

Sea Level Rise in the Sangam Literature

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ABSTRACT

Coastlines have played a major role in human settlement since the beginning and continued till today. The changes in shoreline directly affect the civilisation along the coast. Major port towns that existed along the coast lines have played a major role in maritime activity. Ancient literature furnishes rather meager evidences directly bearing on Indian Shipping and ship building; it abounds with innumerable reference to sea voyages and sea borne trade and the constant use of the ocean as the great highway of international trade and commerce. The deluges had usurped vast area of the land in the Bay of Bengal, had taken away many ports. Ancient literatures refer to the submergence of prosperous cities. The Kollam Eyirpattinam, Arikkamedu, Kaviripoompattinam, Thondi, Marunkai, Korkai are the port cities that had been lost under water due to coastal erosion sea level changes and neo- tectonic activity.¹ But the coastal belt between Kodikkarai and Thoothukudi usually does not experience such calamities regularly. As the force of the north- east monsoon was not severe in this belt, due to a natural barrier in the form of Srilanka, and the water depth is so shallow to allow the deluge to occur.

Introduction

An onshore exploration was carried out along the southern Tamil Nadu coast and located several ports near Nagarkoil and in Rameswaram Island which include Puttanthurai, Manakudi and Ariyagundur. The survey was carried out at well-known ports at Korkai, Alagankulam, Tranquebar and Poompuhar. Presently, Korkai and Alagankulam are located far hinterland while remaining ports are situated right on the coasts and partly submerged under the sea. The assessment of the coastal erosion hazard and mitigation is an estimation of a coastal area susceptible to erosion, based on a number of factors such as shoreline changes, geology, geomorphology, rate of sea level rise, waves and current pattern, human impact on coast etc. Sea level rise is expected to increase the vulnerability of coastal areas to flooding for several reasons. A rise of 1 metre provides a higher base for storm surges and would increase the frequency of flooding associated with storms.³ This paper explains sea level change on the east coast of India with reference to Tamil Nadu ports.

The Sangam Literature And Sea Level Rise

Tamil possesses its own body of ancient literature, the corpus of Cankam literature, which contains flood myths. The Tamil tradition about a lost land was committed to writing after the 10th century by commentators like Nakeerar in his commentary on Iraiyanar Akapporulurai. Nachinarkiniyar and AdiyarkuNallar followed him. Those who wrote the commentaries exaggerated the extent of land that was submerged by the deluges referred to in Silappathigaram and Kalithogai. According to the commentators, there were 49 countries (nadu) in the lost land of Kumari and the distance between the river Kumari and the river Pahruli that flowed in the lost land was 700 katham, which according to one calculation is about 770 km. Ancient literary sources exist that provide possible explanations for the loss of these littoral settlements: like the Sangam literature which refers to the submergence of Poompuhar; or the popular beliefs regarding the submergence of the temples of Mahabalipuram; and the “KumariKandam” traditions of Tamil Nadu.⁴ Sangam literature consists of anthologies of bardic corpus with accepted time span of ca. 3rd century B.C.E. and 3rd century C.E. based on archaeological, epigraphical, numismatic and literary parameters.

Tolkappiam, the age old grammar, the first available treatise of Tamil grammar and other eighteen monumental literary works of the Sangam period and Silappathikaram and Manimegalai the twin epics, the date of which is established beyond doubt as the second century AD substitute ample

evidences for the sea-level changes that had changed the southern peninsula to a very big level. The coastal tract from Visakappattinam to Kodikkarai [Nagappattinam district] regularly faces cyclones.⁵

This literature is classified as ettuththokai and paththuppaattu. The ettuththokai is the eight different collections of small poems of three lines to more than 50 lines. kurunthokai, narrinai, akanaanuuru, puranaanuuru, aingkurunuuru and pathirppaththu are the ettuththokai poems. The paththuppaattu collection has the ten songs, each one of which has more than a few hundred lines, where the poet describes about a hero or a chief or a king and his country.⁶ Porunaraarruppatai, mathuraikkaanjai, netunalvaatai, malaipatukataam, perumpaanaarrup patai, pattinappaalai, cirupaanaarruppatai, mullaippaattu, kurinjippaattu and tirumurukaarruppatai, are the paththuppaattu poems. These eight anthologies and ten songs were the poems of sentiments and exploits of the akam and puram or somewhat simplified poems of erotic experience and heroism. The settings alluded to in the poetry provide ample information on various spheres of maritime activities. A monograph on ships and shipping of the Tamil region has also been attempted. However, the context analysis of such terms, size and functions of the vessels from the literature and their possible provenance have not been attempted.

KumariKandam or Lemuria is the name of a supposed sunken landmass referred to in existing ancient Tamil literature. It is said to have been located in the Indian Ocean, to the south of presentday Kanyakumari district at the southern tip of India.⁷ Multiple ancient and medieval Tamil and Sanskrit works contain legendary accounts of lands in South India being lost to the ocean. The earliest explicit discussion of a tsunami in local language as *katalkol* (“seizure by ocean”) of Pandyan land is found in a commentary on *IraiyanarAkapporul*.

This commentary, attributed to Nakkeerar, is dated to the later centuries of the 1st millennium CE. There are a few references in Tamil Sangam classics to a landmass that was swallowed up by the sea. The writings of WisharCerve and the maps of Scott Elliot were brought into Tamil writings by **K.Appadurai**, in his book **Kumari Kandam Allathu**

Kadal Konda Thennadu (Kumari Continent or the Submerged Southern Land, 1941). The term Lemuria found its way into certain Tamil textbooks and was given the Tamil name Kumarikandam, or continent of Kumari. Names from Tamil classics were given to the mountain ranges, rivers, places and areas. Historians consider the first three centuries A.D. as the Sangam period.⁸

The geo-political region of Tami;ākam, or the Tamil lands was defined and delimited, not just by Cankam poets but by later Tamil nationalists, is key the ways in which catastrophic flood came to be understood in the Tamil regions of southern India.

VamavēEkamateI kumari/āyimait/tami;kū[umnalulakattu:

“Between Venkata in the north and Kumari in the south, is the good earth where Tamil is spoken.” So says PaGampāraGār in his in his preface to Tolkappiyam.⁹

A somewhat more expansive definition is found in the treatise

KākkaippāmiGiyam, offered by David Buck and K. Paramasivan in The

Study of Stolen Love, states:

In the north and the south, the west and the east, Venkatam, Kumari, and the sweet-water seas: The range of a book lies within these four bounds when one expounds with clarity.¹⁰

Tamil Sangams

Assemblies or Academies or Learned gatherings called Sangams were founded to foster the Tamil language. Each was shifted around due to “Piralayams” or “Great Deluges”. Three such Sangams, called ‘Talaicchangam’ (the first Tamil Sangam), ‘Idaicchangam’ is the middle one and ‘Kadaicchangam’ (the last) had poets, musicians, kings and nobles as members. The reference to the tradition about three Tamil Sangams (as assemblies or academies) is noted in IraiyanarKalviyalurai, attributed to Nakeerar. According to this verses pointed out the great loss and many poets lament over this. But this phenomenon was not uniform throughout the coastal area of Tamil Nadu, but was confined to some parts of the Coromandel Coast only.

The first sangam or commentary, the Pandya kings patronised Tamil poets in their capital, where the Sangam was located. The early sangam Mudalsangam was held at Southern Madurai (Then Madurai). The first Pandya capital city was existing in legendary KumariKandam was submerged into sea. And the southern part of the Pandian Kingdom was eroded and obliged the southern king to seek a new capital.¹¹ The king did not learn by experience and shifted to another coastal town (Kapatapuram on the east coast near Korkai) his new capital Kapatapuram. When the sea swallowed Thenmadurai, the capital was shifted to Kapatapuram and the second or IdaiSangam was established. The second sangam called Idaisangam

was also engulfed by the sea. Tradition, it seems, was more certain regarding the second academy, presided over by Tirumaran the Lame, “whom the sea took,” who was both the last patron of the Middle Cankam and the first patron of the Final Cankam. However, the survivors, saving some of the books, were able to relocate further north. They established a Second Sangam in a city called Kavataparam which lasted 3,700 years. The same fate befell this city as well, when it too was swallowed by the sea and lost forever all its works with the sole exception of the Tolkappiyam, a work on Tamil grammar. Following the inundation of Kavataparam, the survivors once again relocated northward in a city identified with modern Madurai in Tamilnadu, then known as Vada-madurai (Northern Madurai). The Third Sangam lasted for a period of 1850 years and most scholars agree that that Sangam terminated around 350 AD.¹²

Some of the important references from Tamil Sangam classics are as follows:

- 1) In Purananuru 9, verses 10-11 are interpreted as a reference to a Pandya king who ruled a part of the lost land where the river Pahruli flowed¹³.
- 2) In Silapathigaram (KaduKaanKaathai) (11:17-22) is a reference to a Pandya king who won over kingdoms in Imayam (the Himalayas) and Gangai (the Ganga) to compensate for his land lost to the deluge. Tamil scholars such as DevaneyaPaavaanar consider the deluge under reference to be the one that destroyed Thenmadurai.
- 3) According to AdiyarkuNallar, poem 104:1-4 from MullaiKalithogai indicates that the Pandya king resettled the survivors of the deluge in certain Chera and Chola territories. It is portrayed by certain Tamil writers that the series of deluges destroyed the Tamil civilisation and the survivors spread out and civilised other parts of the world.¹⁴
- 4) Kalithogai, a Tamil poetic work, is the sixth book of Ettuthokai, a Sangam literature anthology. Kalithogai contains one hundred and fifty poems and were written by various authors. Nachinarkiniyar (6th 7th century CE) has annotated this work. It contains many scattered references to KumariKandam or rather a submerged landmass in the region of our study. It mentions about a third capital of the Pandyas named Manavuur after Kapatapuram was submerged and before Madurai was established. In the Mullai part of Kalittokai (104:1-4) there is historical narration of Three Academies in the commentary to IraiyanarAkapporul. Here there is mention of two rising of the sea. On account of

Kapatapuram being swallowed by the sea, Manavuur, that was on the banks of Kumari and further north became the new capital of the Pandyas.¹⁵

Most of the historians are of the view that the dates of early two Sangams periods as mythical. The legendary dates mostly are not in accordance with the historical dates. Scholars find it very difficult to fix the exact date of the Sangam period.¹⁶ According to G. Vijayavenugopal, epigrapher at the École Française d'Extrême Orient (EFEO) in Pondicherry, the Kalaviyal is the only Cankam text to mention a deluge sweeping away parts of Tamilakam, an opinion seconded by Thomas Lehmann.

Poompuhar:

Poompuhar, also known as Kaveripoompattinam is situated (Lat. 11° 08' 33" N and Long. 79° 51' 31" E) on the east coast of India. Poompuhar one of the most notable ancient Chola port played a vital role in maritime history of Tamil Nadu specially, during Sangam period. Poompuhar or Kaveripoompattinam is located at the point where the river Kaveri joins the Bay of Bengal¹⁷. Several texts of Sangam literature (3rd century B.C. to 3rd century AD) such as Siiappathikaram,

Pattinappalai and Manimekhalai mention about the important port towns of Tamil Nadu including Poompuhar the port capital of early Cholas. Cilappadikaram mentions that the city was spread over an area of 4

Kavatham, approximate to 30 square miles with about 60,000 families in 30 villages. The Manimekhalai further mentions that the Chola king had lost his son and in his great grief he forgot to celebrate the annual Indra festival (Nandakumar, 1989). This enraged the goddess Manimekhalai who caused the city to be swallowed by the sea. Though the reference is only to, a supernatural incident, it may be taken as an echo of some actual sea erosion due to high tidal wave/ storm surge that engulfed and lashed out the city.¹⁸

There was a heavy loss of land in the south, the grand old port city of the Cholas, 'Kaveripoompattinam' otherwise called 'Poompuhar' was hurt by another deluge and had carried away Poompuhar. Kaveripattinam in Tamil Nadu are noted not only for brisk maritime trade but also for the spread of the Indian culture in foreign land from the beginning of the Christian era up to the 11th Century A.D.¹⁹. Sattanar the author of Manimekalai has recorded, this catastrophical deluge thus:

The city forgot Indira's festival Goddess Manimekala was angered She cursed: 'Let the beautiful city be destroyed by the sea' Puhar was ruined. As the sea flowed over the large city like Indra with long lance-wielding hands,

The king departed from thence all alone uprising waves engulfed noble Puhar²⁰. The marine archaeological explorations around Poompuhar brought to light the remains of terracotta ring wells, brick structures, storage jars in the inter tidal zone and brick structures, stone structures, pottery from offshore explorations strongly support the habitation sites.²¹ There are several references suggesting the shift of shoreline at Poompuhar and Tranquebar, which may be one of the reasons of its submergence. The main process directly responsible for shoreline change is influenced by the waves. Cyclones during northeast monsoon would considerably increase the volume of sediment transport towards south with a short spell. It is noticed that for the occurrence of every cyclone there was a permanent loss of beach due to erosion.

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Alagankulam

A famous ancient port town at Alagankulam is situated about 3 kms from the shoreline on the bank of river Vaigai. Presently, a channel which is about two km from ancient site is joining with sea which could have been near to the site in bygone age must have been used for plying the boats.²⁴ Archaeological excavations at Alagankulam suggests that Alagankulam had active trade contacts with Romans²⁵.

Korkai

Korkai is referred in the early Tamil Sangam literature and also mentioned in the notices of the classical geographers as an important port for pearl fishery. Ancient site is located at the mouth of the Tambraparani. Korkai was an important for pearl fishery is confirmed by the find of innumerable pearl oysters in the various levels of the site Kolkhoi, an emporium described by Ptolemy and an emporium of the pearl trade, mentioned by the author of the Periplus of Erythraean Sea²⁶, as situated on the seacoast. The site has been identified with present Korkai which is situated 7 kms inland. McCrindle says that "originally Korkai was situated on the sea coast and later the sea regressed and it was not suitable for carrying out trade". Presently, Korkai is located about 25 km south of Tuticorin and about 7 km from the shoreline. This was the ancient capital of Pandya king. The excavation at the site revealed the evidence on the trade between India and Mediterranean countries in 3rd century BC to 3rd century AD²⁷.

Rameswaram Island

Northeast shore of the island was surveyed where the Department of Archaeology, Government of Tamil Nadu, recently located an archaeological site. The archaeological site is spread over 2 km along the coast and very badly is being destroyed by the sea. The sea waves are hammering the section. One can collect a large number of potsherds from the site. A few potsherds consolidated with beach rocks were also observed. A huge deposit suggest that site was occupied for a long period. The location of the site suggest that site must have served as safer harbour. The discovery of Chinese pottery suggests trade relations with east. Here a clear indication of advancement of shoreline²⁸.

Mahabalipuram

It came to the glory only after the Pallava started building the structural and monolithic temple architecture in this area. Mahabalipuram was dotted with “Seven pagodas’ once up on a time as referred by the earlier mariners (‘pagodas’ refer to the top-most part of a temple,

i.e. *kalash*).²⁹. Now all but one, Shore Temple’ is standing tall overlooking the Bay of Bengal, rest all believed to have been submerged in the sea as per the local traditions and the foreign accounts. It is generally believed that out of a total of seven temples originally constructed, all but one have submerged in the sea over a period of time and what is now known as ‘Shore Temple’ is remaining³⁰. European travellers in the 18th and 19th century have recorded this folk tradition. Mahabalipuram was also a famous centre of Pallava art and architecture and is said to have been a seaport right from the beginning of the Christian era.

Mahabalipuram was a place of pilgrimage even before the Pallava period and the Pallava king NarasimhaVarman built these beautiful temples, including the present Shore Temple, during the 8th century AD. An 8th century Tamil text written by TirumangaiAlwar who described this place as KadalMallai, ‘where the ships rode at anchor bent to the point of breaking laden as they were with wealth, big trunked elephants and gems of nine varieties in heaps’³¹. Some of these structures are observed on raised platforms of existing natural rocks. The structures were noticed mainly in the area close to the reef and are thickly covered with marine growth. These structures may be remains of huge complexes or the temples of seven pagodas.³² As Pallavas encouraged the temple architecture at Mahabalipuram during 8th century AD, these structures may be assigned to be belonging to the same period. Mahabalipuram has served as a port during the Pallava period. Part of earlier Mahabalipuram town may have been

submerged in the sea. The possible causes for submergence of these structures may be shoreline changes owing to erosion³³. Further, investigations are required to understand the nature of the submerged structures and their dates. Mahabalipuram was famous for its architecture in the past and will continue to be so as a centre for art and architecture, if it will survive nature's fury. Recent underwater archaeological explorations in the area have revealed many structural remains including fallen walls, scattered dressed stone blocks, a few steps leading to a platform and many other structural remains. The structures were badly damaged and scattered owing to strong underwater currents and swells.³⁴

Conclusion

Scientific study of the natural hazards and coastal processes of the Indian coast has assumed greater significance after the December 2004 tsunami because the country learned lessons on the impact of natural hazards in terms of high damage potential for life, property, and the environment. The unusual natural disasters and continuous engineering activities near a coastal region are effective in inducing rapid changes on coastal landforms resulting coastal hazards. Development activities, global warming, climate change and sea-level rise not only introduce any new types of coastal hazards, but they also stimulate the existing hazards. The southern coastal Tamil Nadu of India faces severe such threats due to rapid changes in geology and geomorphology, sea-level change, tropical cyclones and associated storm surges. Furthermore, global climate change and the threat of an accelerated sea-level rise exacerbate the already existing high risks of storm surges, severe waves, and tsunamis. Over the last 100 years, global sea level rose by 1.0–2.5 mm/y. Present estimates of the future sea-level rise induced by a climate change range from 20 to 86 cm for the year 2100, with a best estimate of 49 cm. It has been estimated that a 1-m rise in sea-level could displace nearly 7 million people from their homes in India.

The length of its Coastline is about 1050 km with its significant portion on the east coast bordering Bay of Bengal. The coast line starts from Pulicat along the east coast and extends up to Erayamathurai in Kanniyakumari District and consists of Estuaries of ecological importance, Major and Minor ports, Fishing harbours, Monuments of international heritage, Tourist locations, Pilgrimage centers, etc. A coast is said to be eroding when the loss of sediments exceed the supply.

The First and Second Sangams were a golden age of literary, artistic and musical creativity amongst the Tamils, we are looking at a civilization which had reached a high level of development, organization and cultural advancement from as early as 11,000 years ago from today.

Many such port towns that existed on the coastal region vanished or were submerged in the sea, maybe due to coastal erosion, sea level changes and neo-tectonic activities. Ancient literary sources exist that provide possible explanations for the loss of these littoral settlements: like the Sangam literature which refers to the submergence of Poompuhar; or the popular beliefs regarding the submergence of the temples of Mahabalipuram; and the “KumariKandam” traditions of Tamil Nadu. It may well be impossible to search for their roots or find proof that such beliefs are based on facts. Nevertheless, many archaeological explorations have been taken up in an attempt to verify the historicity of these traditions.

There was no historical evidence forthcoming to back them until very recently. Because, the works of these two Sangams were lost when the cities in which they were created were submerged by such inundations. If we had to rely on literary sources alone, our information would have been incomplete. The greatest handicap in the study of the history of sangam period is the absence of a definite chronology. We do not have continuous written records of the past because some have been destroyed with passage of time. Some records narrate falsification of data, some do not write the events as they were held but mention the impression of the event on the mind of the writer. Moreover the bias and exaggeration in the works of court poets does not give an objective assessment of the period the work pertains to.

It is at this stage that the actual remains of the past come to the rescue of the historians to form a fair and objective assessment of the events that took place in the past. Thus, in order to study Indian history in a comprehensive manner one has to depend on literary as well as archaeological sources which help us to form a complete picture of the ancient times. The information provided by literary texts if corroborated by archaeological remains helps the historian to improve the scale of historical authenticity and reliability of fact.

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