

# WELCOME TO ENVIRONMENTAL WATER RESOURCES ENGINEERING (EWRE) LABORATORY



**INDIAN INSTITUTE OF TECHNOLOGY MADRAS**  
Department of Civil Engineering

**EWRE**  
October 12, 2021 at IITM





# Our Students

**INDIAN INSTITUTE OF TECHNOLOGY MADRAS**  
Department of Civil Engineering

**EWRE**  
October 12, 2021 at IITM



**Dr. Balaji Narasimhan**  
**Ph.D, Texas A&M University, USA**  
**Professor, Dept. of Civil Engineering**

**044-2257-4293; [nbalaji@iitm.ac.in](mailto:nbalaji@iitm.ac.in)**

**[http://www.civil.iitm.ac.in/balaji\\_edu](http://www.civil.iitm.ac.in/balaji_edu)**



- ❖ Remote Sensing and GIS
- ❖ Hydrological Modeling
- ❖ Irrigation water management

- Crop Evapotranspiration, Inter-basin water transfer, Irrigation efficiency
- Impact of climate and land use changes on the water resources
- Floods & droughts extent, magnitude, duration and frequency

**Hydrologic Modelling for effective management of land and water resources**

**Dr. B. S. Murty**

**Ph.D, Washington State Univ., Pullman, USA**

**Professor, Dept. of Civil Engineering**

**044-2257-4262; [bsm@iitm.ac.in](mailto:bsm@iitm.ac.in)**

**[http://www.civil.iitm.ac.in/murty\\_edu](http://www.civil.iitm.ac.in/murty_edu)**



- ❖ Open-Channel Flow Modeling
- ❖ Closed Conduit Flows
- ❖ Groundwater Resources Management

- Modeling of flow and transport of pollutants in open channels for quantity and quality management
- Analysis of steady and transient flows in pipe systems, optimal design, condition assessment
- Simulation and management models for groundwater resources utilization and aquifer remediation

**Computational Hydraulics for Management of Water Resources**

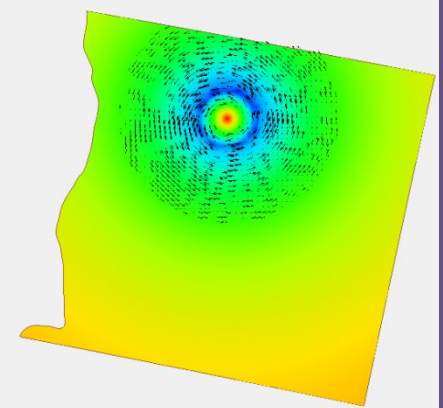
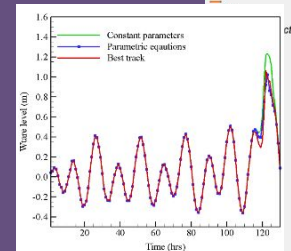
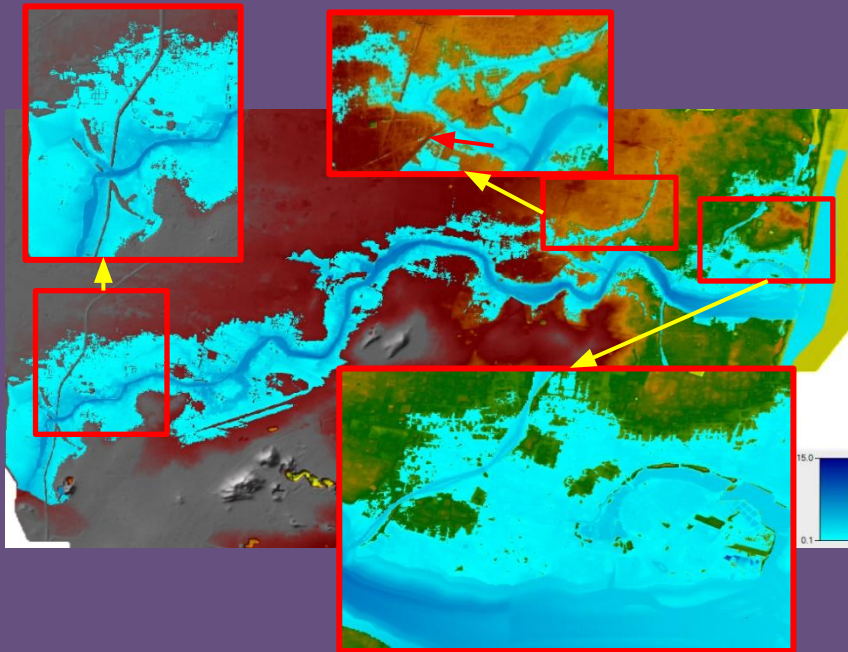


**Dr. Somendra Nath Kuiry**  
**Ph.D., IIT Kharagpur**  
**Assistant Professor, Dept. of Civil Engineering**

044 -2257 4309; [snkuiry@iitm.ac.in](mailto:snkuiry@iitm.ac.in)  
[http://www.civil.iitm.ac.in/kuiry\\_edu](http://www.civil.iitm.ac.in/kuiry_edu)



- ❖ Computational Hydraulics – river, coastal and dam-break flow, urban flood, flash flood
- ❖ Experimental Hydraulics – flow and sediment transport in river-networks
- ❖ Ocean Dynamics - storm surge and tsunami wave propagation, interaction of river and ocean



**Dr. K. P. Sudheer**  
**Ph.D, IIT Delhi, India**  
**Professor, Dept. of Civil Engineering**

044-2257-4288; [sudheer@iitm.ac.in](mailto:sudheer@iitm.ac.in)

[http://www.civil.iitm.ac.in/sudheer\\_edu](http://www.civil.iitm.ac.in/sudheer_edu)



- ❖ Hydrologic Modeling
- ❖ Predictions in Ungauged Basins (PUB)
- ❖ Uncertainty and Sensitivity Analysis

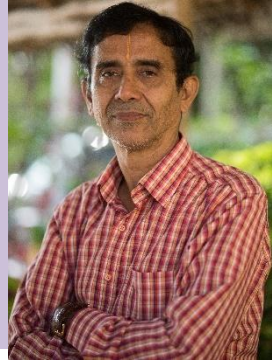
- Distributed Hydrological Models for PUB
- Hydrologic Prediction Band
- Construction of Prediction band

**Employing Distributed Hydrological Models for Water Resources Assessment**

**Dr. K. Srinivasan**  
**Ph.D, IIT Madras**  
**Professor, Dept. of Civil Engineering**

044-2257-4269; [ksrini@iitm.ac.in](mailto:ksrini@iitm.ac.in)

[www.civil.iitm.ac.in/srini\\_edu](http://www.civil.iitm.ac.in/srini_edu)



❖ Water Resources Planning and Management

❖ Flood Management

❖ Regionalization of Hydrologic Information.

❖ Stochastic Modeling of Hydrologic Processes

❖ Optimal Design and Rehabilitation of Water Distribution Systems



Dr. Venkatraman Srinivasan

PhD, University of Illinois Urbana Champaign, USA

Assistant Professor, Civil Engineering

phone: 044-2257-4321; email: [venkatraman@iitm.ac.in](mailto:venkatraman@iitm.ac.in)

website: <http://www.home.iitm.ac.in/venkatraman>



### Major Areas of Research

- Process based eco-hydrological models of vegetated land surfaces
  - Climate change impact on food and water security
  - Experimental manipulation of crop micro climate environment
- 
- Develop an experimental greenhouse facility to study plant behavior under various microclimatic conditions
  - Develop a high resolution 3D explicit architecture plant canopy and root system ecohydrological model
  - Predict impact of climate change on future food and water security and suggest mitigation measures
- Predict the response of vegetation under abiotic stresses and climate change



**Dr. Venu Chandra**  
**Ph.D., IIT Kanpur**  
**Associate Professor, Dept. of Civil Engineering**  
**044 -2257 4281; vc@iitm.ac.in**



- ❖ Experimental Hydraulics
- ❖ Sediment Transport
- ❖ Cohesive Sediment Dynamics
- ❖ River Training and Scour Protection Works



Step pool hydrodynamics  
in mountain streams



Annular flume  
(Cohesive sediment studies)



Field application

**Laboratory to field to prevent sedimentation at hydraulic structures**



# Dr. Chandan Sarangi

PhD (Indian Institute of Technology, Kanpur, India)

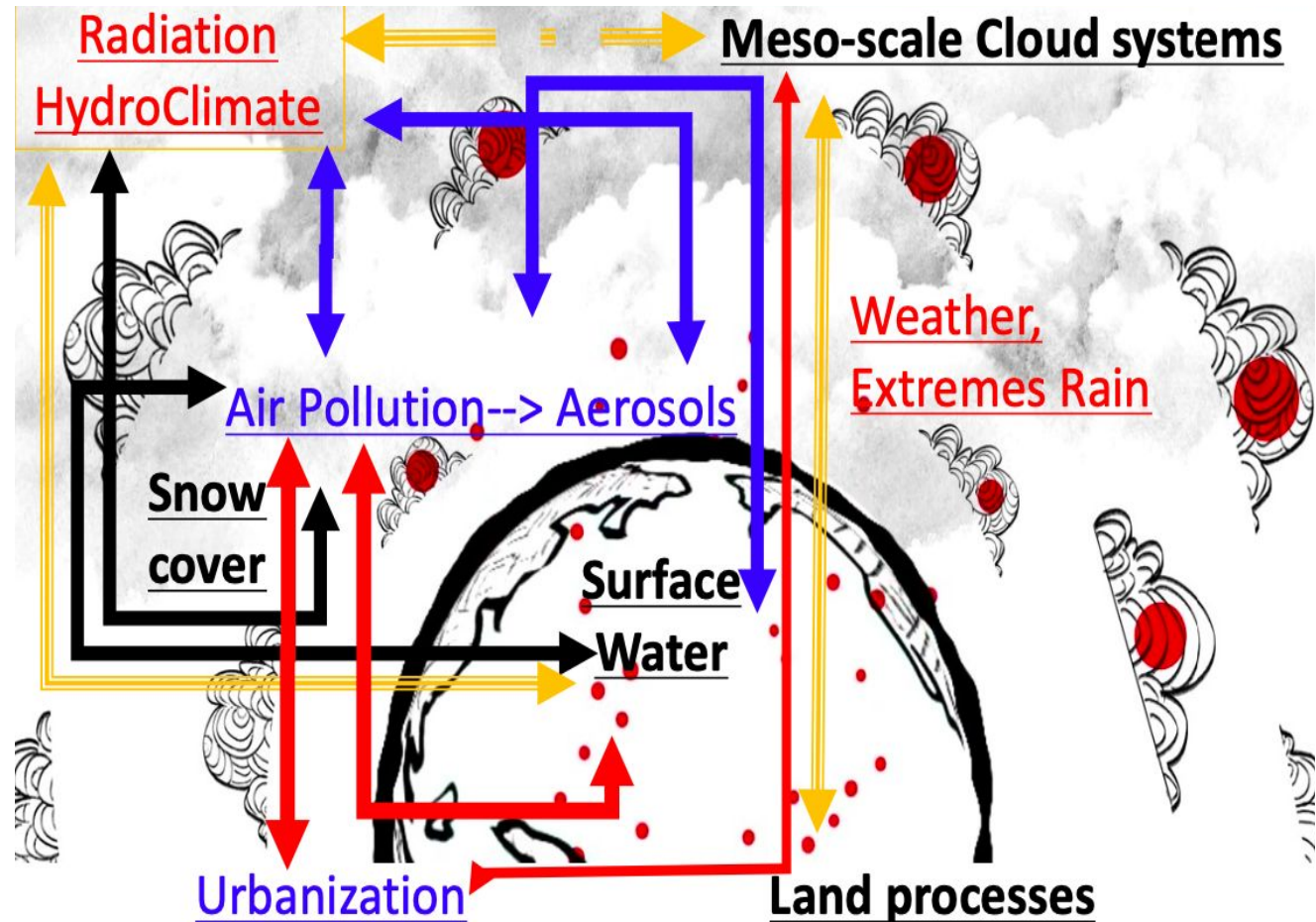
Assistant Professor, Civil Engineering

[chandansarangi@iitm.ac.in](mailto:chandansarangi@iitm.ac.in)



## Major Areas of Research

- Impact of aerosols (particulate air pollution) on hydrometeorological processes (clouds, rainfall, fog, transpiration)
- Impact of dust deposition on Himalayan hydrology
- Modelling fate and transport of aerosols at regional and global scale
- Relative role of aerosols on temperature and extreme rainfall over Megacities



Aerosols and Hydro-Meteorology (ahm) Lab

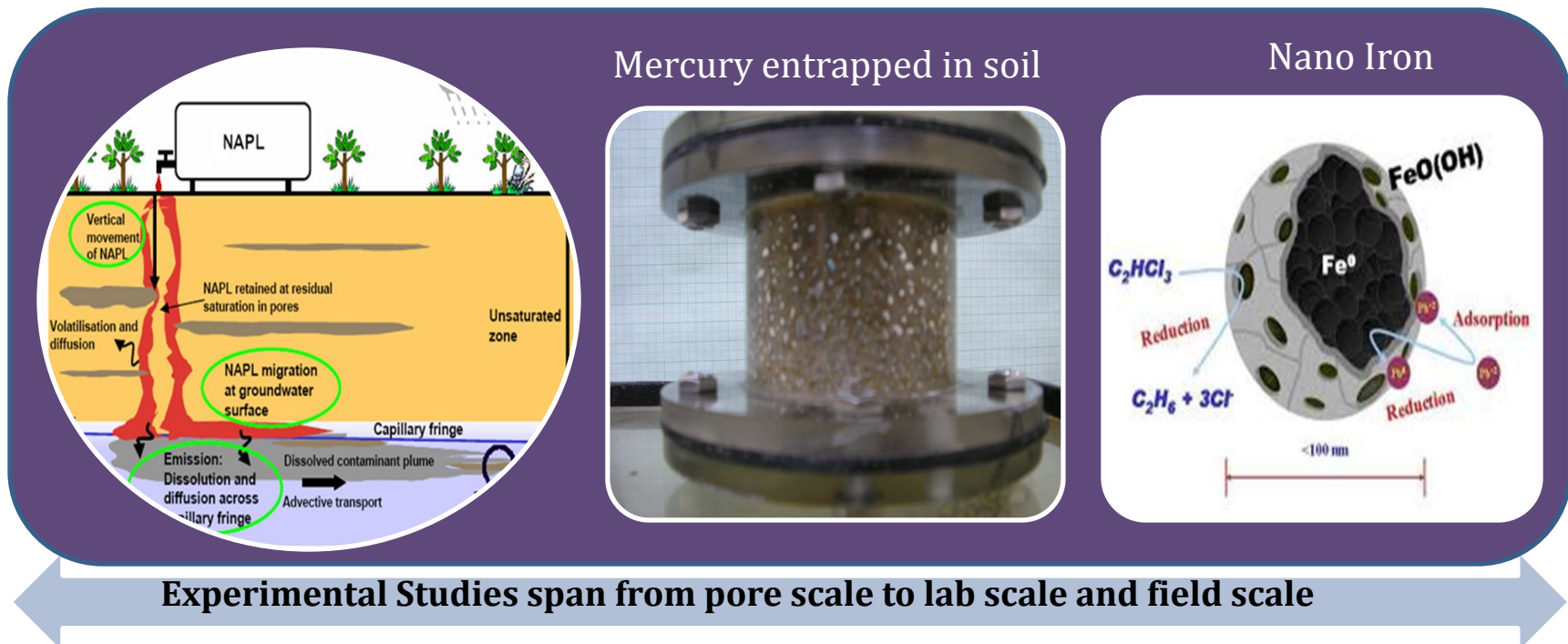
**Dr. Indumathi M Nambi**  
**Ph.D, Clarkson University, U.S.A**  
**Professor, Dept. of Civil Engineering**

044-2257-4289; [indunambi@iitm.ac.in](mailto:indunambi@iitm.ac.in)

[http://www.iitm.ac.in/indu\\_edu](http://www.iitm.ac.in/indu_edu)



- ❖ Ground Water Contamination including NAPL /Transport and Remediation
- ❖ Industrial Wastewater Treatment/Physical and Chemical Processes
- ❖ Water and Waste Water /Tertiary treatment for reuse





**Dr. Ligy PhilIP**

**Ph.D, IIT Kanpur, India**

**Professor, Dept. of Civil Engineering**

**044-2257-4274; [ligy@iitm.ac.in](mailto:ligy@iitm.ac.in)**

**[http://www.civil.iitm.ac.in/ligy\\_edu](http://www.civil.iitm.ac.in/ligy_edu)**



- ❖ Bioremediation of Contaminated Water, Soils, Air and Aquifers
- ❖ Water Treatment and Rural Water Supply
- ❖ Domestic and Industrial Wastewater Treatment, Recycle and Reuse

- To cleanup soils , aquifers and air contaminated with organic and inorganic toxic pollutants
- Water quality assessment and providing tailor made centralized and point of use water treatment technologies
- Sustainable Wastewater management using centralized/decentralized and onsite systems

**Pollution Abatement, Drinking water quality assessment and treatment**



# Dr. S. Mathava Kumar

## Associate Professor, Civil Engineering

044-2257-4267; mathav@iitm.ac.in

[http://www.civil.iitm.ac.in/mathav\\_edu](http://www.civil.iitm.ac.in/mathav_edu)



### Major Areas of Research

- Membrane Technology for Water and Wastewater Treatment
- Emerging Contaminants/Micro-Pollutants Removal
- Development of Low-cost adsorbents & Remediation of Contaminated Systems

- Technology for Emerging Contaminants/Micro-Pollutants Removal
- Membrane (Bio)reactor for wastewater treatment
- Solid Waste Management and Leachate Treatment

Application of technologies for water, wastewater and solid waste management

**Dr. S. Mohan**

**Ph.D, Indian Institute of Science, Bangalore**

**Professor, Dept. of Civil Engineering**

**044-2257-4261; smohan@iitm.ac.in**

**[http://www.civil.iitm.ac.in/mohan\\_edu](http://www.civil.iitm.ac.in/mohan_edu)**



- ❖ Environmental systems analysis & modeling,
- ❖ Environmental impact analysis,
- ❖ Reservoir operation,
- ❖ Contaminant transport modeling,
- ❖ Sustainable development, GIS & applications,
- ❖ Evolutionary algorithms & their applications

**EARTH ALLOWS YOU TO STAND; LET IT STAND THE WAY IT IS**



**Dr. Sachin S. Gunthe**

**Ph.D, Indian Institute of Tropical Meteorology, India**

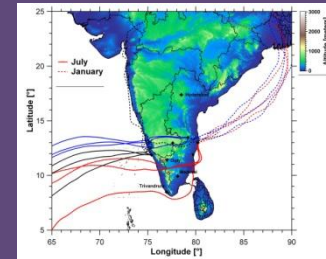
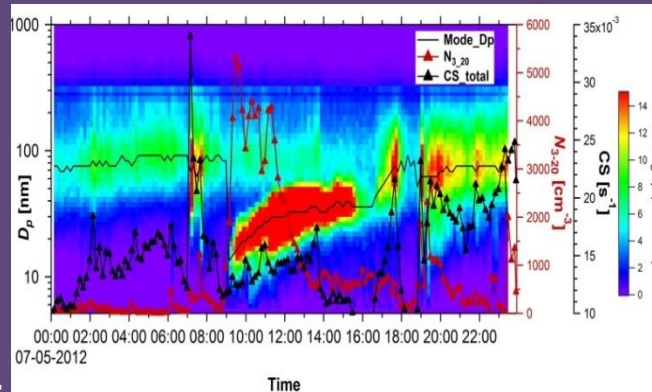
**Associate Professor, Dept. of Civil Engineering**

044-2257-4308; [s.gunthe@iitm.ac.in](mailto:s.gunthe@iitm.ac.in)

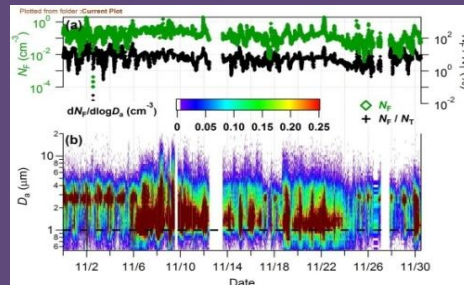
[http://www.civil.iitm.ac.in/gunthe\\_edu](http://www.civil.iitm.ac.in/gunthe_edu)



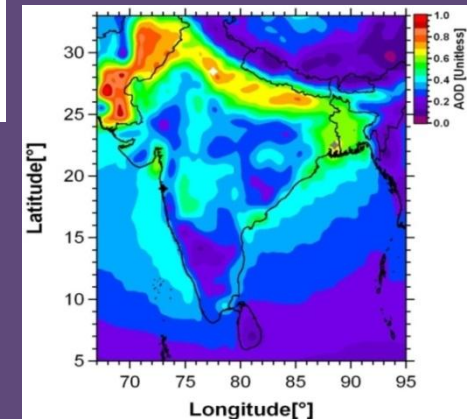
- ❖ Properties and interaction of atmospheric aerosols including bioaerosols
- ❖ Role of atmospheric aerosols in Earth system science
- ❖ Aerosol cloud precipitation interaction – Indian monsoon



Field campaigns



Laboratory studies



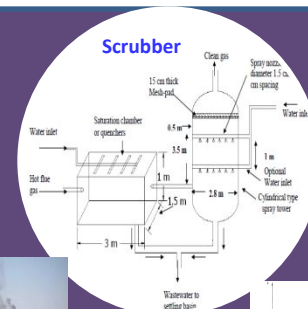
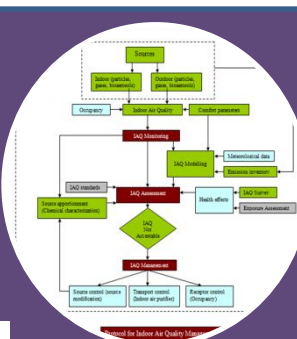
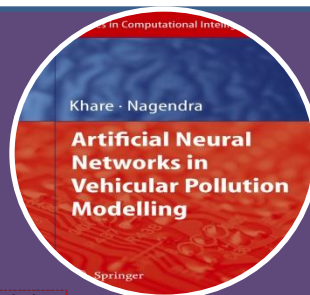
Numerical simulations

**Dr. S.M. Shiva Nagendra**  
**Ph.D., IIT Delhi, India**  
**Professor, Department of Civil Engineering**  
 044-2257-4290; snagendra@iitm.ac.in  
[http://www.civil.iitm.ac.in/shiva\\_edu/](http://www.civil.iitm.ac.in/shiva_edu/)

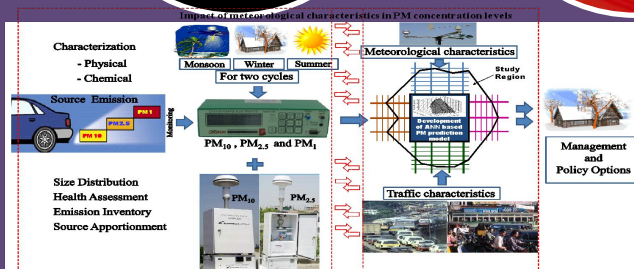
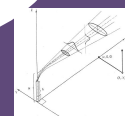


## RESEARCH INTERESTS

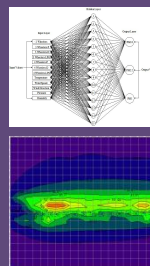
Urban Air Quality Management	Emission inventory, air quality monitoring, modelling, source-receptor modelling and control strategies
Vehicular Pollution Modelling	Deterministic, statistical and artificial neural network approaches
Indoor Air Quality	Monitoring, modelling and control strategies
Industrial Air Pollution Control	Design of air pollution equipments and environmental impact assessment
Environmental data analysis	Multivariate data analysis and environmental auditing



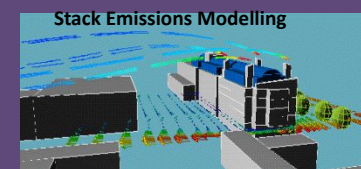
Environmental Pollution Index



Urban Air Quality Management



Indoor Air Quality Management



Industrial Pollution Control