

Demonstration of the synergy between multi-sensor satellite data, GIS and ground truth to explore the archaeological site in Talakadu region in South India

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Abstract: Talakadu is an archaeological site in southern India situated on the bank of river Kaveri. The peculiar configuration of the river flow has accumulated large amount of river sand on the curve and the annual monsoon wind has carried the fine sand to the north east direction over the last few centuries burying the site. There are five well-known temples, which were constructed between 10th and 14th century AD. The Directorate of Archaeology and Museums of Karnataka together with University of Mysore conducted excavations at 7 locations (numbered TK 1 to 7) in Talakadu from 1992-93. Most of the trenches yielded fruitful results: in consequence the nature, history and archaeology of the site came to be better understood, though only about less than 1% of the total sand covered area has been excavated. The sand accumulation vertically ranges between 2 to 30 feet covering an area of 4.5 km sq. In early 19th century trees were planted in this area to arrest the movement of wind-blown sand.

This paper deals with the integration of information derived from remote sensing data and excavation. The study has analyzed multi spatial, spectral and temporal satellite data using digital interpretation techniques to understand the migration of the River Kaveri, and shape, pattern, texture, colour and association of archaeological sites excavated so far in the study area. GPS survey of the area was conducted to determine the exact coordinates of existing temples and excavated areas in order to establish spatial relation between known locations and the potential locations (seen as anomaly on the satellite data) that may contain buried archaeological remains and to normalize the positions/locations. The present study had analyzed the information got from two domains and thus interpreted the features leading to identifying four anomalous features for further exploration.

Keywords: Remote sensing, multi sensor studies, ground truth, GPS, GIS, Talakadu site.