



पृथ्वी प्रणाली विज्ञान में कुशल जनशक्ति का विकास (डेस्क)

Development of skilled manpower in earth system science (DESK)

भारतीय उष्णदेशीय मौसम विज्ञान संस्थान

Indian Institute of Tropical Meteorology

Date: 13-03-2026

**IITM -Max Planck Institute- Atmospheric Thermodynamic Workshop (NT-ATW)
IITM Pune, March 16 to 18, 2026**

Goal:

To understand and brainstorm the potential of thermodynamic metrics in improving Earth system models over India with a specific focus on:

- 1. Land-atmosphere interactions.**
- 2. Climate Change in the Himalayas.**
- 3. Extreme rainfall and drying trends.**
- 4. Indian monsoon in a changing climate.**

Key Resource Persons:

- 1. Axel Kleidon, Max - Planck Institute, Jena, Germany (AK)**
- 2. Tejasvi Chauhan, Post-doc at MPI, Jena (TAC)**
- 3. Saurabh, doctoral student at MPI, Jena (SS)**
- 4. V K Gaur, CSIR 4th Paradigm Institute, Bangalore (VKG)**
- 5. Sarosh Alam Ghausi, Assistant Professor, IIT Kanpur (SAG) Ms. No. TJOO-2025-0034**
- 6. M. Vijayan, CSIR 4th Paradigm Institute, Bangalore (MV)**
- 7. Suryachandra Rao, IITM, Pune (SR)**
- 8. Rajib Chathopadhyay, IITM, Pune (RC)**
- 9. Subodh Saha, IITM, Pune (SS)**
- 10. Sandip N Setti, IITM, Pune (SP)**
- 11. R. Krishnan, Inst of Human settlements, Bangalore (RK; online)**



Program

Day	Time	Type	Title	Speaker
Day 1 March 16 Monday	10:00 - 10:45	Lecture	Thermodynamics : An evocative lens to view the ever transforming universe	VKG
	10:45 - 11:30	Lecture	Current state of Monsoon predictability and areas of improvement.	IITM Director + (TBD)
	11.30- 12.00	<i>INFORMAL SESSION</i> <i>(Tea - Conversations)</i>		
	12.00 -12: 45	Lecture	Earth's Climate, entropy, second law and the processes of Maximum rate of Entropy Production (MPP)	AK



	12.00-13:00	Lecture	Understanding trends in dryness (VPD, RH) and the role of VPD in shaping evaporation/ 3-D water vapour field.	TAC/VJ
	13.00-14.00	LUNCH		
	14:00 - 16:30	Tutorial/Hands-on	Examining land surface models (QUINCY, IITM ESM, and the MPP.	SS/TAC
	16:30 - 17:30	Lecture	Discussions: <i>Land-atmosphere INTERACTIONS ? Or LAND-atmosphere response?</i>	Brainstorm Session
Day 3 March 18 Wednesday	10:00 - 11:00 11.00-11.30	Lecture	Climate Change Dynamics over the Indian continent	R Krishnan (online)



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		INFORMAL SESSION		
	11:30 - 12:15	Lecture	Thermodynamics and Climate Change. Case of elevation dependent warming.	AK.
	12:15 - 13:00	Lecture	Current understanding of ITCZ and gaps.	Dr. Ayantika Dey
	13.00- 14.00	LUNCH		
	14:00 - 14:45	Lecture	IITM Earth System Model: Overview, biases, discussions and scopes of improvement.	Sandip N. Setty



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	14.45-15.15	Lecture	Application of Moist heat engine perspective to Indian monsoon	AK
	15.15-16.00	Lecture	Sensitivity of Hydrological Cycle and Precipitation extremes to global warming	TAC
	16.00-17.30	Discussions	Brainstorming open questions e.g., the thermodynamics of the ITCZ. Goal: Potential hypothesis to test where MPP can be useful for Monsoon.	TAC/SS/AK
Day 4 March 19 Thursday		Resource persons and part of the participants visit the Cloud Physics Lab at Mahabaleshwar and Discussions on		



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		assimilation of water vapour data in earth system models		
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