

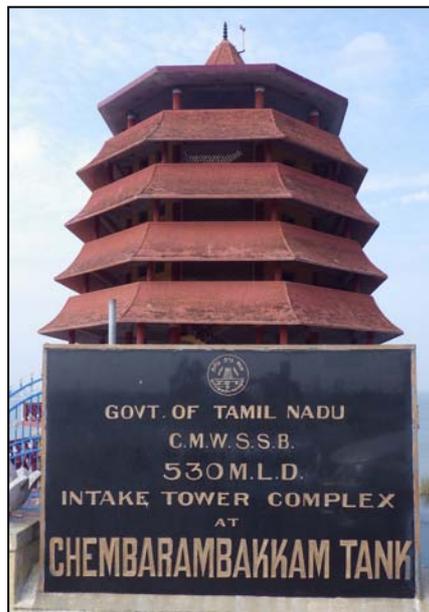


# Urban Waters ARCUS Workshop

15-18 February 2017

**Anna University, Chennai - India**

*Pithavadian Hall, School of Architecture & Planning*



*The Arcus program of the french ministry for foreign affairs aims at setting innovative academic partnership between french regions and other countries.*

*In that framework, the region Centre Val de Loire has put the emphasis to strengthen international cooperation with the Tamil Nadu state, in India.*

*Megacities (>10 millions inhabitants) and large cities with rapid urbanization and industrial development can generate some serious concerns in waterbodies.*

*Closely related to this general issue, the final Arcus meeting aims to present the scientific results of the Arcus french-indian community members. This event is also an opportunity to welcome keynote speakers working into the field of urban waters*

## 15 february 2017 - Opening session

13:00 registration & welcome coffee/cookies

14:00 15:30

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### INAUGURAL SESSION

#### **Dr. Raneer Maria Leonie Vedaumuthu**

Chairwoman and professor, School of Architecture and Planning at Anna University - Chennai

#### **Dr. N.K Ambujam**

Director and Professor, Centre for Water Resources at Anna University - Chennai

#### **Jérôme Bove**

Attaché for Science & Technology, French Embassy in India - Bangalore

#### **Olivier Frézot**

Vice-President of the région Centre-Val de Loire - Orléans

#### **Dr. S. Ganesan**

Registrar, Anna university - Chennai

#### **Philippe Janvier-Kamiyama**

Consul General of France in Pondicherry - Pondicherry

#### **Laura Verdelli & Marc Desmet**

Co-leaders of the urban water ARCUS project

15:30 16:00 coffee break

16:00 17:30

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### OPENING CONFERENCES

#### **Indian speaker in water sciences**

to be determined by Pr. Ambujam

#### **Aurélie Varrel**

French Institute in Pondicherry - Pondicherry  
title requested

17:30 Ice breaker party

## 16 february 2017 - Field trip in Chennai urban water bodies

07:30 Departure from Anna University - breakfast bag arranged by gourmet basket restaurant

09:00 10:30

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### CHEMBARABAKAM LAKE AND SURROUNDINGS FIELD

10:30 12:00 From Chembarabakam to Chennai

12:00 13:00

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### YMCA CANAL

13:00 14:00 Saangeetha hotel in Adyar

14:30 16:00

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### ADYAR POONGA FIELD VISIT

16:00 17:00 from Poonga to Thiruporur tank

17:00 18:00

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### KAPALEESWARA TEMPLE & TEMPLE TANK

20:00

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### GALA DINNER AT AZURI BAY

## 17 february 2017 - Scientific presentation

08:30 9:00 - Welcoming Tea and Coffee

09:00 10:15

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### SESSION 1 : OBJECTIVE AND SUBJECTIVE PROXIES OF RIVER QUALITY

Water Sciences keynote 30'

**Andreas Holbach**

*The asthysphere concept in relation to proxies of river water quality*

Arcus speaker in Social Sciences 15'

**Denis Martouzet**

*Representations of the river associated with closeness.*

Arcus speaker in Water Sciences 15'

**Mr. S.P Saravanan**

*What are the water science tools to outline the river quality of Chennai megacity?*

Discussion 15'

10:15 10:30 - Tea and Coffee break

10:30 11:45

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### SESSION 2 : FOOTPRINT OF URBAN DEVELOPMENTS

Water Sciences keynote 30'

**Johnny Gasperi**

*How and at which spatial scale assess the impact of the Paris Megacity on the Seine River quality?  
Case of some organic micropollutants*

Arcus speaker in Social Sciences 15'

**Mrs. R.H. Rukkumany**

*Tracing the impact of Urbanization on the Adyar watershed with specific reference to the changes in the common lands and its impact on the water management systems*

Arcus speaker in Water Sciences 15'

**Marc Desmet**

*Geochemical Pollution Index vs. Geochemical Urban Footprint Index : the case studies of large rivers in Chennai*

Discussion 15'

11:45 13:15 - Lunch at gourmet basket

13:15 14:30

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SESSION 3 : POST FLOODING RESILIENCE

Social Sciences keynote 30'

**Mrs. Puspha Arabindoo**

title requested

Arcus speaker in Social Sciences 15'

**Karine Hochart**

*Rivers or sewers? Retracing rivers' imaginaries in the temporalities of the floods in Chennai*

Arcus speaker in Water Sciences 15'

**Cécile Grosbois**

*Geochemical composition of river sediments before and after the 2015 monsoon hazard in Chennai*

Discussion 15'

14:30 15:45

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SESSION 4: RIVER MANAGEMENT, URBAN PLANNING & EMERGING LIMITS

Social Sciences keynote 30'

**Mrs. Kamala Marius**

Economic resilience and water issues : the case of an industrial cluster in Tamil Nadu

Arcus speaker in Social Sciences 15'

**Laura Verdelli**

title requested

Arcus speaker in Water Sciences. 15'

**Dr. R. Saravanan**

title requested

Discussion 15'

15:45 16:00 - Tea and Coffee break

16:00 17:30

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SUMMARY & CONCLUSIONS

## 18 february 2017 Dissemination session

10:00 - 12:00

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DISCUSSION WITH STUDENTS, STAKEHOLDERS & ACADEMICS

chaired by

**Sébastien Salvador & Dr. V. Lenin Kalyana Sundaram**



## List of delegates

### India

Dr. N.K. Ambujam, Director & Professor of CWR, Anna University, Chennai

Dr. Raneer Maria Leonie Vedaumuthu, Chairman & Professor, SAP, Anna University, Chennai

Mrs. R.H. Rukkumany, Assistant Professor & (Research Scholar), Anna University, Chennai & (Tours University, France).

Mr S.P. Saravanan - Research scholar, Anna University & Tours University

Dr. R. Saravanan - associate professor, Anna University

Dr. V. Lenin Kalyana Sundaram, Assistant Professor, Anna University, Chennai

Aurélie Varrel, researcher at the French Institute in Pondicherry

SAP (30) & CWR (20) post graduate students - Anna University

### France

Marc Desmet - researcher, Tours University

Cécile Grosbois - researcher, Tours University

Sebastien Salvador - researcher, Tours University

Laura Verdelli - researcher, Tours University

Denis Martouzet - researcher, Tours University

Karine Hochart - research scholar, Tours University

Christine Fauvelle-Aymar - researcher, Tours University

Johnny Gasperi - researcher, Paris University

Olivier Frézot - Vice President, Région Centre Val de Loire

Pascal Meyer - Deputy Director, Région Centre Val de Loire

Caroline Paris - Program officer for Asian countries, Région Centre Val de Loire

Benoit Briand - Project Officer, Région Centre Val de Loire

Jerome Bove - Attaché for Science & Technology, French Embassy in India - Bangalore

Mrs. Kamala Marius - researcher, Bordeaux University

Nathalie Guivarc'h - researcher, Tours University

### Germany

Andreas Holbach - researcher, Karlsruhe University

### UK

Mrs. Puspha Arabindoo - University College London

## Abstract book

### **Mrs Puspha Arabindoo**

title and abstract requested

### **Laura Verdelli**

title and abstract requested

### **Aurélie Varrel**

title and abstract requested

### **Opening conference - Indian speaker**

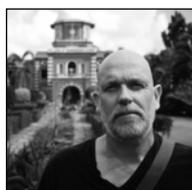
title and Abstract requested

### **Dr. R. Saravanan**

expected today

### **Sébastien Salvador**

title and abstract requested



### **Marc Desmet**

*GéHCO research Unit, University of Tours*

**Title :** Geochemical Pollution Index vs. Geochemical Urban Footprint Index : the case studies of large rivers in Chennai (India)

**Abstract :** Bed sediments of both urban rivers (Couv and Adyar) of the Chennai megacity were collected in 2015 and 2016 during the dry season. Over a distance of several kilometers from semi-rural upstream location to the mouth of the rivers and crossing the most urbanized part of the city, the collected samples were analyzed (major & trace elements, organic compounds, grain size and sedimentological preliminary measurement). A new proposed Geochemical Urban Footprint Index is triggered by the development of non-planned urbanization and urban industry. Silver, Cadmium, Mercury and PAH are the most significant tracers of the megacity of Chennai.



### **Johnny Gasperi**

*LEESU research Unit, Paris Est University*

**Title :** How and at which spatial scale assess the impact of the Paris Megacity on the Seine River quality? Case of some organic micropollutants

**Abstract :** The Paris megacity has a population of 12 million residents and is among the 30 most populous cities in the world. Due to very low flow rate of the Seine River (the median Seine River flow within the Paris city limits 350 m<sup>3</sup>/s) leading to a very limited dilution factor, the Seine River basin is exposed to strong anthropogenic pressures and is considered as representative of river basins exposed to the impacts of intense human activity. Different approaches were conducted to assess the impact of the Paris Megacity on

the Seine River quality as regard a large broad of organic pollutants (PAHs, PBDEs, PCBs, Phthalates or Alkylphenols). This presentation will present and discuss results of these different approaches (longitudinal profiles, annual monitoring at different stations up and downstream of Paris, pollutant loads assessment).



**Cécile Grosbois**

*GéHCO research unit. University of Tours*

**Title:** Geochemical composition of river sediments before and after the 2015 monsoon hazard in Chennai

**Abstract :** Unusually intense monsoon in December 2015 triggered huge flood events in Chennai. The Cooum urban basin was completely overflowed and water level of the Adyar river increased due to high discharge of the major upstream reservoir. The February 2016 sediment survey was compared to the previous survey in February 2015. In order to quantify the potential influence of such a natural event on the contamination gradient, two main questions were investigated: (i) how will urban tracer levels, calculated by the Geochemical Urban Footprint Index (GUF1) evolve at the megacity scale? (ii) What are the main factors controlling the longitudinal gradient of contamination ?



**Karine Hochart**

*CITERES Research Unit, University of Tours – School of Architecture and Planning, Anna University, Chennai*

**Title:** Rivers or sewers? Retracing rivers' imaginaries in the temporalities of the floods in Chennai

**Abstract:** Commonly considered as sewers more than rivers, Adyar and Cooum remain largely neglected, disregarded, rejected and forgotten in both representations and practices. Yet, the experience of the last-year floods has shown how rivers can remind themselves in the city. This presentation attempts to study people's river imaginaries in Chennai in the light of the floods, considering their temporalities through the concept of resilience. Analyzing the discourses on rivers before, during and after the floods leads us to question the definition of river itself, the forms of understanding of pollution and cleanliness as well as the representations of urban waters in a specific cultural context.



**Andreas Holbach**

*AGW Institute, Karlsruhe Institute of Technology*

**Title :** Water quality affected by urban systems in the view of the geochemical Astysphere concept

**Abstract :** Over the last centuries, human activities have altered the earth's surface in unprecedented extents. The Astysphere comprises those parts of the earth influenced by urban systems. These became major drivers of global element and energy fluxes. Urban pollution plumes affect all compartments of nature and in particular the hydrosphere. Element associations and accumulations not occurring in nature without human activities are produced within and exported from the Astysphere into surrounding aquatic ecosystems. Some impacts of the Astysphere on water bodies are highlighted and discussed within the talk with particular respect to questions of water quality.



### **Kamala MARIUS**

*LAM research unit, University of Bordeaux Montaigne*

**Title :** Economic resilience and water issues : the case of an industrial cluster in Tamil Nadu

**Abstract :** Unlike some other developing countries of the world, India has shown relative resilience to the global economic crisis of 2008 by maintaining one of the highest growth rates in the world. It recorded a growth rate of 7.6% in 2015-2016 (April to March). Even if one of the main drivers of India's growth during the global economic crisis has been the services sector (55%) located in peripheral areas of metros, the manufacturing sector, not only in metropolitan areas but also in small and medium towns, has been instrumental in maintaining the country's massive informal labour in spite of its low contribution to the GDP (15%). An example of this is the leather industry of Ranipet, one of India's oldest manufacturing industries highly polluted, with a tendency towards informalization and feminization of the workforce. The leather cluster of Ranipet in Tamil Nadu is composed of 355 units distributed in many sub-sectors : dry leather finishing, chrome tanning, vegetable tanning, leather chemicals, shoe uppers and footwear manufacturing. More than 200 units are involved in tanning and 150 in chrome tanning employing 8000 workers. A preliminary analytical framework based upon mechanisms, policies, actors can deepen our understanding of the factors that contribute to the resilience of industrial towns highly polluted. The present study focusses on the interesting example of the role of the different institutions on leather industry is the development of The Ranipet Common Effluent Treatment Plant (RANITEC) at V.C.Mottur-Ranipet.



### **Denis Martouzet**

*CITERES research unit, University of Tours*

**Title :** Representations of the river associated with closeness.

**Abstract :** An investigation was led with inhabitants situated at a very short distance from the Loire (less than 100 meters) in the urban area of Tours. This investigation showed a wide diversity regarding relations to the river, through the representations of the river they have. These representations are accessible through the words collected in interviews. This diversity is nevertheless organized around three poles which match each other and form a system: The Loire as intimate friend, as danger, as French-style wilderness. First, we'll look at how, on a theoretical level, perceptions, representations and emotional evaluations work together, before presenting the broad outlines of the scientific approach and the main characteristics of the site. Finally, we'll present the results of this research and its possible generalizations.



## **R.H. Rukkumany**

*School of Architecture & Planning, Anna University*

**Title :** Tracing the impact of Urbanization on the Adyar watershed with specific reference to the changes in the common lands and its impact on the water management systems'

**Abstract :** According to the watershed atlas of India, the Chennai metropolitan area forms part of the Palar sub basin and within it, is the Adyar river watershed (AIS-LUS, 1990). This watershed is facing tremendous development pressure due to the expansion of the city. One of the major impacts of this urbanization on the watersheds of this region has been the loss of tanks (large reservoirs for storage of water), an important part of the traditional water management system existing in Tamilnadu. The traditional water management system anchored in the Tanks has been adversely affected by the various activities related to Urbanization. The presentation will bring forth the impact on the tanks *per se* due to infrastructure development such as building of roads and encroachment on the tank bed. In addition it will present the indirect impacts on the tanks due to landuse change in the watershed; especially with reference to the changes happening to the common lands in the villages. These common lands are the crucial links in the water management systems. The impact of urbanization and related activities on these common lands is an important factor affecting the traditional water management systems. It has been found that changes specially have happened to the channel network which also is part of the common land. This has created a major impact in the water storage capacity and the flood prevention potential of the traditional water management systems.



## **S.P. Saravanan**

*Research Scholar, Anna University, Chennai & University of Tours, France*

**Title :** What are the water science tools to outline the river quality of Chennai megacity?

**Abstract :** Two main rivers, Cooum and Adyar rivers drain the growing megacity area of Chennai (10 million inhabitants). These rivers are discharging sewage, waste water and runoff water conveyors and several smaller outputs of untreated waters. In 2015 and in 2016, two bed sediment surveys were carried out, aiming to reconstruct the upstream to downstream quality of the waterbodies. Major and trace element composition and associated geochemical indexes were one of the used tools to compare Chennai river quality to other megacities, either in India and all over the world.