



Dates: Monday 9th February to Friday 13th February 2026
Location: INCOIS, Hyderabad, India.
Virtual Platform: MS Teams

Details and joining links can be found on the SharePoint page here: [6th Annual Science meeting 2026](#)

The 6th WCSSP India Science Workshop, hosted by the Ministry of Earth Sciences (MoES), provides a forum to **share, discuss** and **evaluate** the advances that have been achieved through collaborative project activities in the recent period, leading to *enhanced understanding, methods and tools for improving risk-based forecasting of natural hazards*.

This event builds on previous cross-project interactions. The 4th WCSSP India Science Workshop was held in-person in India in February 2023, which enabled discussions between ~150 registered participants. This was followed by the 5th WCSSP India Science Workshop which was held as a hybrid event at The Met Office, UK in July 2024.

The 6th WCSSP India Science Workshop will be hosted at the Indian National Centre for Ocean Information Services (INCOIS) in Hyderabad, India. Most sessions will also be accessible online to enable in-person and remote participation.

Workshop Objectives:

- Enhance peer-to-peer interactions, networking and developing new research collaborations across the scope of WCSSP India
- Share insights from research progressed under the WCSSP India project across India and UK project partners to support knowledge exchange and identifying opportunities for further strengthening collaboration,
- Discuss impacts and implications of new India-UK research and the resulting opportunities for translating into improved services via MoES partners,
- Develop deepening peer-to-peer and cross-institute research networks to address key outstanding challenges for improving observations, modelling and research capability on natural hazard prediction in the Indian monsoon system, leading to enhanced risk-based services.

Themes for workshop plenary sessions:

- Theme 1 - *Understanding, predictability, post-processing and verification of high impact weather*
- Theme 2 - *Coupled model development, evaluation and inter-comparisons*
- Theme 3 - *Understanding model error evolution, physical processes and scale interactions*
- Theme 4 - *Improving models using observations*
- Theme 5 - *Impact modelling and forecasting*
- Theme 6 - *Improving predictions through machine learning and data sciences*

WCSSP India Work Packages:

WP1 – Developing seamless ensemble coupled systems across scales

- UK Lead: Arathy Menon
- India Lead: Jayakumar

WP2 – Evaluation and understanding of monsoon processes and hazards

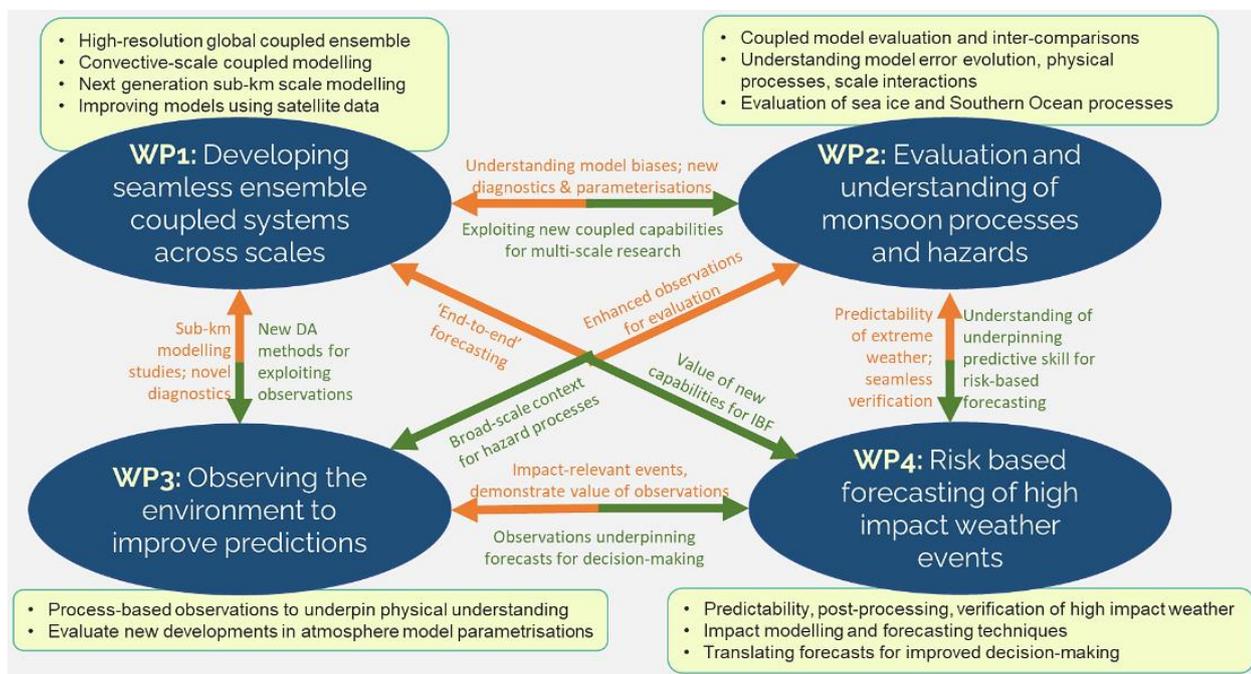
- UK Lead: Gill Martin
- India Lead: Prasanth Pillai

WP3 – Observing the environment to improve predictions

- UK Lead: Bernard Claxton
- India Leads: Anupam Hazra & Sachin Deshpande

WP4 – Risk based forecasting of high-impact weather events

- UK Lead: Seshagirirao Kolusu
- India Lead: R Jenamani





Day 1: Monday 9th February 2026

India IST	UK GMT	Session	Speakers / Facilitators
10:00		High Tea - INCOIS	
10:30		INCOIS Foundation Day Celebration – Agenda Shared Separately <i>By kind invitation Director, INCOIS the 6th WCSSP India Science Meeting will begin with sharing a celebration of INCOIS Foundation Day [in-person only].</i>	
12.35		Welcome and Registration for WCSSP India Annual Workshop	
13:00		Lunch	
14:00	08:30	Introduction to WCSSP India Science Meeting India welcome and introduction (5 min) UK welcome and introduction (5 min) SRP introduction (10 min) WCSSP India project overview (20 min + 10 min Q&A)	<i>Ministry of Earth Sciences; British High Commission; Met Office; Science Review Panel</i>
15:00	09:30	WP3 Overview Session: Observing the environment to improve predictions	<i>Work Package Leads and UK Defrayments</i>
		Work Package 3 Overview (25 min)	<i>Bernard Claxton, Anupam Hazra, Sachin Deshpande</i>
		Utilising Indian Research Observations for Model Evaluation (UniCon) (30+5 min)	<i>Thorwald Stein</i>
16:00	10:30	Networking, Break	
16:30	11:00	WP4 Overview session: Risk based forecasting of high-impact weather events	<i>Work Package Leads and UK Defrayments</i>
		Work Package 4 Overview (25 min)	<i>Seshu Kolusu, R Jenamani</i>
		Impact Based Forecasting and Warning IBFW (MIDAS) (30+5 min)	<i>Richard Body, Lucas Terlinden-Ruhl</i>
19:30		Evening Networking and INCOIS Hosted Dinner	



Day 2: Tuesday 10th February 2026

India IST	UK GMT	Session	Speakers / Facilitators
09:00	03:30	Arrival and Registration	
09:30	04:00	WP 2 Overview Session: Evaluation and understanding of monsoon processes and hazards	Work Package Leads and UK Defrayments
		Work Package 2 overview (30+5min)	<i>Gill Martin, Prasanth Pillai</i>
		Monsoon Extreme Events Impacts (OUTBREAK) (12+5 mins)	<i>Andy Turner</i>
		Monsoon Extreme Rainfall (DRENCH) (12+5 mins)	<i>Andy Turner</i>
10:40	05:10	Overview of India Defrayments (15+5 mins)	<i>NCMRWF, MoES</i>
11:00	05:30	Poster Session 1; India defrayments To include coffee and networking	11:30 - SRP Meeting – UK WPL and Project Team (Closed Session) UK Work Package Leads, Project Team and Nick Hopkins-Bond
13:00		Lunch	
14:00	08:30	WP 1 Overview Session: Developing seamless ensemble coupled systems across scales	Work Package Leads and UK Defrayments
		Work Package 1 Overview (25min)	<i>Arathy Menon, Jayakumar</i>
		HEPPI-ML PI	<i>Martin Widmann</i>
15:00	09:30	Break	
15:30	10:00	Plenary 1: Understanding, predictability, post-processing and verification of high impact weather 4 x 10+5 min talks and 30 min discussion*	<i>Gill Martin, Prasanth Pillai</i> <i>(For individual talks please see list at end of the agenda)</i>
17:00		End of Day 2 and Evening Networking and INCOIS Hosted Dinner	

Day 3: Wednesday 11th February 2026

India IST	UK GMT	Session	Speakers / Facilitators
09:00	03:30	Arrival	
09:15	03:45	Welcome and Overview of the Day	<i>Anthony Jones</i>
09:30	04:00	Poster Session 2; Focus on Themes 1 and 2 To include coffee and networking	
11:00	05:30	SRP Panel Meeting – UK PI's (Closed Session – Invitation Only)	Executive Committee Meeting (Closed Session – Invitation Only)
12:30		Lunch	
13:30	07:30	Plenary 2: Coupled model development, evaluation and inter-comparisons 4 x 10+5 min talks and 30 min discussion	<i>Arathy Menon, Jayakumar</i> <i>(For individual talks please see list at end of the agenda)</i>
15:00		Break	



15:30	10:00	Plenary 3: Understanding model error evolution, physical processes and scale interactions 4 x 10+5 min talks and 30 min discussion	<i>Gill Martin, Prasanth Pillai</i> <i>(For individual talks please see list at end of the agenda)</i>
17:00		End of Day 3	
		MoES Hosted Dinner – Location TBC – Transfers to be provided.	

Day 4: Thursday 12th February 2026

India IST	UK GMT	Session	Speakers / Facilitators
09:00	03:30	Arrival	
09:30	04:00	Poster Session 3; Focus on Themes 4, 5 and 6 To include coffee and networking	SRP Panel Meeting – India Work Package Leads (Closed Session – Invitation Only)
11:00	05:30	Plenary 4: Improving models using observations 4 x 10+5 min talks and 30 min discussion	<i>Bernard Claxton, Anupam Hazra, Sachin Deshpande</i> <i>(For individual talks please see list at end of the agenda)</i>
12:30		Lunch	
13:30	08:00	Plenary 4 [cont.]: Improving models using observations 4 x 10+5 min talks and 30 min discussion	<i>Bernard Claxton, Anupam Hazra, Sachin Deshpande</i> <i>(For individual talks please see list at end of the agenda)</i>
15:00		Break	
15:30	10:00	Plenary Session 5: Impact modelling and forecasting 4 x 10+5 min talks and 30 min discussion Plenary Session 6: Improving predictions through machine learning and data sciences 1 x 10+5 min talk	<i>Seshu Kolusu, R Jenamani</i> <i>(For individual talks please see list at end of the agenda)</i>
17:30		End of Day 4	

Day 5: Friday 13th February 2026

India IST	UK GMT	Session	Speakers / Facilitators
09:00	03:30	Arrival	
09:30	04:00	Plenary Session 6 [cont.]: Improving predictions through machine learning and data sciences 3 x 10+5 min talks and 15 min discussion	<i>Seshu Kolusu, R Jenamani</i> <i>(For individual talks please see list at end of the agenda)</i>
10:30	05:00	Keynote: Mission Mausam	<i>MoES Mission Mausam Secretariat</i>
11:00	05:30	Break	
11:30	06:00	WCSSP Future directions: To include breakout discussions on Future Directions/networking time	<i>Anthony Jones</i>



13:00		Lunch	
14:00	08:30	Feedback from breakout discussions on Future directions/networking time and protected time for additional SRP meetings.	ALL
16:00	10:30	End of Workshop	

Science Talks and Presenters

Plenary Session 1: Understanding, predictability, post-processing and verification of high impact weather

Tuesday 10th February 2026, 15:30-17:00

Facilitators: Gill Martin (UK Met Office), Prasanth Pillai (IITM)

On the intensification of monsoon low-pressure systems	Kieran M R Hunt <i>University of Reading</i>	15:30-15:45
Increase in the intense cyclones in the Arabian Sea during the last decade and its reasons and characteristics	R. Harikumar <i>INCOIS</i>	15:45-16:00
Analysis of moist heatwaves and their relationship with active and break periods of the ISM during 1940– 2023.	Akshay Deoras <i>University of Reading</i>	16:00-16:15
The impact of the Equator-to-polar temperature gradient on temperature extremes over the tropical region and the Indian subcontinent	Rajib Chattopadhyay <i>IITM</i>	16:15-16:30

Plenary Session 2: Coupled model development, evaluation and inter-comparisons

Wednesday 11th February 2026, 13:30-15:00

Facilitators: Arathy Menon (UK Met Office), Jayakumar (NCMRWF)

Coupled global NWP system at NCMRWF	John P George <i>NCMRWF</i>	13:30-13:45
Regional Coupled Model India	Juan M Castillo <i>UK Met Office</i>	13:45-14:00
The Indian Ocean-Land-Atmosphere (IOLA) Coupled Mesoscale Prediction System for Inland Severe Weather and Coastal Hazards Forecasting	Sudheer Joseph <i>INCOIS</i>	14:00-14:15



Sub-grid scale modelling activities at NCMRWF

T J Anurose
NCMRWF

14:15-14:30

Plenary Session 3: Understanding model error evolution, physical processes and scale interactions

Wednesday 11th February 2026, 15:30-17:30

Facilitators: Gill Martin (UK Met Office), Prasanth Pillai (IITM)

The multi-year negative Indian Ocean Dipole of 2021–2022	Ankur Srivastava IITM	15:30-15:45
Swell surges in the Indian Ocean (Kallakadal) events in fully coupled global Ocean-Wave-Atmosphere (OWA) system.	Nikesh Narayan UK Met Office	15:45-16:00
Importance of teleconnections in predictability of monthly-mean rainfall during Indian Summer Monsoon.	Ankur Gupta NCMRWF	16:00-16:15
Challenges in simulating polar sea ice variability	Arnab Mukherjee NCPOR	16:15-16:30

Plenary Session 4 Improving models using observations

Thursday 12th February 2026, 11:00-12:30

Facilitators: Bernard Claxton (UK Met Office), Anupam Hazra, Sachin Deshpande (IITM)

Observing and predicting lightning risk over the Indian region and development of convective scale modelling	Saji Mohandas NCMRWF	11:00-11:15
Progress on gridding Indian radar data to enable model evaluation using radar data	Rob Thompson University of Reading	11:15-11:30
INCOIS process-specific field campaign	Girishkumar M S INCOIS	11:30-11:45
Satellite Direct Products and Retrievals in NCMRWF Assimilation Systems: Status and Plans.	Indira Rani S NCMRWF	11:45-12:00

Plenary Session 4 [cont.]: Improving models using observations



Thursday 12th February 2026, 13:30-15:00

Facilitators: Bernard Claxton (UK Met Office), Anupam Hazra, Sachin Deshpande (IITM)

Evaluation of Extreme Rainfall Events in a High-Resolution UKMO Regional Model over India	Paul Field <i>UK Met Office</i>	13:30-13:45
Use of Doppler radar data taken from Bhopal to help with the evaluation and development of convective-scale modelling	Adam Gainford <i>University of Reading</i>	13:45-14:00
Evaluating Roles of Absorbing and Scattering Aerosols in Winter Fog in the Indo-Gangetic Plain	Shweta Bhati <i>NCMRWF</i>	14:00-14:15
Better monsoon precipitation in coupled climate model: Importance of mixed-phase clouds	Moumita Bhowmik <i>IITM</i>	14:15-14:30

Plenary Session 5 Impact modelling and forecasting

Thursday 12th February 2026, 15:30-17:00

Facilitators: Seshu Kolusu (UK Met Office), R Jenamani (IMD)

Comparative Evaluation of Short-Range Extreme Rainfall Forecast by Two High Resolution Global Models	Tanmoy Goswami <i>IITM</i>	15:30-15:45
Multi-hazard Impact-based Forecasts and Warnings	Darren Lumbroso <i>HR Wallingford</i>	15:45-16:00
Value Chain Assessment of an Extreme Heavy Rainfall Event over Chhattisgarh	Gayatri Vani Kanchibhotla <i>IMD/UK Met Office</i>	16:00-16:15
Using the value chain process to analyse multi hazard events in the UK	Lizzy Dyson <i>UK Met Office</i>	16:15-16:30

Plenary Session 6 Improving predictions through machine learning and data sciences

Thursday 12th February 2026, 17:00-17:30

Facilitators: Seshu Kolusu (UK Met Office), R Jenamani (IMD)

Machine Learning and Traffic Impact Analysis	Caroline Jones <i>UK Met Office</i>	17:00-17:15
--	---	-------------

Plenary Session 6 [cont.]: Improving predictions through machine learning and data sciences

Friday 13th February 2026, 9:30-10:30

Facilitators: Seshu Kolusu (UK Met Office)



Foundational Models' Precipitation Inter-Comparison Over Indian Region	Deepesh Jain IITM	09:30-09:45
Urban scale ML development	Huw Lewis UK Met Office	09:45-10:00
Assessing Initial-Condition Sensitivity of AI/ML Foundation Models for Operational Weather Forecasting	Niranjan Kondapalli NCMRWF	10:00-10:15

Poster Sessions, Presenters

Poster Sessions, Presenters

Poster Session 1

Tuesday 10th February 2026, 11:00-13:00

- 1. Project Overview**
- 2. Indian Academic defrayment projects**

1.1	Key insights from the Weather and Climate Science for Service Partnership India in collaboration	Anthony Jones UK Met Office
1.2	Showcasing the benefits and impact of WCSSP India	Nick Hopkins-Bond UK Met Office
1.3	Hybrid ML-xAI-Dynamical Framework for Enhancing Skill of NCMRWF NCUM S2S-to-Seasonal Monsoon Rainfall Predictions at Subregional Scales	Ashok Karumuri University of Hyderabad
1.4	Enhanced Lightning Hazard Prediction in India with Observational Data and Improved Modeling of Sub-Grid Scale Processes	A. Naga Rajesh SRM Institute of Science and Technology
1.5	Impact-based forecasting of lightning, hail, and wind gusts in severe convection over eastern parts of India	Krishna K Osuri NIT Rourkela
1.6	Understanding and Predicting Extreme Rainfall Events in India: A Machine Learning and Numerical Modeling Approach	G. China Satyanarayana KL University
1.7	Modelling and Predicting Glacial Lake Outburst Flood (GLOFs) in High Mountain Asian Region using Ensemble Machine Learning	Arun Kumar NIT Rourkela



- 1.8 Modeling the Combined Impact of Sea Level Rise, Land Subsidence, and Tropical Cyclones on Compound Flooding of Coastal areas in the Mahanadi river
Ratnakar Swain
NIT Rourkela
- 1.12 Enhancing Land-Atmosphere Interactions and Sub-Seasonal to Seasonal Forecasts in the UKMO JULES Urban Climate Crisis over Cochin and Role of Urban Testbeds for Integrated Observations and City scale Improved Water Management and Vegetation Dynamics Modeling
Prasanth
Valayamkunnath
Abhilash S.
IISER
Cochin University of Thiruvananthapuram Science & Technology
Sourav Sir
- 1.13 Assessment of the NCMRWF Seamless Prediction System on Simulating ocean mixing in the northern Bay of Bengal for better prediction of the Monsoon impacts on Monsoon Analysis using Integrated Diagnostics
IIT Bhubaneswar
Tanuja Nigam
CSIR NIO Goa
- 1.14 Advancing Aerosol Representation in the Regional Unified Model through inclusion of Reactive Nitrogen Chemistry for Improved Air Quality and Fog Forecasting Hazards in the Indian Himalayas through Evaluation of the cutting-edge NCMRWF Ensemble Prediction System
Vinoj. V
IIT Bhubaneswar
Raju Attada
IISER Mohali
- 1.15 Quality control of IMD Ground Radar data with spaceborne radars and estimation of calibration bias
Srinivasa
Ramanujam Kannan
IIT Bhubaneswar
- 1.16 POD-NCUM: Process Oriented Diagnostics (POD) to infer key processes linked to Rainfall and Surface Temperature Biases in NCUM Model
Vishal Dixit
IIT Bombay
- 1.17 PROcess-Oriented Model evaluation for Improved Subseasonal to seasonal prEdictions of monsoon (PROMISE)
Sandeep Sukumaran
IIT Delhi
- 1.18 DeveloPIng an ML-driven SuperEnsemble for NCMRWF's Ensemble Prediction System
Sarvesh Kumar
Dubey
IIT Delhi
- 1.19 Towards Improved Parametrization of Cloudy Boundary Layer Processes in the Unified Model using High-resolution Modelling and in-situ Observations over Indian Region
Piyush Srivastava
IIT Roorkee
- 1.20 Advancing Aerosol Representation in the Regional Unified Model through Data Assimilation for Improved Air Quality and Fog Forecasting over India
Govindan Kutti M.
Indian Institute of Space Science and Technology
- 1.21 Deciphering Compound Extremes in the Northwest Himalaya: Mapping, Trends and Atmospheric Triggers for improved Early Warning Systems
Ashwini Ranade
NIH Roorkee



1.22 Enhanced Understanding of Indian Summer Monsoon processes over South Asia using the NCUM coupled modelling system at medium to Sub-Seasonal time scales

Dandi Appala Ramu
University of
Hyderabad



Poster Session 2

Wednesday 11th February 2026, 9:30-12:30

- 3. Understanding, predictability, post-processing and verification of high impact weather**
- 4. Coupled model development, evaluation and inter-comparisons**
- 5. Understanding model error evolution, physical processes and scale interactions**

2.1	The role of dry intrusions in breaks of the Indian summer monsoon	Akshay Deoras University of Reading
2.2	Early and Delayed Onset of Tropical Cyclone Rapid Intensification in the Coupled HWRF Model: Role of Upper Atmospheric Evolution	N.D. Manikanta INCOIS
2.3	Development of a high-resolution regional/global ocean modelling system using MOM6	Abhisek Chatterjee INCOIS
2.4	Ocean observation monitoring and its impact on the weakly coupled data assimilation system	Imranali Momin NCMRWF
2.5	GOSI10: Global Ocean and Sea Ice configuration version 10	Catherine Guiavarc'h UK Met Office
2.6	Ocean and polar processes, model development and evaluation	Tim Graham UK Met Office
2.7	Strategies of ensemble based coupled data assimilation for improved weather and short-term climate predictions	Sreenivas Pentakota University of Hyderabad
2.8	Understanding how the ISM precipitation bias varies in different versions of the Met Office weather forecasting system.	Richard Keane UK Met Office
2.9	Diagnosing ocean biases in GC5 using Lagrangian particle tracking	Hannah Ellis UK Met Office
2.10	Understanding precipitation biases in weather forecasts using the boreal summer intraseasonal oscillation	Richard Keane UK Met Office
2.11	Characteristics of East Greenland Shelf during 2025 Summer and comparison with NCUM predictions	Nuncio Murukesh NCPOR



Poster Session 3

Thursday 12th February 2026, 9:30-11:00

6. Improving models using observations

7. Impact modelling and forecasting

8. Improving predictions through machine learning and data sciences

- | | | |
|------|--|--|
| 3.1 | Atmospheric conditions over the west coast of India during the dry and wet spells event in July 2024: a moist static energy approach | Anupama Sahoo
INCOIS |
| 3.2 | SOL/INSOL - a simplified aerosol scheme for numerical weather prediction | Anthony Jones
UK Met Office |
| 3.3 | Why cloud microphysics matters for extremes: Importance of observation | Moumita Bhowmik
IITM |
| 3.4 | High resolution numerical weather prediction for investigating cloud Heterogeneity and improving hyper local rainfall forecast using CRM and LES schemes | Gadha Gopan
IITM |
| 3.5 | Spatial Heterogeneity of Lightning Activity and Associated Atmospheric Drivers Over India During Pre-monsoon and Monsoon Seasons | Naman Prakash Rai
IITM |
| 3.6 | Ocean observational activities of NCPOR, Goa, in the Southern Ocean and Antarctic coastal waters. | Jenson George
NCPOR |
| 3.7 | Sub-Divisional North-East Monsoon Rainfall variability over South Peninsular India | Sagili Karunasagar
IMD |
| 3.8 | Advancing flood risk understanding through improved impact-based forecasting and process-level diagnostics using case-studies | Anand Shankar
IMD |
| 3.9 | The Compound Effect of Nocturnal Cooling Deficit and Urban Dry Island in Amplifying Urban Heat Island Risk in Pune City, India | Soumi Chakravorty
IMD |
| 3.10 | Advancing Heatwave Prediction with the Aurora Foundation Model | Seshu Kolusu
UK Met Office |
| 3.11 | South Asian Summer Monsoon representation in Machine Learning models | Gill Martin
UK Met Office |



3.12 Global model evaluation in physical and ML models

**José M.
Rodríguez
UK Met Office**

3.13 Evaluation of 4 AI/ML foundation models for Tropical Cyclone Forecasting Using ERA5 and NCUMG initial conditions

**Niranjan
Kondapalli
NCMRWF**

