and beach morphodynamic state provide a significant way to look at the effectiveness of nearshore waves with respect to the monsoon seasons.
- The grain size data highlights the wave energy condition and longshore sediment drift displayed in the coast.
- The weight distribution of placer deposits provide an insight to deposition of economic placer minerals in accordance with the beach and wave condition.

1. Data, experimental design, materials and methods

1.1. Data

This report includes morphometric, hydrodynamic and granulometric dataset of the sandy beaches along the central Tamil Nadu coast, India. The study area extents upto 51 km of the coastal stretch, located between Thirukadaiyur in the north and Velankanni in the south. It lies in Karaikkal district and also parts of Nagapattinam district. Totally, ten stations were fixed with an approximate interval of 5 km, between Thirukadaiyur and Velankanni (Fig. 1). The beach and wave characteristic of these ten sites is presented in Table 1. Data was collected in this region on a monthly basis from January 2011 to December 2011 which includes monsoonal seasons such as northeast (NE) monsoon (November to February), non-monsoon (March to June) and southwest (SW) monsoon (July to October). The entire dataset is displayed in ten Excel files. Each file represents each station of the present study area. The Excel file contains nearshore data such as wave period (T), breaker wave height (Hb), longshore current velocity (Vc), surf zone width (W) and particle settling velocity (Vs).