CHAPTER 2

HISTORY OF TROPICAL CYCLONES IN TAMIL NADU (1800-1900)

Climate is one of the many complex and subtly changing elements of the environment upon which human societies depend for their survival. In recent years, interest in historical climatology has grown considerably, and significant contributions have been made not only by natural scientists but also by historians (Annal school of thought especially Ladurie). This interest has arisen through an increased awareness of man’s susceptibility to the vagaries of climate, through the maxim of the actuarial approach to climatic forecasting.

It is useful to place a hundred years sample in context with the great catastrophes in history in which most deaths were caused by tropical cyclones and cyclonic floods. If the history of the last century is repeated it is not unreasonable to expect that the potential exists for a repetition of such catastrophes on the country. The magnitude of the impact will reflect progress in mitigation and community preparedness in the years ahead. One can argue that, by looking at the ways in which climate has affected societies in the historical past, it should be possible to identify more precisely the potential impacts (and successful adaptive strategies) that present and future climatic fluctuations can have on human societies. Such studies are free from contemporary political controversies and other obscuring factors. Global and regional climate changes will affect different societies and different segments within societies in a wide variety of ways. One means to determine the range of impacts is to undertake case studies on ways in which families, political institutions, and social sectors such as agriculture have been affected by changing or varying climates. Historical case studies of climatically vulnerable areas may be particularly useful in understanding societal adaptations.¹

¹ American Association for the Advancement of Science, 1980, p.p14
Tropical Cyclone Climatology of Southern India

In the Bay of Bengal, as is well known condition along the shore are more favorable to storm surges to attain enormous dimension specially when they coincide with the astronomical tides. Also the storm waves arrive as sudden rise of water sometimes as advancing well water and at other times in the form of bores with very steep points. The characteristic feature of the cyclone is peculiar in Bay of Bengal when compared with other seas. From the historical records, it is seen that there were instances when the height of the storm surges attained 10 meters or more, roughly equivalent to the height of a modern four storied building.2

The South Indian state of Tamil Nadu is one of the important maritime states of India. It is frequently subjected to cyclones and flooding in the coastal districts. Next to Andhra Pradesh, the coastal areas of Tamil Nadu experienced the maximum number of cyclones viz. Chengelpattu (including Chennai, South Arcot, Pondicherry), Tanjavur (including Puducottai, Ramanathapuram, Thirunelveli, Kanyakumari) are the most vulnerable areas.

Madras is subjected to various cyclones, generally in the early part of May, November, and at the end of October. They seem to travel up from the East South East and progress rapidly in the West and to the North-West direction till they touch the land, and then they assume a west or sometimes a west South West course. Their centers generally come on to the port of Madras. Their diameters are about 150 miles, and they revolve in a direction contrary to the hands of a watch, as do all cyclones north of the Equator. When the cyclone’s center comes right on to Madras, and thence takes a west course, the wind is first at north, increasing in violence for a few hours, and then a full or awful calm for half an hour or so, when the cyclones re-commences furiously from exactly opposite quarter, south. Usually the gale commences about North-North-West showing that the vortex of the cyclones bears about East-North-East. Vessels therefore, warned by the Barometer, hallow breaking surf, the threatening sky,

and the signals of the watchful Master Attendant, should at once put to sea. The course to steer, and fortunately it is one which the wind permits, is South-South-East to South East. In a few hours the vessel will probably have the wind moderate at West, and may, in fact it has been done, sail round the cyclone, the wind veering to south and then to east. Vessels at first steering east to get way from the land have run right into the vortex of the cyclone. The only danger in a southerly course is from the storm-wave setting a ship on shore. If the gale commences North North West at Madras, and ends at South East as has often happened, it shows that the center has taken a West South-West course, and passed a little to the South of the town, but if it ends at South West, it shows the center has taken a West North West course, and the vortex has passed to the North of Madras.3

History of cyclones prior to 1800

Alfred Wagener, a German meteorologist in his notable book The origins of continents and oceans have observed that the Indian subcontinent has drifted from a very big continental mass. The deposits of plants, insects, fishes, amphibians reptiles found in the most ancient crust of India had striking resemblances with that of varieties found in South Africa, South America and Australia. Mr. Maharaj Chopra, when telling about India and the Indian Ocean, points out that the sub continent was nothing but a part of a proto-continent Gondowana land.4

“Once India lay much farther south, part of a Proto-Continent Gondwanaland, when this primordial land mass sundered, Antarctica, Australia and Africa moved apart. India split from Malagasy drifted northward till it collided with the Eurasian land mass. Scientists say that the Himalaya Mountain was pushed up as a result of the collision, with ‘prodigious outburst of igneous and plutonic action’ as the Gazetteer of India puts it carrying along the deposits of the sea. Some striking resemblances have been found between these deposits

3 Ibid p. 42
and those in Bay of Bengal brought down by the Himalayan rivers. The land movement has not halted: and the subcontinent is said to be still moving at the rate of 3 cm-a year pushing China up."\(^5\)

There are references to cyclone which resulted in the submergence of large tracts, in ancient Tamil literature. The ancient Tamil land had witnessed several deluges the result of which vast and expansive landed area had submerged under the sea. The early Sankam 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 Mudal Sangam and the southern part of the Pandian Kingdom was eroded and obliged the southern king to seek a new capital. The king did not learn by experience and chose to make another coastal town (Kapatapuram on the east coast near Korkai) his new capital. The second sangam called Idai sangam was also engulfed by the sea. The capital was then shifted to Madurai. According to the Iraiyaanar Ahapporul the castastrophe happened during the Pandiya king Mudattirumaran. The Tollkappiam, 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.\(^6\)

There was a heavy loss of land in the south, the grand old port city of the Cholas, ‘Kaviripmapattinam’ otherwise called ‘Poompuhar’ was hurt by another deluge and had carried away Poompuhar. Cattanar the author of Manimekalai has recored, this catastrophical deluge thus: The city forget Indira’s festival Goddess Manimekalai was angered and she cursed:

\(^{5}\) Ibid.p.81.
\(^{6}\) N. Subramanian, Social and Cultural History of Tamilnad upto AD 1336, (Udumalpet: Ennes Publication, ,2005), p.52
'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 Puhar.

The submergence of Pumpukar was due to such cyclones and the resultant sea erosion. The coastal belt adjacent to the Palk straits falling a prey to cyclone has become an annual feature. The deluges which had usurped vast area of the land in the Bay of Bengal, had taken away many ports. The Kollam Eyirpattinam, Arikkamedu, Kaviripoompattinam, Thondi, Marunkai, Korkai are the port cities that had been lost under water. 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, the water depth is so shallow to allow the deluge to occur. In the mediaeval period during the Pallava’s regime the Mahapalipuram shore was a border one and the sea shore temple called ‘mallai Thala Sayana Perumal temple’ which stood fully well on the shore is partly submerged now. On the alternate the sea which was very close to the Chidambraram town had receded and went far off leaving the town completely safe.

Major Storm of 17th And 18th Century

Sixteenth and Seventeenth century witnessed number of major cyclones. Three weeks before the East India Company settlement in Madras unreasonable cyclonic storm of March 1639 caused the loss of Eagle and Unity vessels. The usual months of storms are May, October and November. The occurrence of storm in March was unlooked for. Other major cyclone during the century were the cyclones of 28th February 1661, 22nd November 1668, 21st-23rd April 1674.
3rd November 1684, 4th-8th October 1687, 22nd November 1695. Seventeenth century storm are 7th and 8th April 1717, 13th and 14th November 1721. It was the severe storm, 30th October 1729, 2nd October 1746 that created great damage to De la Bourdonnais fleet. It caused grievous havoc among the ships in the roadstead. The vessels Phenix and Duc d’Orleans were lost and four other vessels were blown out to sea and dismasted at Madras, which was a great set back to the French fleet. 31st October 1752, 1st January 1761 cyclone destroyed H.M. squadron in Pondicherry, 20th October 1763, 30th October, 1768, 14th October 1782 more than 100 native craft which had come to Madras with Rice to feed the thousand who had flocked into the town to escape Haider’s horsemen were wrecked and a terrible famine followed. The 13th November 1791, storm played an important role in the political history of East India Company and the French Company in the 17th century.

**Nineteenth Century First Storm**

The gale commenced about midnight, on the 5th December 1803. The wind flew round in a violent gust to the southward, and till 6p.m. it was blowing hurricane. On the 4th December 1803, H.M. Ship Centurion (of 50 guns, bearing the flag of Admiral Rainier) on her passage from Trincomalee to Madras, experienced a violent cyclone, which left her with nothing standing, but the bow spirit; and had nearly proved her destruction. H.M. ship was so severely strained that she had eight feet water in her hold, and her upper deck guns were obliged to be here overboard. H.M.S.Albatrass (vessal) was dismasted in the same storm, and put in Negapattnam to refit.

**Storm of 1807**

Wind began from 9th December 1807; blew equally strong from East-South, East, and South. Madras suffered from another storm on the 10th December 1807. Fortunately there was only one vessel on the roads, when the storm commenced, and she was put in the sea. The devastation along the beach and

---

11 Ibid. p.p.206
12 W Francis, *Gazetteer of south India*, 1855, p. 195
this hurricane that occurred there created an extraordinary rise of the tide, which inundated the whole of Black Town (George town). The sea rose much beyond its usual height, and by its violence exposed 4 feet from the foundation of the house; one side of the adjacent building, the naval office was much damaged. The company’s rice godowns were forced to open, much of their contents were washed away.\(^\text{14}\)

**Disastrous Hurricane of 1811**

Very disastrous hurricane broke out near Madras on 2\(^{\text{nd}}\) May 1811. Two large ships which did not run to sea were founded and ninety country craft were lost and the surf broke in 9 fathoms of water 4 miles from the shore.\(^\text{15}\) In the storm the ‘Dover’ frigate and a store ship were lost in the road. Providentially the fleet with the troops for the attacks of Java had just sailed. Ninety country boats went down their anchors. Only two vessels that were in the roads, when the hurricane set in, were saved and put to sea. During this hurricane the surf broke in nine fathoms water, four miles from shore.\(^\text{16}\)

**Storm of Madura**

In November 1814 a terrific storm from the south-east swept over the neighbourhood of Madura town.\(^\text{17}\) The setting in of that North-east monsoon gives a brief time of bad weather at Paumban, and experience expects the tail of a Madras storm to visit Palk Bay about once in 17 years.\(^\text{18}\) The collector of Tanjore reported that rain had fallen all over the provinces but that it must have been heavier to the westward as the account from the anicut in the Cauvery near Trichinopoly of the 20\(^{\text{th}}\) November.

\(^{14}\) Public works Department, dated, 24/4/1882,G.O.1008 w.


\(^{18}\) Board of Revenue Consultation ,dated, 12/12/1814, Vol. 663 ,No.33. p.p.15098-106
Violent Storm of Madras

On 24th October 1818 Madras again suffered by a storm. The wind commenced at north and after increasing in violence, suddenly lulled, and suddenly flew around furiously to south. This Hurricane travelled west and its vortex passed over the town. The barometer fell to 28.78.\textsuperscript{19}

Hurricane of 1820

On 30\textsuperscript{th} March a storm commenced from North East, veered to N.N.W and S.W. This storm was worse than the storm of October 1818. On the 9\textsuperscript{th} October 1820 there was a hurricane commencing at North West veering to West South West. The barometer fell to 28.50. Here the cyclone travelled West and passed to the north of Madras.\textsuperscript{20}

The Tanjore Storm of 1827

On 7\textsuperscript{th}, 8\textsuperscript{th}, 9\textsuperscript{th} May 1827 Tanjore suffered heavily by the cyclone. On the night of 9\textsuperscript{th} there was a gale from North West. This storm was longer in duration. No crop remained on the ground. The disaster of 1827 exceeded any that had occurred within people’s memory. Cattle were swept away in hundreds. In the Srivaikundam and Tiruchendur taluks, the work of water courses was under water for several days.\textsuperscript{21}

The Storm of 1830

The threatening aspect of the weather during the whole of Tuesday, 2\textsuperscript{nd} December, indicated an approaching storm, but the wind fortunately subsided during the night and they were not aware of any damage having been sustained in the neighborhood of Madras. But, at Pondicherry and Cuddalore, it blew a terrific hurricane. At Pondicherry the rain commenced with heavy squall from the north east about noon and continued from that quarter until 8 p.m. At 1 a.m. On Friday it suddenly shifted to the east, when it blew with great violence; day light presented a scene of devastation, surpassing anything ever witnessed at

De Melay, Governor of Pondicherry, in a report sent to France on 29th January 1831 had furnished an account of the havoc wrought by the severe cyclone of 2nd December. Crops in the surrounding villages were completely lost.

**Storm of 1836**

The wind began to blow strong on the night of the 29th October 1836, the following day accompanied with rain, the wind continued to increase every hour; between 7 and 8’o clock, it blow a perfect hurricane blew from the north north west and north. After an ominous lull of half an hour, it flew round with redoubled violence from the south at ½ past 9. At this time the barometer was 28.85. Which shifted at about 10’O clock at night to south east, with double force. The storm abated on 30th October 1836.

**Violent Storm of 1842**

The cyclone which struck Pondicherry on October 1842 was the worst of all since 1745. It is an extraordinary violence. Earlier, the region had experienced mild storm on 30th October 1836 and May 1840. This cyclone blew in two spells, first at 4 p.m. and then at 6 p.m. the same day. The town suffered heavy damage. Roof tops were blown off. Uprooted coconut trees falling on houses had aggravated the damage. All the roads were filled with fallen trees and debris thrown up by the storm. Portion of the central jail were damaged. The hangers of Grand Bazaar came down under its attack. The two weaving mills of Blin and Poulain suffered considerable damage. In the “Place De Government” hardly a tree or plant was left unaffected. Out of five ships that lay in anchor then in Pondicherry, three were wrecked. At least 82 men on board were reported lost. The total damage was estimated at over 5,00,000 Francs. The government of France sanctioned a sum of 13,000 francs for the immediate relief of that affected.

---

24 *Madras Herald* 27th November, 1839.
The Madras Storm of 20th of October, 1846

The gale, experienced at Madras on the 20th October, 1846, was not of that violent nature, which is the usual characteristic of these visitations in tropical storms from the fact that the wind during its continuance did not veer round more than a point or two. It commenced at Madras, the wind had been blowing briskly from West, South West to West North West with an unusual fall of rain. After noon it veered back to the Westward, and gradually drew to west, south west: the sky become more obscure, and the barometer indicated bad weather. It then increased gradually, till, about 9 pm when it was blowing a fresh gale from West south west: the rain at the same time falling in sheets of water. By midnight it had amounted to a moderate hurricane, at which it remained till about 4 a.m. of the 21st, when the Barometer which had fallen to 29.492, began to rise although slowly.26 Between 11pm and 12pm on the night of the 20th, the wind was from south west, yet as at 7 am on the 21st it was found still to be blowing from nearly the same quarter, South West. It is worthy of observation too that the various accounts given by the commanders of vessels who were in this gale, although at considerable distances from each other and from the shore, agree in establishing the period between midnight and 4 a.m. of the 21st as the time at the time at which the gale was felt in its greatest strength. This must have lead to the conclusion that the body of the hurricane was not passing from East to west, but was formed in such a position as to throw both Madras and the shipping in its South Eastern Quadrant. 4 am of the 21st October 1846, the wind together with the rain, began to subside and to draw round to the southward, in which quarter it remained strong and variable till between 7 and 8 a.m. of the 22nd when it backed round to the North west, the barometer gradually rising till the 25th when it attained its previous height of 30.00. There had been an unprecedented fall of rain (20 ¾ inches in 24 hours). If the hurricane set in before the soil had dried, not a single building or tree in Madras would have remained upright.

Storm of 1846 (25th November, 1846)

The cyclone of the 25th November was as usual preceded at Madras by a murky atmosphere with the wind blowing in squalls from the North West to north with heavy rain. After noon it veered round to North North East, and North East, the wind rapidly increasing and the barometer falling. Taking it for granted then the formation took place about 300 miles east by north of Madras, it appears to have pursued a straight course towards the coast, which struck about midway between Madras and Sadras, soon after which it seems to have abated27. At noon of the 25th the nucleus about 160 miles eastward from Madras, at which time the ships that left the road on the 24th began to feel the hurricane from the Northward, from which quarter it rapidly veered to west to South west as the centre approached and passed to the North of them. At about 9.45 the greatest depression of the barometer took place at Madras, being 29.03 inches. The centre had then reached its nearest proximity to Madras lay due North of it, shown by the wind being East, drawing round to S.E. as the body of the storm passed to the westward.

Chingleput storm of 1848

The Chingleput district witnessed 3 violent storms, on 21st October, 1st November and 26th November of 1848 (fusly 1256). Numerous tanks were carried away. The portions of the punjah and sumbah crops are stated to have suffered considerable injury and the loss of cattle was great. The 1st November storm began before sunrise N.N.W. under 5lbs. The centre passed in the south of Madras.

Violent Storm of Tanjore 1853

A hurricane again occurred in March 26th, 27th 1853. It was the most violent. From which the interior of Tanjore is known to have ever suffered; but it was not so much the winds that blew but the floods which they brought down from the west ward that caused the damage which ensued. On the 26th of March the wind had shifted to N.E. and was blowing in fitful gusts with squalls.

On the 27th the squalls had increased in violence, accompanied with heavy rain, and at noon showed a tendency to veer to the eastward. At 4 p.m. the wind

27 C.S. Crole, Chinglepet District Manuel, 1879. p.p.20
had veered to east, showing that the vortex of the storm had passed the southward of Madras. Pondicherry and Karaikal were affected by the cyclone. Four vessels anchored off Pondicherry port were lost. The tanks at Abishekkapakkam, Kilur and Mel Sattamangalam suffered serious breaches. In Karikal the banks of Arasalar were breached at many points.

At Negapatnam the hurricane raged from N.N.W. and between 4 and 5 pm, the central calm was experienced with a shift of wind to the S.E, thus demonstrating that the vortex passed directly over the roadstead travelling in from east to west. The influence of the cyclone was felt across the peninsula at Calicut on the night of the 27th, March. The winds kept blowing furiously for two days (27th and 28th march) during which an immense body of water came down the Cauvery, and swollen further by the heavy rains which fell increasingly on these two days, burst through its distributaries and more or less covered the greater fact of the delta. "In many places" in the words of the Collector, "water stood for some days four and five feet deep over the high roads." and a surveyor assured. There was little loss of life; but the destruction of property was very considerable. The damage in the aggregate was the heaviest in the Southern and South Eastern parts of the delta. The roads and the embankment of rivers and channels suffered very severely.

Cyclone of 20th November 1856

The cyclone of 20th November 1856 was violent. Two ships anchored off in Pondicherry port, went adrift in the tempest and ran aground at the mouth of river Ariyankuppam. The excessive rains of 1856 were responsible for inundating large tracts of land in Pondicherry and Cuddalore. The barometer began to show a downward tendency as early as the night of the 17th November 1856, but so slight as to cause no alarm; for the next two days their tendency continued. But there was no sudden depression; the daily rise being only little less, and the daily fall rather more prolonged than usual. No decided fall took place until the

---

afternoon of the 20th when instead of the usual rise after 4 p.m., the mercury, after fluctuating slightly for about an hour, continued descending until 3.30 am. on 21st, when it stood at 29.540.\textsuperscript{32}

The wind, which had been for some days a little westerly, blew rather fresh from N.N.W. about midnight of the 19th, but the pressure scarcely, exceeded 5lb. on the square foot. On the morning of the 20th, after a short lull it veered to the eastward of N., about 10.30 am returning to nearly due North, in the afternoon between 2 and 3 pm. The pressure reached 12 lb, but only in a single gust. From 5pm to 8pm the gale moderated and again became easterly; but freshened again during the night and about midnight began to veer westerly, from 4am to 5 am. On the 21st it attained a force of 18 ½ lb when it began gradually to moderate and by the evening had become nearly calm, still coming round till it finally blow South West. The barometer continued to rise steadily from 2 am by the evening it had nearly attained its usual height. From the course followed by the wind it was inferred that the centre of the storm was passing a little southward of Madras, and this agrees with the reports of the shipping which stood out to sea in a South East direction, and met with worse weather than what occurred on shore.\textsuperscript{33}

**The Nagapatanam Cyclone Of 1859**

Another hurricane took place in April 23rd 1859, in the latitude of Nagapatam. The damage in land was confined mainly to the breaching of the river banks and the falling down of trees and dilapidated buildings. More than 30 vessels were wrecked between Tranquebar and point Calimere.\textsuperscript{34} At Tranquebar, the hurricane lasted for three days viz 23rd, 24th and 25th of April 1859. It prevailed in the latitude of Nagapatam; but its force diminished when it passed inland. At sea the impact of hurricane was a lamentable loss of the life and property in the reports of the collector Mr. W.M Cadwell who reported that


\textsuperscript{34} Report on the administration of the Madras Presidency, during the year 1859-60 p.p.113
“the most serious disaster was the foundering of the British Braque Monarch with 200 coolies on board, it collided with another vessel and both came to shore, nearly all the coolies being drowned”. 35

Cyclone of Karaikal and Pondicherry, 1863

The cyclone of 19th October 1863 struck at Pondicherry. Large number of boats and vessels were lost. Karikal too was not spared this time.

Cyclone of Cuddalore, 1864

On 27th and 28th of November 1864, the Northern and Western part of the district were visited with a heavy gale. The wind commenced from the N.E. gradually veering round the N.W and then due west and so on to S.W, S. and due east, having gone round the compass in about the space of 24 hours. The wind blew with such violence and in gusts that the entire salt pans were affected and the covering stone of the heaps were carried away, not withstanding the heavy day. The storm was no doubt a cyclone. The centre of which could not have been very distant. The post from Madras was delayed for three days showing that the greatest strength of the storm must have been somewhere to the north or north east probably of the places in the District which felt its influence the most. 36 In Cuddalore it blew very violently for some hours during the night of the 27th and day of 28th and the rain was also at times very heavy.

Great Intensity Cyclone of 1865

A cyclonic storm of great intensity struck the Coromandel Coast on 25th November 1865 not sparing Pondicherry from its impact, Telegraph posts were uprooted. In November 1865 Madras was visited by a heavy cyclone, which proved very destructive to shipping. On the evening of 25th the vortex was steering in for the land between Madras and Cuddalore, and the unfortunate shipping with a N.N.E. gale and a heavy sea stood out and drafted into the more violent portion of circle, and met with sever disaster. The effects of the storm were not felt on shore at Madras to any great degrees. The barometer did not fall lower than 29° – 60°, and the velocity of the wind reached forty-three meter per

36 Proceedings of Board of Revenue, dated, 12/1/1865, No. 231, 232.
hour corresponding to a pressure of 9 ¼ lb to the square foot. 37 The total amount of rainfall was 12.36 inches. The wind veered from N.N.E. to east and south east, thus showing that Madras was placed on the right hand semicircle of the storm. The vortex crossed at the south west of Madras.

Cyclone of Tinnevelley, November 1869

From 15th to 16th November 1869 cyclone caused disasters all over the Tinnevelley District. It exceeded all its predecessors in devastation. Heavy rain and floods commenced on the night of the 15th November 1869. At Palamcottah rain set in on the night of the 15th and continued during the 16th; on the 17th the Tambrapoornay had risen almost to the crown of the arches of the bridges, or to a height of 26 feet. An unusual heavy rain especially from 16th to the 18th of November occurred and several villages near the Tambrapoorney were being flooded, and considerable damage was done to the channels, tanks and roads. The cyclone of November 1869 had its impact at Tuticorin. At Tuticorin, the sea rose to the level of the road, damaging it considerably, and the new lighthouse in progress on Hare Island was completely destroyed. 38 The loss of land revenue alone was estimated at a rate of 6 lakhs. The fall of rain in twenty four hours was recorded in Tinnevelly as seven inches. The rainfall in twenty four hours at Dindigul was recorded as 5 inches 39.

Cyclone of Tranquebar, 6th and 7th November 1871

The cyclone took place in the year 1871 on November 6th and 7th. It commenced at about 6pm on 6th and lasted till about 10 am on the 7th; but apparently it was towards the intervening morning that it was most furious and violent on the coast than in the interior and its centre was Tranquebar. At Mayaveram and Shiiali, it blew first from north and then veered to the south; elsewhere it was observed to blow from SW to NW. At Kodianpalayam and Tirumullavasel near the northern extremity of the district, the sea, raised by the strong northerly wind, broke in on the shore and carried away a large number of houses, causing the death of thirteen persons by drowning.

37 Marine Department, dated, 26/1/1866, G.O. 39-40.
38 Proceedings of the Public Works Department, dated,10/12/1869 ,No. 174, p.5530.
39 Marine Department, dated ,14/12/1869 ,G.O. 12-13.
A storm and torrential rain simultaneously struck Pondicherry and Karaikal. While the damage in Pondicherry was moderate, Karikal bore the brunt of its attack. The Administrator’s office and the Hospital in Karikal were damaged. The river Arasalar overflowed its banks and inundated the neighboring residential areas. Many people lost their lives in the flood. Two boats loaded with government salt sunk in the Vedarannyam canal a few miles south of Nagapattinam. All traffic was stopped on five roads in Tindivanam and Tiruvannamallai taluks for four days. 50 tanks were breached in these two places.40

**Triple Cyclone of Madras in 1872**

The effects of 3 storms were felt at Madras and other eastern parts. The first was a somewhat violent cyclone on the 5th and 6th of May, the heavy velocity of the wind at Madras reaching an extreme limit of 49 miles. Stormy weather, not cyclonic, was experienced on October 24th and 25th; and a moderate cyclone swept the coast about December 12th. 41

The cyclone which visited the Coromandel coast on 30th April and 1st May 1872, a frightful cyclone visited the coast, strewing the shore with wrecks of vessels of all sizes, and doing great damage to irrigation works in the surrounding countries. The damage done to salt works and the salt manufacturing operation was rather extensive. 42 On May 2nd, 1872 a cyclone visited Madras and destroyed a great number of buildings, after a fall of 13.80 inches of rain. Several hundred lives were lost in the inundation which resulted and one suburb was entirely swept away. 43

**The Destructive Storm of 1872**

“It is an ill wind that blows no good”

The Chingleput district is peculiarly liable to cyclones, the months of May and October being the usual periods of visitation. 15 disastrous cyclones have

---

40 Marine Department, dated,21/5/ 1872, G.O.22-29.  
42 *Report on the administration of the Madras Presidency, during the year 1874-75*, Vol. 2 p. 498  
43 Public Works Department, dated ,31/3/1882, G.O. No 182.
been recorded between 1746 and 1846. The year 1872 was marked by the occurrence of a most destructive storm of this kind. The town of Madras being frequently touched by the centre of the storm, from the S.S. east, afterwards assumed a West or West South Westerly direction. The area within which their action was usually felt extended from 109 miles N to 120 miles south of Madras. They have from the earlier times caused great destruction for shipping strewing the coasts with wrecks quenching the tanks, sweeping away villages and inflicting the country with the most disastrous losses in cattle and other live stock. The rainfall accompanying the cyclone averaged 6 inches.

In May 1872, the Salem district suffered from cyclones. It did much damage to the crops, caused terrible mortality among cattle, and breached several tanks. On this occasion the registered wind pressure, reached a maximum of 53 lb. to the square foot. The shipping in the roads did not receive sufficient warning to allow them to ship their cables and put to sea. In the space of few hours 9 English ships were driven ashore.

A cyclone of unusual severity passed over the northern and Western taluk of this district between the 4th and 7th May, causing great damage especially to irrigation works, roads, bridges, houses, and cattle in the Tripatur Taluk. The storm was the longest with the exception of the cyclone of May 1872, the most violent.

**Heavy Cyclone of Madras 1874**

Madras was visited by a heavy cyclone on the 5th and 6th May 1874. The storm was ushered in with a North West wind, which afterward veered to north, north-east, and east as the storm passed to the southward of the port. The lowest barometric pressure during the storm noted by the government astronomer was 29°18’ and the greatest force of the wind at an hourly velocity of 49 miles was accompanied by an unusually copious downfall of rain.

Madras port was again visited by a cyclone in May 1874. The cyclone travelled oblique up the Bay of Bengal. Its influence being felt from the night of 3rd May until noon of the 6th instant. The strength of the wind during the height of the storm from 8 p.m. of the 5th increased to 2 am of the 6th May, during which it veered formed northward to the eastward. The appearance of the weather on 4th May 1872 was very suspicious and threatening. The warning signal was

---

45 Revenue *Department*, dated, 29/5/1874, G.O. No. 665.
hoisted in the evening and during the whole night communication was constantly being passed by wire between the master attendants office and the observatory, which resulted in not a doubt being entertained that a storm was imminent.\textsuperscript{46} Many tanks were breached and much property was damaged. The railway line was carried away in several places and a considerable portion of the town of Vaniyambodi was swept away. A cyclone of unusual severity passed over the northern and western taluks of this district between the 4\textsuperscript{th} and 7\textsuperscript{th} May causing great damage, especially in the Tripatur taluk, to irrigation works, roads, bridges, houses, and cattle. It was the longest cyclone. Supply of wood and bamboos have been used for the purpose of reconstructing the houses which have fallen.\textsuperscript{47}

**Cyclone of 1879**

In the month of May and November 1879, cyclone occurred along the canal line. A cyclone passed up the Bay on May 21\textsuperscript{st}. On that day the wind velocity reached 563 miles.\textsuperscript{48} The north-east monsoon set in on October 15\textsuperscript{th}. The November cyclone of 1879 occurred with great severity, extending along the entire sea-board from Madras to Pedda Ganjam, and flooding the whole country in the neighborhood of the canal.\textsuperscript{49}

**Disaster of 1880**

A wind set in fresh from north, by west in the very early morning of 21\textsuperscript{st} November 1880. It freshened to a stiff breeze by noon and blew such a strong gale at night between 7 and 8 pm. That was completed and then the wind returned very strong from south for about an hour, lessened by degrees and subsided towards midnight. It rained heavily every day till the 8\textsuperscript{th} of December. The cyclone inflicted much damage at the time when cultivation was for advanced. On the 21\textsuperscript{st} November 1880 a cyclonic storm passed on the district from south - east to north-west and expanded itself to Kalrayan hills, causing such a flood in the Vellar as has never yet been exceeded. Floods in the Coleroon

\textsuperscript{46} Report on the administration of the Madras Presidency, during the year (1874-75) Vol. 2. P.212.

\textsuperscript{47} Ibid.p.p.212-213.

\textsuperscript{48} Board of Revenue proceedings, dated, 26/11/ 1880, No. 1,805, p.8052.

\textsuperscript{49} Report on the administration of the Madras Presidency, during the year 1879-80, p.322.
had caused the Vadavur channel to breach in many places, and the country from
the Lalpet weirs to Mannargudi was one sheet of running water. The channels
from the Tirukkoyilur anicut on the Ponnaiyur were also breached and the total
bill for the damage in the district due to this flood came to Rs. 2,12,000.50

The cyclone of 12th Nov 1881 has been described by Mr. Pogson, the Govt.
Astronomer, as “having exhausted its greatest force while crossing the Bay
before reaching the coast of southern India, which would account for the high
destructive sea for beyond what might have been expected from the
meteorological indications accompanying its progress. The centre of the storm
must have struck the coast considerably southwards of Madras.”

The veering of the wind was as usual for cyclone southward of Madras.
The result of this cyclone was the wreck of the faces and elbow of the north and
south piers of Madras Harbour, the wreck being more complete of the elbows
than on the faces whilst the sides remained practically uninjured.

Mr. Parkes report of 9th March 1882, runs as follows:

“the testimony of all observers is to the effect that the sea of the 12th
November must rank with these of the great historical cyclones, though
there is a conflict of evidence as to whether it was actually as heavy or
“heavier” and then he goes on to quote his authority Mr. Chisholm, who
says speaks confidently as to the recent sea being considerably heavier
than that of 1872”.51

Mr. Parkes reports of his note of the 13th march 1882. “doubtless the sea
was much heavier than might have been expected from the comparatively low
recorded wind pressure at Madras, as also from other phenomena connected
with the storm. Many high authorities would be unprepared to accept the
cyclone of the 12th Nov. as affording a sufficiently crucial test of the forces which
may be expected to be called into action in a cyclone of maximum intensity”.52

The direction of the heavy sea at about east by north also clearly proves
the centre to have been always to southward of the place. The strength of wind

51 Public Works Department, dated ,24/4/ 1882, G.O.No.1008 w,
registered by the anemometer was 32 miles an hour, or a moderate gale of wind as compared with 53 miles in the gale of 1872.\textsuperscript{53}

The sea was getting up during the night of the 11\textsuperscript{th} November and the principal damage took place before noon of the 12\textsuperscript{th}, but the greatest barometric depression, showing the nearest approach of the centre, was about 2 pm and the wind increased up to about 2 in the morning of the 13\textsuperscript{th}, after which it rapidly decreased.

The storm was doubtlessly very severe out in the Bay, but there is no record at Madras of its having been actually encountered by any vessel. There is every reason to fear that the streams Lockyer from Calcutta foundered in this cyclone. It appears not to have been of large diameter and evidently decreased in intensity on approaching the coast, but the sea, originating on the advancing north side of the centre of the cyclone, and propelled by it on to the harbour works was there is no doubt, very high, and of destructive violence.

\textbf{The Adirampatnam Cyclone of 16 October 1884}

On the night of the 16\textsuperscript{th} October, a cyclone appears to have struck the coast near Adirampatnam. The wind continued to blow with much fancy from the N.N.W until about 8 am. On the 17\textsuperscript{th}, when there was a usual lull, followed by a renewal of the storm from the opposite quarter. There was a heavy rain in all parts of the district, ranging from 19.83 inches at Kodaikanal, where the vehemence of the hurricane was most felt up to 2.17 inches at Palni. It appears that the centre of the cyclone must have passed right access the Ponneri taluk, which it struck somewhere about Pulicat.\textsuperscript{54} Pulicat appears to have been the most severely visited spot in the taluk, and the wind, which lasted there for nearly twelve hours continued an hour or two longer. Almost the entire town would have been inundated by the sea and swept away. As it was the sea wave rose to a height of 12 ½ feet above its ordinary level and increased 260 yards beyond its usual limit. The storms which are occasionally met during December in the southern half of the Bay affect the weather on the coast between Negapatnam and Bimlipatam, for instance there was a severe cyclonic storm which struck the coast near Negapatnam between 12\textsuperscript{th} and 19\textsuperscript{th} December 1884.

\textsuperscript{53} Public works Department, dated, 23/3/ 1882, G.O. No. 780 W.

\textsuperscript{54} Report on the administration of the Madras Presidency, during the year 1884-85 p.32
The Triple Storms of 1886

Madras was visited by three cyclones during the year. The first burst on Madras on the 23rd May 1886 which was a moderate one. The vortex passed between Negapatnam and Pondicherry, Madras being on its outer verge. It was strongest between 3 pm and 4 pm, when the wind was north and by east and the hourly velocity was 24 miles.

The second cyclone occurred on the 9th November 1886. Cyclone of 2nd to 16th November 1886, crossed the Madras coast, and, so far as can be judged by the observations, passed out into the Arabian Sea, and advanced by a curved path to the Baluchistan coast. It commenced to be felt on the evening of the 8th, when the wind was N.W. it veered to W.N.W. at 8 am. On the following day, 9th November, at 11 am it was W.S.W; and at noon, when it had attained its full force, it was S.W by W. The velocity was 45 miles an hour. The centre of the storm passed north of Madras and midway between the latitudes of the Armeghon and Pulicat lighthouses.

The Third was small cyclonic storm which took place on the 9th December and passed northward of Madras. Storm of 12th and 19th 1886, struck the Coromandal Coast near Madras. The Coast between Madras and Bimlipatam is not so likely to have affected on December.55

Madras Cyclone of 8th October 1887

Storm of 8th to 14th October 1887 crossed the coast near Madras, and recurred in the Peninsula first to North and then to North East, and broke up in the North West Provinces. Madras was during the year visited by only one cyclone and that was a very moderate one. It burst on the night of the 8th Oct 1887 and continued till daylight of the following day. The vortex of this storm was reckoned to have reached the shore to the southward of Madras between 6.30 and 7 am on the latter date, and at a distance of not more than 18 miles from Madras. From information received from the west coast, it was ascertained that it came on the Madras coast with very great rapidity, and travelled right across the peninsula in a westerly direction passing on to the Arabian Sea to the northward of Mangalore at a velocity of 32 miles an hour.56

55 Report on the administration of the Madras Presidency, during the year 1886 – 87. P. 64.
56 Report on the administration of the Madras Presidency, during the year, 1887-88 p. 190, 17,58-59
Four Cyclones of 1888

In the year 1888 Madras was affected by four cyclones. The North East monsoon rain was unusually heavy, especially about the end of October. A considerable cyclone passed over Madras and Chengleput and a portion of the North Arcot District on October 31st, on that day the rain was 9.2 inches and the daily velocity of the wind was 66 miles. A second storm, with its centre southward of Madras, also brought strong wind and considerable rain about December 13th.57

Account of the weather was furnished by the port officer is as follows: “The weather on the morning of 30th was unsettled, but the barometer was steady and did not, at that time, indicate the approach of a storm. At noon the wind began to increase in force, and at 8 pm, the barometer began to be felt at first very slowly the weather became more unsettled during the night, with constant rain. The wind had now shifted to North West and increased steadily in force. At noon of the 31st the weather was very stormy, and the barometer began to fall rather rapidly, the wind remained steady at north-west, and the squalls became more violent and were extremely severe between 6 pm and 9 pm. There was a lull of half an hour from about 9.30 pm to 10 pm and almost immediately after 10 pm the wind began to come from east. The lowest reading of the barometer was taken very shortly after at 10.30 pm. The wind now blew for some time in furious gusts from the east and then shifted to south–south–east, at which it remained for some hours.58 It rained continuously for 49 hours from about 10 am of the 31st, when the centre was probably nearly 150 miles distant, until 1 am of the 1st November. The rapid fall of the barometer which coincided with the period of frequent furious squalls of wind lasted from 6 pm, (when the distance of the centre was probably about 40 miles), to about 2 am. The outer storm area was from 200 to 250 miles in diameter from east to west and the inner storm area 80 to 90 miles in diameter. Cyclone of 19th to 27th December 1889 December crossed the Madras coast and broke up in South India.59

57 Report on the administration of the Madras Presidency, during the year 1888-89 p.p 194.123
58 Report of the Native Passengers ship commission in Nov. 1890, Calcutta 1891. p. XXXIII.
Last Cyclone of the Century, Nagapattanam Cyclone of 1899

A heavy cyclone passed over the Nagapattanam division on 12th November 1899. The wind was exceptionally high and some damage to buildings. The port of Nagapatnam was visited by the most severe hurricane that had occurred for many years. It came almost without any warning. The previous day weather was quit fine, though in the afternoon the sea got up rather high, and after sun was down there was rather a lurid appearance in the sky, neither of which are uncommon at this time of year. A great deal of damage was done by a cyclone. The barometer was steady, reading 29.92 at 4pm with the wind at north. About 4 am as the weather appeared to be getting bad. At 7 am, the barometer reading was 29.89, wind westerly, increasing with driving rain at 8.30 and the barometer had fallen to 29.32. Wind increased to strong gale. This lasted from 7 am till 4 pm. It was at its worst at midday, when most of the damage was done.

Three classes of cyclones

The storms may be divided into three distinct classes, and generally accepted theory of revolving storms or cyclone identifies these classes as those in which the center of the storm passes respectively over Madras, or South, or North of it. 24.24 % of the cyclones belong to first class, 48.5% of the cyclones belong to second class, 27.3% of the cyclones belong to third class.

First Class – Central

In these cases, the wind commenced at or near north blew for some hours with great force, then there was a lull of half an hour or less, and then it blew again with equal violence from the south. Storms of the first class occurred in October 1797, May 1811, October 1818, and October 1836, May 1874, November 1881, November 1886, October 1887, October 1888.

60 Administrative report of the P.W.D [General building and road branch, Madras Presidency for the year 1892-1893 p.27
61 Marine Department, dated 4/12/1899, G.O.No 1060.
63 Appendix
Second Class - Center South of Madras

In these cases, the wind rose at about north, then gradually increasing in force it veered towards east maintaining force. After passing east it gradually fell, and by the time it arrived at south it was either very light or merged in the ordinary periodical wind. Storms of the second class, center south of Madras occurred in December 1807, November 1846, November 1818, May 1850, November 1864, November 1865 and May 1872, October 1884, November 1880, May 1886, May 1888, December 1888, November 1888, November 1896, November 1899, and November 1836

Third Class: Center North of Madras

In these case the storm kept rapidly shifting about with apparent irregularity through the western half of the compass, never during the height of the storm being in the eastern half, except on one remarkable occasion of October 1846 and perhaps one or two other of the earlier ones, when it made a rapid circuit of the whole compass round by west, north, east and south. Storms of the third class, center north to Madras, occurred in March 1820, May 1827, May 1841, May 1843, October 1846, May 1851, November 1879, November 1885, December 1886. In each of these seven cases the same course was followed. In these cases the courses of the wind was much less regular then in the two preceding classes.

There were 34 cyclones which struck in the Coromandel coast of Tamilnadu from 1801-1900. In the year 1846 and 1848, Tamil Nadu was affected by two cyclones. Four cyclones struck Madras in the year 1888. Among the 34 cyclones, the cyclone of 1818, cyclone of 1836, the cyclone of 1846, the cyclone of 1872, the cyclone of 1881, cyclone of 1888 were very severe. It would thus appear that Madras is subjected to severe hurricane about fifteen times in a century, or once every six or seven years. The effects of the cyclone of 1881 were most disastrous to the new harbour works.
TABLE: 4 LIST OF VULNERABLE DISTRICTS FOR CYCLONE WIND AND COASTAL/INLAND FLOODING

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>District</th>
<th>Wind and cyclone</th>
<th>Coastal and inland flooding</th>
<th>No. of Cyclone (1800-1900)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Madras</td>
<td>VH</td>
<td>FLZ</td>
<td>15</td>
</tr>
<tr>
<td>2</td>
<td>Podicherry</td>
<td>VH</td>
<td>FLZ</td>
<td>7</td>
</tr>
<tr>
<td>3</td>
<td>Tanjore</td>
<td>VH</td>
<td>FLZ</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Cuddalore</td>
<td>VH</td>
<td>FLZ</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>Kanjeeipuram</td>
<td>VH</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Thiruvallur</td>
<td>VH</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Thiruvanamalli</td>
<td>VH</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Villupuram</td>
<td>VH</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Ramanathapuram</td>
<td>VH</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Nagapattanam</td>
<td>VH</td>
<td>FLZ</td>
<td>6</td>
</tr>
<tr>
<td>11</td>
<td>Pudukottai</td>
<td>H</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Sivaganga</td>
<td>H</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Thuthukoodi</td>
<td>VH</td>
<td>FLZ</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Thirunelveli</td>
<td>VH</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>15</td>
<td>Kanyakumari</td>
<td>H</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend: M – Medium; H – High; VH – Very High; FLZ – Flood Zone
(Source: HPC Report, UNDP and NIDM)

Topography also plays an important role in the occurrence or impact of storm tide or tropical cyclone. The onshore impact of storm tide is limited to lower lying coastal areas. Similarly, the shape of the ocean floor and coastal topography play a large role in the behaviour and onshore impact of tropical cyclone. The wind speed from tropical cyclones or severe storms increases in areas of high relief.

One of the major reasons for this is the serious storm tide problem in these coasts. A tropical cyclone of specific intensity when it strikes the east coast of India and Bangladesh, usually produces a higher storm surge compared to that when such a cyclone strikes elsewhere in the world. This is because of the special nature of the coastline, the shallow coastal ocean topography and the characteristics of tide in the Bay of Bengal region. Further the high density of population, low awareness of the community about cyclones and their risks, inadequate response and preparedness add to the severity of the problem.

While the past can be used as an indicator of what may happen in the future, disasters will happen in areas where there is no memory or experience of them. This may be because the hazard has never arisen in the area before.
The east coast of India is more prone to natural hazards like cyclones, storm surges and now the new hazard in the form of tsunamis, in comparison to the west coast. The Eastern Continental Margin of India as a passive margin evolved during the process of break-up of Eastern Gondwanaland during late Cretaceous. In the pre-breakup scenario, the present Krishna–Godavari basin was conjugate with the Enderby land of East Antarctica. Most rivers in the peninsular part of India flowing over southeastern and eastern slope discharge into the Bay of Bengal, which results in a mosaic of basinal and non-basinal morphology. Shallow bays associated with the basinal areas are more affected by the crossing of cyclones and storm surges, due to the wider shelf with gentle slope. One of the important parameters to be considered in the context of cyclones/storm surges is the seabed morphology, including the shelf/slope characteristic of the margin.

A study of the origin of rains in the months of October-November along the Coromandel Coast has shown that they are caused by tropical disturbances and depressions which develop in the Bay of Bengal. These atmospheric depressions are almost always followed by cyclonic storms of great velocity ripping across the sub-continental land mass. Naturally therefore, the coast must have been subjected to the ravages of cyclones from ages unknown. Violent storms visit the coast frequently and the recorded loss of lives and shipping on the seaboard of this district is very great. 1808, 1820, 1831, 1840, 1842, 1853, 1870, 1871, 1880, 1882 were the violent storms causing a serious loss of shipping and created great injury on shore swept some of the Districts in the coast. Several reasons were attributed to the unusual surge in this part of the Tamil Nadu margin, the main reason being its relative proximity to the origin of the event, apart from the concave nature of the shelf with a gentle gradient. The structure of the underlying basement, the morphology and the land–ocean tectonics are the main guiding factors for the run-up heights in case of the Nagapattinam–Cuddalore shelf. The fault controlled basement structure, and a straight coastline with narrow and gentle shelf have helped in rapid transgression of the surge inundating the coastal area.

---