International Symposium on 'Advances in Coastal Research with special reference to Indo Pacific- 2019 (AdCoRe IP-2019)'

AdCoRe IP-2019

17th -19th DECEMBER 2019
Chennai, India

-First Announcement-

Themes

Coastal Erosion and Sediment Transport

Marine Pollution and Marine Litter

Forecasting Coastal Hazards and Sea Level Change

Coastal Vulnerability, Floods and Modeling

Coastal Ecosystems and Modeling – SDG 14

Climate Change and its Impacts on the Coasts

Blue Economy (Resources, Energy) and Coastal Governance

Ocean Technologies and Small Island Developing States

National Centre for Coastal Research (NCCR)
Research and Information System for Developing Countries (RIS)

Background

United Nations Sustainable Development Goal 14 (SDG 14) commits countries to unite over what is a truly global responsibility – the protection of our oceans and the lives below the sea. By 2020, countries commit for achieving the sustainable management of marine ecosystems and significantly reduce marine pollution of all kinds. This will require an international scientific partnership, regulation for fish harvesting, fishing, and enhance our research knowledge on critical issues concerned to the survival of life below water. The Ministry of Earth Sciences is the focal point in the country to provide input on regional and global science based issues for policy making. Research and Information System for Developing Countries (RIS), in collaboration with the Ministry of External Affairs (MEA) and NITI Aayog, Government of India, and with support from the UN in India, is spearheading a programme of national consultations among lawmakers, policymakers, academia, private sector and the civil society on the Sustainable Development Goals (SDGs).

The National Centre for Coastal Research (NCCR), Chennai is an attached office of the Ministry of Earth Sciences, Government of India. NCCR aims to apply scientific tools and techniques in addressing problems like erosion, ecosystem changes and seawater quality monitoring to monitor the levels of marine pollutants in the seas around India. The NCCR implemented programmes on integrated coastal and marine area management (ICMAM) plan, GIS-based information for critical habitats, determination of waste assimilation capacity, development of EIA guidelines, determination of 'no impact zone', determination of best use classification for coastal waters, shoreline management plans, ecosystem modelling for coastal habitats, marine ecotoxicology and storm surge inundation modelling. NCCR attracts more interaction by research communities at the national and international level with its competence and capabilities developed for the last three decades and enhance the countries capabilities in addressing the challenging problems prevailing in the coastal zone.

India's focus on oceans and marine resources management has been forward looking. With close to 129 institutions in the country working on marine and ocean related issues, largely supported by four ministries of Government of India. NCCR has a mandate to address the coastal issues and challenges across the coastal states of India. Countries across the Indo-Pacific region are having common coastal problems and issues to be addressed. Hence, to share the scientific knowledge on advances in coastal research an International Symposium on **Advances in Coastal Research with special reference to Indo Pacific- 2019 (AdCoRe IP 2019)** is being organized by the NCCR, Ministry of Earth Sciences, Government of India in collaboration with RIS. The symposium is expected to attract the global scientific experts, academician, researchers and policy makers onto the common platform of collaborating in the area of global challenges facing coastal regions worldwide. Outcome of the symposium will be useful to better understand the common coastal issues of concern, enhance regional co-operation, devise unique strategies and fine tune national policies across the Indo Pacific region.

About the National Centre for Coastal Research

The National Centre for Coastal Research (NCCR), Chennai is an attached office of the Ministry of Earth Sciences, Government of India established in 1998. Vision of NCCR is to carry out cutting edge coastal research and offer scientific advisory for better management of coastal areas with a mission to develop and provide solutions to coastal issues such as marine pollution, coastal erosion, sea level rise, coastal flooding, restoration and conservation stratergies for critical habitats through monitoring, modelling and applied research. NCCR has a mandate for developing and improving capability to understand the critical coastal parameters, processes and phenomena through continuous monitoring and research for sustainable use of resources. Currently, NCCR has taken up the socially relevant scientific programmes such as seawater quality monitoring, prediction, ecosystem modelling, marine ecotoxicology, coastal processes & shoreline management, marine litter and capacity building.

About the Research and Information System for Developing Countries (RIS)

Research and Information System for Developing Countries (RIS), a New Delhi based autonomous think-tank under the Ministry of External Affairs, Government of India, is an organization that specializes in policy research on international economic issues and development cooperation. RIS is envisioned as a forum for fostering effective policy dialogue and capacity-building among developing countries on international economic issues. The focus of the work programme of RIS is to promote South- South Cooperation and assist developing countries in multilateral negotiations in various forums. RIS is engaged in the Track II process of several regional initiatives. RIS is providing analytical support to the Government of India in the negotiations for concluding comprehensive economic cooperation agreements with partner countries. Through its intensive network of policy think tanks, RIS seeks to strengthen policy coherence on international economic issues.

Themes of the Symposium

Keeping the focus on “Coastal Research Advances”, we invite papers on topics of interest to Ocean Scientists / Academicians /Engineers and Technologists in the following areas:

- Coastal Erosion and Sediment Transport
- Marine Pollution and Marine Litter
- Forecasting Coastal Hazards and Sea Level Change
- Coastal Vulnerability, Floods and Modeling
- Coastal Ecosystems and Modeling – SDG 14
- Climate Change and its Impacts on the Coasts
- Blue Economy (Resources, Energy) and Coastal Governance
- Ocean Technologies and Small Island Developing States

THEME 1: Coastal Erosion and Sediment Transport

The vast majority of research into coastal hydrodynamics and associated sediment transport has been concerned with beaches comprising either a single sediment type - sand or gravel, OR both - mixed beaches. Typical problems faced by shoreline managers with such beaches include:

- inability to determine the sensitivity of the beach profile and cross-sectional area to variations in sediment distributions

- uncertainty in predicting longshore or offshore losses of recharge materials over time

- inability to predict beach response in the vicinity of coastal structures

- inability to predict the importance of seepage through barrier beaches

Given the operational difficulties and lack of environmental control during field studies on mixed beaches, the way ahead to understand their sediment transport processes, particularly beach profile response, lies in physical modelling. There is a need for information about the performance of recharge schemes using mixed sediments, preferably by comparing the pre- and post-scheme beach behaviour. Changes in sediment distributions and beach profiles over time, sediment budgets, management operations, storm responses and ther impact of structures will help to better understand the processes.

Rigorous comparisions of performance against design predictions will be important to determine the weaknesses in existing predictive approaches. Ultimately, the longer term wave climate/beach profile/sediment composition monitoring must be synthesized with detailed short-term process studies to answer the most pressing of beach replenishment questions.

THEME 2: Marine Pollution and Marine Litter

Marine pollution is the trash that we put into the ocean and can be anything from fishing equipment to toys and plastic bags. Litter is found in all the world's oceans and seas, even in remote areas far from human contact and obvious sources of the problem. The continuous growth in the amount of solid waste thrown away, and the very slow rate of degradation of most items, are together leading to a gradual increase in marine litter found at sea, on the sea floor and coastal shores. It is an economic, environmental, human health and aesthetic problem posing a complex and multi-dimensional challenge.

Marine litter results from human behaviour, whether accidental or intentional. The greatest sources of it are land-based activities, including: wastes released from dumpsites near the coast or river banks the littering of beaches tourism and

recreational use of the coasts fishing industry activities and ship-breaking yards. Storm-related events – like floods - flush the resulting wastes out to sea where they sink to the bottom or are carried on coastal eddies and ocean currents. The major sea-based sources include: abandoned, lost, or discarded fishing gear shipping activitiesand legal and illegal dumping.

All this can cause serious economic losses. Coastal communities are facing increased expenditure on beach cleaning, public health and waste disposal. The tourism sector has to deal with loss of income and bad publicity. The shipping industry is impacted by higher costs associated with fouled propellers, damaged engines, removing litter and managing waste in harbours. The fishing industry faces reduced and lost catch, damaged nets and other fishing gear, fouled propellers and contamination, which also affects fish farming and coastal aquaculture.

Marine litter can also lead to loss of biodiversity and of ecosystem functions and services. For instance, discarded, lost, or abandoned, fishing gear are continuing to fish and trap animals, entangling and potentially killing marine life, smothering habitat, and acting as a hazard to navigation. Microplastics are also raising concerns. Toxins including DDT, BPA and pesticides adhere to these tiny particles of plastics that can be accidently ingested by small aquatic life. Once ingested, the toxins biomagnify as they move up the food chain, accumulating in birds, sea life and possibly humans.

Causes of marine litter are both cultural and multi-sectoral, resulting from poor practices in managing solid wastes, a lack of infrastructure, insufficient understanding among the public of the potential consequences of its actions, inadequate legal and enforcement systems and a shortage of financial resources.

The need of the hour is for clearly defined actionable strategies to deal with this crisis at all levels - national, regional and global.

THEME 3: Forecasting Coastal Hazards and Sea Level Change

Multi-century sea-level records and climate models indicate an acceleration of sea-level rise. Most estimates of 20th century sea-level rise have depended on averaging the rates of rise from the few, long, high-quality tide-gauge records that are available. The future impacts of climate change on landfalling tropical cyclones are unclear. Regardless of this uncertainty, flooding by tropical cyclones will increase as a result of accelerated sea-level rise. Society must learn to live with a rapidly evolving shoreline that is increasingly prone to flooding from tropical cyclones. These impacts can be mitigated partly with adaptive strategies, which include careful stewardship of sediments and reductions in human-induced land subsidence.

Global sea level is expected to rise in the upcoming centuries, with a mean global

increase that could approach or exceed 1 m by 2100. Relative sea-level rise at individual sites will vary from this global average; however, in general, densely populated regions affected by coastal flooding from tropical cyclones have experienced a rate of sea-level rise near or greater than the global average over the instrumental record. Coastal flooding probability associated with landfalling tropical cyclones depends both on the probability of tropical cyclone occurrence and the behaviour of relative sea level. Accurate predictions of future flood risk, therefore, must consider the two jointly.

THEME 4: Coastal Vulnerability, Floods and Modeling

Potential changes in tidal regime may also be important. Low-lying shores are often built by mobile sediments (for example, barrier beaches and deltaic coastlines) and/or by biogenic systems (for example, reefs, mangrove wetlands and salt marshes) that are particularly susceptible to climatic and anthropogenic stressors. The frequency and intensity of tropical cyclone flooding has been, and will continue to be, tightly coupled to the morphological development of these coastal systems.

Most coastal populations are not prepared for an increase in extreme flood frequency. Coastal planners and policy makers are challenged by large uncertainties in flood projections related to changing tropical cyclone climatology, sea-level rise and shoreline change. However, despite these uncertainties, the high likelihood of increased catastrophic coastal flooding in the future warrants preparation. Coastal populations need to develop adaptive strategies, which in many cases must include plans and incentives for landward or vertical retreat from the sea. Equally important is the development of proactive policies for planning and engineering in communities that must remain in these vulnerable areas, because of, for example, economic importance, national security or political boundaries.

THEME 5: Coastal Ecosystems and Modeling - SDG 14

Humans derive many tangible and intangible benefits from coastal areas, providing essential components for social and economic development especially of less developed coastal states and island states. At the same time, growing human and environmental pressures in coastal areas have significant impacts on coastal systems, requiring urgent attention in many coastal areas globally. Sustainable development goal (SDG) 14 of the 2030 Agenda for Sustainable Development (henceforth the 2030 Agenda) aims for conservation and sustainable use of the oceans, seas, and marine resources, explicitly considering coastal areas in two of its targets (14.2 and 14.5).

The main threats to coastal ecosystems are described as habitat loss or conversion

due to coastal development, agriculture, or aquaculture; habitat degradation due to eutrophication, pollution, and contamination; and consequent changes in sediment and water supply due to human activities along the coasts and in the upstream watersheds. Further pressures arise from climate change, invasive species, and overexploitation of fishing resources. Coastal zones are typically subject to natural hazards such as river flooding, storms and storm surges, and tsunamis, with serious socio-economic impacts from flooding and erosion in developed coastal areas.

Environmentally oriented goals on water (SDG 8), climate (SDG 3), ocean and coasts (SDG 14), and terrestrial ecosystems (SDG 15) have been integrated to make the SDGs more comprehensive than their predecessors. The SDG process is an unprecedented opportunity to reconcile competing sustainability concepts by commonly shared endeavours to come close to (or even reach) the SDG-objectives. The SDGs seek to “balance all three dimensions of sustainable development: the economic, social and environmental”. The 2030 Agenda adopts the so-called “three-pillar-model” but does not specify how to balance the economic, social, and environmental dimensions in cases of trade-offs or conflicts. Since most of the SDGs refer to humanitarian aspirations, there are reasons to ground SDG 14 as one of the “environmental” SDGs in a concept of sustainability that does not allow for ongoing substitution of natural capital but provides for restoration, rehabilitation, and conservation.

SDG 14 may be interpreted to be in favour of strong sustainability. A constitutive principle of “strong” sustainability requires keeping the (critical) substances of all natural capitals constant over time (constancy of natural capital rule, CNCR) irrespective of how other stocks of societal capitals evolve. The arguments in favour of strong sustainability should meet the requirement of broad acceptance within the overall SDG process, of epistemic communities, local stakeholders, and policy makers.

THEME 6: Climate Change and its Impacts on the Coasts

The original idea of the Ecosystem Services approach was to bridge the gap and recognise the interdependencies between nature and human welfare. Further, Ecosystem Services also are a device to specify the concept of natural capital. Parts of nature are being conceived as a rich and fertile set of stocks and funds (“capital”) that yield ongoing flows by which humans are benefitted in many ways. Such flows are dubbed “services” (although nature should not be perceived as service industry). Not all of nature is beneficial to humans, and there are many natural disservices as pests, tsunamis, or tropical cyclones. Such disservices and disasters may increase via climate change, marine pollution, and ocean acidification.

Marine and coastal ecosystems need to be managed sustainably, protected, and their

resilience be strengthened so that “significant adverse impacts” are avoided. To determine what “significant adverse impacts” are, suitable indicators, baselines and thresholds would need to be defined. Considering the multiplicity of stressors identified for coastal regions, this would require developing a complex assessment and monitoring framework that can trace the social–ecological interactions of activities at various spatial and temporal scales and on the basis of best available information and knowledge. Sustainable management would then be reactive and adaptive to emerging “significant adverse impacts” such as coral bleaching, collapse of a fish stock or pollution above defined levels, and be combined with ecosystem-based management.

THEME 7: Blue Economy (Resources, Energy) and Coastal Governance

Population growth, urbanisation trends and increasing demand and competition for resources, transport, and energy are placing growing pressures on coastal zones, their ecosystems, and the capacity to produce sustainable resources. Meanwhile, poor planning and incoherent and fragmented land–sea governance, and a lack of awareness, regulations and enforcement are adding to the problems. Coastal zones are complex social-ecological systems characterised by inherent multifaceted interactions and uncertainties. Coastal governance and management issues are often rather “wicked problems” with no simple dualisms between environmental conservation and socio-economic development.

Coherent policy making and implementation that integrates different sectors and societal actors across geographical and jurisdictional boundaries and scales is imperative for coastal governance if aiming to apply a strong sustainability approach. To resolve conflicts and avoid potential bargaining away of the environmental dimension of sustainability, coherent, integrated and adapted coastal governance is imperative. Coastal governance also should not rest on a narrow definition of coastal zones, but take due regard of the land–sea nexus of interactions, and of the various processes impacting on coastal zones, including the human dimension. There are strong indications that the pressures on coastal zones will rather increase than decrease in the future through tourism, trade and transport, increasing demand for food, energy, resources and the like, pollution and littering, and climate change.

Blue economy has emerged as a commonly acceptable development paradigm which has effectively blended economic growth with sustainable development. Small Island Developing States are also placing great hopes on a “blue economy”, a term developed from the “green economy” approach to sustainable development and poverty eradication by various governmental and non-governmental actors. The concept has been accepted and promoted by both developed and developing countries as a new development model for littoral countries, including small, medium, large, LDCs and Small Island Developing States. This development model started with the

basic premise that the oceans and ocean-related activities are important for economic and social development of the coastal nations, and these activities form the core of the Blue Economy. Maritime fishing, shipping, maritime trade, etc. are not only part of Blue Economy as construed traditionally, but several other activities, deeply entrenched in almost all sectors of the economy, are also forming part of blue economy. These activities spread into core sectors including agriculture, minerals, construction, energy, manufacturing, services, among others. Further, Blue Economy sectors are comprehensive in nature, combining both goods and services activities generated within each sector. There are multifarious issues involving Blue Economy, but it is still emerging as the most dynamic sector in the world economy for several countries.

THEME 8: Ocean Technologies and Small Island Developing States

However, different countries and regions have different socio-economic and environmental conditions, and probably rather different aspirations with regard to (sustainable) development. And they might claim the right to determine priorities based on their individual challenges and needs despite the determined universality of the 2030 Agenda and SDGs. Nations inevitably set different priorities for sustainable development depending on their individual developmental challenges, even when there is broad agreement over a strong sustainability approach. This raises the question of how, for example, global targets should be interpreted and implemented nationally, and how countries can be engaged to follow a unified approach and avoid compliance problems. Small Island Developing States, for example, strongly support and seek to implement SDG 14, and they are especially interested to apply strong sustainability for preserving the livelihoods of their people.

It is here that the development of pertinent, socially-relevant ocean technologies for Small Island Developing States are crucially important. The key aim is to:

- To develop world class technologies and their applications for sustainable utilization of ocean resources

- To provide competitive, value added technical services and solutions to organizations working in the oceans

- To develop a knowledge base and institutional capabilities for management of ocean resources and environment

Research submissions are not limited to the specified theme and submissions in other relavant areas will also be considered for oral and poster presentations.

Call for Extended Abstracts

One page extended abstract of research papers giving details on objective, methodology, salient results and conclusions may please be submitted through conference portal online https://www.niot.res.in/Adcore19/themes.php **on or before 31st August 2019**. Times New Roman Font of 10pt size with single space may be followed for preparation of abstract. The title of paper, authors' names and their affiliations and the E-mail Id for correspondence may be given along with the abstract.

Registration

	National Participants		International Participants	
	Delagate	**Student**	**Delagate**	**Student**
Early registration	Rs. 4000	Rs. 2500	US$ 300	US$ 500
Late registration	Rs. 6000	Rs. 3000	US$ 400	US$ 600
Spot registration	Rs. 7000	Rs. 3500	US$ 500	US$ 700

Mode of Payment

Payment can be made through online portal and visit the conference website https://www.niot.res.in/Adcore19/themes.php for more details.

Venue: Chennai

How to reach venue: The Chennai city, Capital of Tamilnadu State of India has global connectivity through Airways and well-connected to all the major cities across the country by road, rail and air. By Air: venue is about 8km from Indira Gandhi International & National Airport, Chennai. By Rail: The Chennai Central railway station is located in the heart of the city, 14 km from the venue well connected with Local Electric Train and Bus. Call Taxi services are available across the city 24/7.

Important Dates

Last date of Abstract submission	31 August 2019
Intimation of acceptance of abstracts	30 September 2019
Full paper submission	30 October 2019
Intimation of acceptance of full paper	16 November 2019

Accommodation: Accommodation can be arranged on payment basis. Kindly mail to organizers for booking in advance.

Visa requirements: Overseas delegates who require Indian Visa for participation are requested to contact the organizers in advance for guidance and invitation letter.

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Dr. M. Rajeevan, Secretary, Ministry of Earth Sciences, Government of India

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Dr. Shailesh Nayak, Former Secretary, Ministry of Earth Sciences, Government of India and Director, National Institute of Advanced Studies (NIAS), Bangalore

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National Centre for Coastal Research (NCCR), Chennai

Research and Information System for Developing Countries (RIS), New Delhi

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Popular Science Talks

(1) Tsunami: How can coastal residents be alert?

(2) Storm surges: the costs being caught off guard

(3) Blue revolution: how can it benefit local communities?

(4) Non-conventional energy from oceans: will it solve our fossil fuel imports?

(5) Beaches: Tackling marine litter head on to retain recreational value

(6) Oceanarium: to enjoy the wonders of the sea and learn about marine life

Exhibition

Exhibitions showcasing the indigenous technologies is being organized parallelly which provides a great platform for the stakeholders of coastal research, ocean technologies and allied sectors. AdCoRe IP-2019 is expected to be a global level edition, which will showcase the most recent products and services for advancing coastal research and allied technologies.

Tourist Places in Chennai

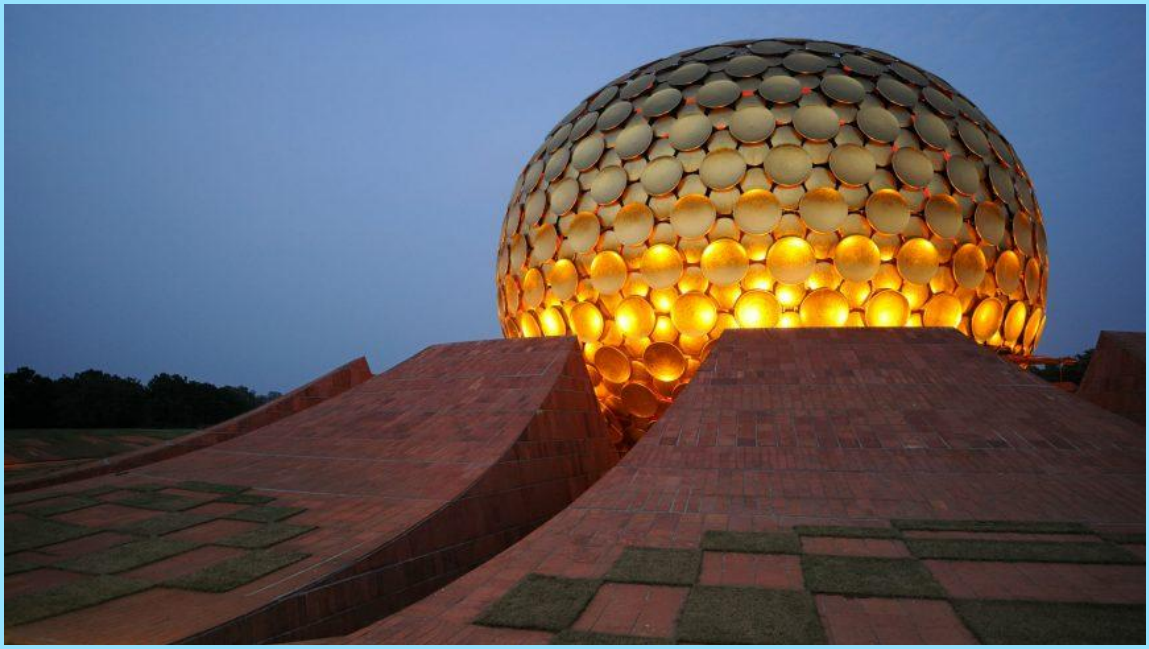
Mahabalipuram is one of the histories intriguing enigmas. It was flourishing port town of the Pallava rulers of south India who chiselled in stone a fabulous **open air museum**. The site is enlisted under the UNESCO world heritage site and is situated 60 KM off Chennai.

Shore Temple of Mahabalipuram (700-728 AD)

Panchratha "Five Chariot" of Mahabalipuram (700-728 AD)

Marina Beach is India's longest beach and one of the worlds longest. The Marina's 6 km promenade includes Chennai Lighthouse, statues of several historical figures and memorial. **Elliot's Beach** is famous for its calm atmosphere, iconic Karl Schmidt memorial, named after the Dutch sailor who lost his life in the process of saving others from drowning is located at the heart of Elliot's beach.

Auroville is an experimental community in southern India, Pondicherry and is situated 140KM off Chennai. It was founded in 1968 by the spiritual leader Mirra Alfassa as a town where people from all over the world could live in harmony. Its focal point is the Matrimandir, a futuristic, spherical temple covered in gold discs. Auroville Botanical Gardens protects the region’s tropical dry evergreen forest. Auroville Beach is a long sandy stretch with gentle surf.



Government Museum, Egmore A variety of artifacts including archeology, numismatics, zoology, natural history, sculptures, palm-leaf manuscripts and Amravati paintings.

Museum also houses the Connemara Public Library and the National Art Gallery. Connemara Public Library is one of the four National Depository libraries and the National Art Gallery building is one of the finest Indo-sarcenic types of architectures in the country.

Wildlife: **Arignar Anna Zoological Park** is located south-west of the city and covering an area of 1490 acres is India's largest zoo. **Madras Crocodile Bank** is an important centre for herpetological research houses several crocodiles, alligators, & gharials.

Kanchipuram: It is a famous temple city situated at 70 KM which is known as “The City of Thousand Temples” is considered one of the seven holliest cities to the Hindus of India. City is well known for the production of the Silk Sarees.

Ekambaratha Temple

Varadharaja Perumal Temple