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# Workshop on the Fundamentals of Air Quality Modelling and Its Role in Air Quality Management

Date: 01.04.2025–02.04.2025

Location: Inspire Hall, Le Méridien New Delhi

## Agenda

Day 1 (1 April 2025)	
8:30–9:15 AM	Registration
9:15–9:30 AM	Welcome remarks and scope of the workshop
<b>Session 1: Fundamentals of Air Quality Modelling, Types of Air Quality Models, Photochemical Models, and Representation of Physical and Chemical Processes</b>	
9:30–10:30 AM	<b>Fundamentals of Air Quality Modelling</b> By Dr Piyush Bhardwaj, Research Scientist, Air Quality, CSTEP [Topics covered: Types of air quality models (box models, puff models, line models, particle dispersion models, and photochemical models) used for regulatory/research purposes and typical inputs required to run air quality models]
<b>10:30–10:45 AM</b>	<b>Tea break</b>
10:45 AM–12:00 PM	<b>Representation of Physical Processes in Photochemical Models</b> By Prof Peter Adams, Carnegie Mellon University, Pittsburgh, PA, USA [Topics covered: How do photochemical models work, key components, dynamical core, and resolved and unresolved processes]
12:00 PM–1:15 PM	<b>Representation of Atmospheric Chemistry in Photochemical Models</b>

	<p>By Prof Shantanu Jathar, Colorado State University, Fort Collins, CO, USA</p> <p>[Topics covered: How do photochemical models estimate pollutant concentration - continuity equation and its components, wet and dry deposition, and atmospheric chemistry]</p>
<b>1:15–2:30 PM</b>	<b>Lunch and networking</b>

**Session 2: Components of Air Quality (Photochemical) Modelling, Emissions and Measurements, Model Validation, Lagrangian Particle Dispersion Models, and Reduced Complexity Models**

2:30–3:30 PM	<p>Emissions and Measurements as an Integral Part of Air Quality Modelling</p> <p>By Dr Sarath Guttikunda, Urban Emissions, India</p> <p>[Topics covered: Emission inventory development and efforts, should we develop US EPA's NEI like framework for regular updates of national-level emissions, how regional vs city level emission inventories differ, and state of air quality measurements in India]</p>
3:30–4:00 PM	<p>Utility of Satellite-Derived Measurements for Air Quality Monitoring</p> <p>By Prof Sagnik Dey, IIT-Delhi, India</p> <p>[Topics covered: How can remote sensing measurements complement in-situ measurements]</p>
4:00–4:45 PM	<p>Performance of Air Quality Models in India: Implications for Policymaking</p> <p>By Prof Srinidhi Balasubramanian, IIT-Bombay, India</p> <p>[Topics covered: Importance of model validation and compilation of all chemical transport model (CTM) performances in India for PM<sub>2.5</sub> and O<sub>3</sub>]</p>
<b>4:45–5:00 PM</b>	<b>Tea break</b>
5:00–5:45 PM	<p>Lagrangian Particle Dispersion Models – HYSPLIT</p> <p>By Prof Srinidhi Balasubramanian, IIT-Bombay, India</p>
5:45–6:30 PM	<p>Reduced Complexity Models for Policy Use: Review of commonly used models</p> <p>By Prof Peter Adams, Carnegie Mellon University, Pittsburgh, PA, USA</p> <p>[Topics covered: Challenges with state-of-the-art CTMs; introduction to reduced-complexity models (RCMs); and</p>

	examples of commonly used RCMs such as REACH, InMAP, EASIUR, and GAINS]
6:30–7:30 PM	Discussion
<b>7:30–9:00 PM</b>	<b>Dinner and networking</b>

<b>Day 2 (2 April 2025)</b>	
9:30–9:45 AM	Welcome remarks including a sneak peek of PAVITRA Dashboard By Dr R Subramanian, Sector Head, Air Quality, CSTEP
9:45–10:15 AM	Keynote address By TBC
10:15–10:45 AM	Special Address By TBC
10:45–11:00 AM	Report launch
<b>11:00–11:15 AM</b>	<b>Tea break</b>

<b>Session 1: <i>Panel Discussions</i></b>	
11:15 AM–12:15 PM	Panel discussion on ‘Reflections on NCAP: Key takeaways and use of air quality modelling for NCAP 2.0’ Panellists: CPCB/State PCB/ CAQM officials (TBC) Moderator: Ms Swagata Dey, Policy Specialist, Air Quality, CSTEP
12:15–1:00 PM	Panel discussion on ‘Role of air quality models for air quality management: Key learnings’ Panellists: Prof Peter Adams, Prof Srinidhi Balasubramanian, Dr Sachin Ghude, and Prof Sagnik Dey Moderator: Dr Piyush Bhardwaj
<b>1:00–2:00 PM</b>	<b>Lunch break and networking</b>

<b>Session 2: <i>Research Presentations: Use of Modelling for Air Quality Management and Impact Assessment</i></b>	
2:00–2:30 PM	Role of air quality models in air quality management: Examples from Western countries By Prof Peter Adams, Carnegie Mellon University, Pittsburgh, PA, USA
2:30–3:00 PM	PAVITRA: A novel reduced complexity modelling platform for India By Prof Chandra Venkataraman (Online), IIT-Bombay, India

3:00–3:30 PM	Impact Assessment using Air Quality models: Human Health By Prof Sagnik Dey, IIT-Delhi, India
3:30–4:00 PM	IITM-Decision Support System By Dr Sachin Ghude, Indian Institute of Tropical Meteorology (IITM), Pune, India
<b>4:00–4:15 PM</b>	<b>Tea break</b>

**Session 3: Research Presentations: Recent Developments in Air Quality Models for Policy Use**

4:15–5:00 PM	Research presentations on the PAVITRA project by UC-Berkeley and IIT-Bombay Results from the PAVITRA (SMoG-InMAP-India) model
5:00–5:45 PM	CSTEP research presentations on interstate transport of PM <sub>2.5</sub> over India Results from REACH-India and PAVITRA (SMoG-InMAP-India) RCMs
5:45–6:00 PM	Concluding remarks and way forward
6:00–7:30 PM	<b>Networking or discussions</b> Building on existing data for policy use in India: Measurements, emissions, and modelling
<b>7:30–9:00 PM</b>	<b>Dinner</b>