

FINAL: 4th WCSSP India Annual Science Workshop, 27th February – 3rd March 2023

The 4th WCSSP India Annual Science Workshop

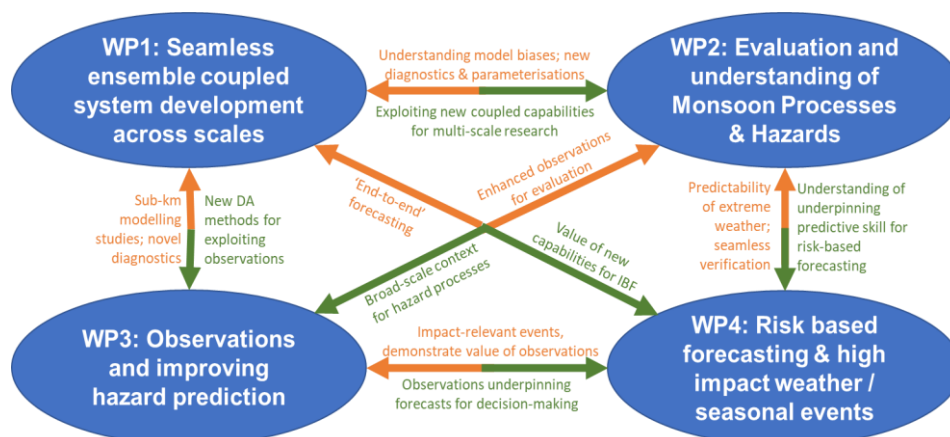
‘Pathways to Impact: Building a legacy in Science to Services’

The 4th WCSSP India Annual 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 activities in the past year, leading to *more accurate forecasts and earlier warnings of high impact weather and enhancing the capacity to transition towards delivery of impact-based forecasting.*

This event provides the first opportunity for face-to-face interactions following 2 years of online-based workshops and meetings. Workshop sessions will be held at MoES in New Delhi (*Monday 27 February 2023*) and at the National Centre for Medium Range Weather Forecasting (NCMRWF) in Noida (*Tuesday 28 February – Thursday 2 March 2023*). Most sessions will also be accessible online.

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.



Workshop schedule overview:

Monday 27 Feb 2023	LOCATION: MoES, Lodhi Road, New Delhi + online		
	ARRIVAL and LUNCH [1200 – 1330 IST]		
	OPENING CEREMONY [1400 – 1435 IST]		
	<ul style="list-style-type: none"> Opening remarks Dr M Ravichandran and Ms Christina Scott Inaugural address from Hon. Minister Dr Jitendra Singh 		
Tuesday 28 Feb 2023	LOCATION: NCMRWF, Noida + online		
	MORNING [0945 – 1300 IST; 0415 – 0730 UK]		
	<ul style="list-style-type: none"> Welcome to NCMRWF; Parallel session arrangements 		
	Parallel Session 1: Impact modelling and forecasting techniques	Parallel Session 2: Understanding model error evolution, physical processes, and scale interactions	Parallel Session 3: Improving prediction of visibility and fog over the Indian subcontinent
Wednesday 1 Mar 2023	LOCATION: NCMRWF, Noida + online		
	MORNING [0945 – 1300 IST; 0415 – 0730 UK]		
	Parallel Session 4: Impact based forecasting	Parallel Session 5: Improving models using observations Parallel Session 7: Improving predictions through machine learning and data sciences	Parallel Session 6: Observing and predicting lightning risk over the Indian region
	AFTERNOON [1400 – 1800 IST; 0830 – 1230 UK]		
<ul style="list-style-type: none"> Plenary Session 4: Forecasting extreme weather events Plenary Session 5: Coupled model development, evaluation, and inter-comparisons Plenary Session 6: Observing and predicting lightning risk over the Indian region 			
<ul style="list-style-type: none"> Plenary Session 7: Impact modelling and forecasting techniques Plenary Session 8: Improving prediction of visibility and fog over the Indian subcontinent 			

	<ul style="list-style-type: none"> Plenary Session 9: Understanding model error evolution, physical processes, and scale interactions 		
	WORKSHOP DINNER, hosted by Secretary MoES [1930 IST] Location: Northern Railway Eco Park, Chanakyapuri, New Delhi		
	LOCATION: NCMRWF, Noida + online		
	MORNING [0945 – 1300 IST; 0415 – 0730 UK]		
Thursday 2 Mar 2023	Parallel Session 8: Coupled model evaluation and inter-comparisons	Parallel Session 9: Predictability, post-processing and verification of high-impact weather	Parallel Session 10: Forecasting extreme weather events
	AFTERNOON [1400 – 1800 IST; 0830 – 1230 UK] <ul style="list-style-type: none"> Plenary Session 10: Improving models using observations Plenary Session 11: Predictability, post-processing and verification of high-impact weather Closing ceremony 		
Friday 3 Mar 2023	LOCATION: NCMRWF, Noida + online		
	ALL DAY [1000 – 1630 IST; 0430 – 1100 UK] <ul style="list-style-type: none"> Meeting spaces available during Friday morning to support additional 1:1, group discussions or SRP meetings. If interested to schedule and advertise any events either before the workshop, or as ideas develop during the workshop, please contact workshop organisers 		

Notes to workshop attendees:

We are excited to have opportunity to meet in-person and online again during the 4th WCSSP India Annual Science Workshop, with 190 registered participants and over 120 abstracts submitted.

With the aim to encourage new connections across the project after a period of online-only interactions, all contributions are scheduled as oral presentations across the week (see agenda for details).

We therefore kindly request:

- **All speakers keep strictly to time, allowing good time for Q&A discussion**
- Presentations to be uploaded ahead of time to [Project Sharepoint](#) both to provide legacy of the workshop and access to those joining online and in parallel sessions
- All participants use the break/networking time available through the week to re-connect with existing colleagues and develop new project links and networks

Joining links for Virtual Attendees:

All links for all sessions have been included in the below detailed agenda – please check plenary and parallel agendas as relevant.

Monday 27th February 2023 **LOCATION: MoES, Lodhi Road, New Delhi**
 1200 – 1830 India (IST); 0830 – 1300 UK (GMT)

Time	Session / Title	Speakers	Joining Link
1200 India	ARRIVAL		
1230 India	LUNCH for all workshop participants		
	OPENING CEREMONY		
1400 India 0830 UK	Welcome address Dr Gopal Iyengar Ministry of Earth Sciences		[3 min]
	Opening Remarks Prof Kamal Puri , WCSSP India Science Review Panel Chair Prof Sean Milton , WCSSP India Executive Committee, Met Office		[5 min]
	Dr M. Ravichandran , Secretary Ministry of Earth Sciences		[5 min]
	Ms. Christina Scott CMG, Minister and British Deputy High Commissioner to India		[10 min]
	Inaugural Address Hon. Minister Dr. Jitendra Singh		[10 min]
	Vote of Thanks Dr. V. S. Prasad , Head, NCMRWF		[2 min]
1435 India 0905 UK	SHORT BREAK		
		Room: MoES Conference Hall Online: Teams – link to be provided by MoES	
	PLENARY 1		
		Chair: Dr S C Bhan (IMD)	
1445 India 0915 UK	Work Package 2: Evaluation and understanding monsoon processes and hazards	Vinu Valsala, IITM Gill Martin, Met Office	[10min talk]
1455 India 0925 UK	Science highlight: Indian summer monsoon precipitation biases in GloSea and CFS and their response to large-scale drivers	Richard Keane, Met Office Ankur Srivastava, IITM	[15min talk]
1510 India 0935 UK	<i>Plenary Q&A – WP2 and Science Highlight</i>		[10min Q&A]
1520 India 0950 UK	Work Package 1 update: Seamless ensemble coupled system development across scales	John George, NCMRWF Huw Lewis, Met Office	[10min talk]
1530 India 1000 UK	Science highlight: Impact of the urbanization and aerosol in predicting extreme weather events using sub-km model	A Jayakumar, NCMRWF Bernard Claxton, Met Office	[15min talk]
1545 India 0935 UK	<i>Plenary Q&A – WP1 and Science Highlight</i>		[10min Q&A]
1555 India 1025 UK	HIGH TEA		

PLENARY 2		
Chair: Dr. E N Rajagopal (IITM)		
1630 India 1100 UK	<i>Work Package 3 update: Observations and improving hazard prediction</i>	G. Pandithurai, IITM Amy Doherty, Met Office [online] <i>[10min talk]</i>
1640 India 1110 UK	<i>Science highlight: Lightning prediction over India on seasonal timescales</i>	Anupam Hazra, IITM <i>[15min talk]</i>
1655 India 1125 UK	<i>Plenary Q&A – WP3 and Science Highlight</i>	<i>[10min Q&A]</i>
1705 India 1135 UK	<i>Work Package 4 update: Risk based forecasting and high impact weather</i>	RK Jenamani, IMD Joanne Robbins, Met Office [online] <i>[10min talk]</i>
1715 India 1145 UK	<i>Science highlight: Wider application and evaluation of the Flood Hazard Impact Model for India (FHIM-India)</i>	Steven Cole, UKCEH Raghavendra Ashrit, NCMRWF <i>[15min talk]</i>
1735 India 1205 UK	<i>Plenary Q&A – WP4 and Science Highlight</i>	<i>[10min Q&A]</i>
1740 India 1210 UK	SHORT BREAK	
PLENARY 3		
Chair: Dr. A K Mitra (former Head, NCMRWF)		
1745 India 1215 UK	Role of atmospheric heat fluxes and ocean advection on decadal (2000–2019) change of sea-ice in the Arctic	Arnab Mukherjee, NCPOR <i>[10min talk + 5min Q&A]</i>
1800 India 1230 UK	On the utility of ensemble rainfall forecasts over river basins in India	Anumeha Dube NCMRWF <i>[10min talk + 5min Q&A]</i>
1815 India 1245 UK	Extreme weather events of 2022, their impacts and impact-based forecasting	RK Jenamani, IMD <i>[10min talk + 5min Q&A]</i>
1830 India 1300 UK	CLOSE	

Tuesday 28th February 2023

LOCATION: NCMRWF, Noida

0945 – 1800 India (IST); 0415 – 1230 UK (GMT)

Time	Session / Title	Speakers	Joining Links
0900 India	CLOSED SCIENCE REVIEW PANEL MEETINGS (by invitation only) Hall 3 SRP meeting with UK academic project PIs (and representatives in-country)		
0945 India	ARRIVAL FOR MAIN DELEGATION		Room: Hall 1
1000 India 0430 UK	Welcome to NCMRWF <i>Arrangements for the day</i>	Dr V.S. Prasad, Head, NCMRWF John George, NCMRWF	
1015 India 0445 UK	PARALLEL SESSIONS 1, 2, 3 • See parallel session agenda below	See session agendas for joining links	
1115 India 0545 UK	BREAK / NETWORKING		
1145 India 0615 UK	PARALLEL SESSIONS 1, 2, 3 continued • See parallel session agenda below	See session agendas for joining links	
1300 India 0730 UK	LUNCH		
	Room: Hall 1	Online: TEAMS - Click here to join Plenary Sessions	
PLENARY 4: Forecasting extreme weather events		Chair: <i>Dr Jenamani</i>	
1400 India 0830 UK	Probabilistic Prediction of Active and Feeble Western Disturbances: Medium to Extended Range Leadtime of Multi Model Perspective	Arulalan T, IMD <i>[10min talk + 5min Q&A]</i>	
1415 India 0845 UK	Evaluating the Heavy Rainfall Events of 2022 in NCUM-G and UKMO	Raghavendra Ashrit, NCMRWF <i>[10min talk + 5min Q&A]</i>	
1430 India 0900 UK	Medium and extended range forecast of monsoon over India: Prospects of its application in different sectors	D R Pattanaik, IMD <i>[10min talk + 5min Q&A]</i>	
1445 India 0915 UK	Improved TC Science for better decision making	Monica Sharma, IMD <i>[online]</i> <i>[10min talk + 5min Q&A]</i>	
1500 India 0930 UK	BREAK / NETWORKING		
PLENARY 5: Coupled model development, evaluation, and inter-comparisons		Chair: <i>Gill Martin</i>	
1530 India 1000 UK	NCMRWF Extended Range Prediction System	Ankur Gupta, NCMRWF <i>[15min talk + 5min Q&A]</i>	
1550 India 1020 UK	Evaluation and comparison of the sub-seasonal prediction skill of Indian summer monsoon in IITM CFSv2 and UKMO GloSea5	Susmitha Joseph, IITM <i>[15min talk + 5min Q&A]</i>	
1610 India 1040 UK	Advances in weather forecasting enabled by Regional Environmental Prediction research and its implementation at NCMRWF	Ségolène Berthou, Met Office Akhilesh Mishra NCMRWF <i>[15min talk + 5min Q&A]</i>	
1630 India 1100 UK	BREAK / NETWORKING		
PLENARY 6: Observing and predicting lightning risk over the Indian region		Chair: <i>Anupam Hazra</i>	
1700 India 1130 UK	Evaluation of lightning forecasts from the High-Resolution Rapid Refresh (HRRR) modelling system with ground-based lightning data	B R R Hari Prasad Kottu, NCMRWF <i>[15min talk + 5min Q&A]</i>	
1720 India 1150 UK	Exploring relationships between the CASIM microphysics and forecast lightning flash rates	Jonathan Wilkinson, Met Office <i>[15min talk + 5min Q&A]</i>	
1740 India 1210 UK	Thunderstorm and Lightning warning system over Jharkhand, India	Preeti Gunwani, IMD <i>[15min talk + 5min Q&A]</i>	
1800 India	CLOSE		

TUESDAY 28 FEBRUARY 2023 - MORNING PARALLEL SESSION AGENDA:

PARALLEL SESSION 1: Impact modelling and forecasting techniques			
Chair: <i>Preveen Kumar D (NCMRWF)</i>		Room: Hall 2	
		Online: Click here to join Parallel 1	
Time	Session / Title	Speakers	
1015 India 0445 UK	Extreme Weather Events induced mortalities in Jammu and Kashmir, India during 2010- 2022	Mukhtar Ahmed	IMD
1030 India 0500 UK	Assessment of Heavy rainfall and Impact Based weather forecast over Arunachal Pradesh during the southwest monsoon	A. Sandeep	IMD
1045 India 0515 UK	Heavy rainfall warning and Impact based forecasting for the subdivision of Tamilnadu, Puducherry & Karaikal during the northeast monsoon season	B. Geetha	IMD [online]
1100 India 0530 UK	Designing an Impact-based Forecasting evaluation methodology using hazard and impact observations	Elizabeth Dyson	Met Office
1115 India 0545 UK	BREAK / NETWORKING		
1145 India 0615 UK	Developing Impact-Based Forecasting of heavy rainfall and agriculture for the state of Jharkhand	Abhishek Anand	IMD [online]
1200 India 0630 UK	Investigating the unprecedented heavy rainfall activity over Northeast India and their impact during 13-15 May 2022	Himadri Vaiasa	IMD
1215 India 0645 UK	Impact based Forecast and Risk based Warning System for Heavy Rainfall in India: A Review	Shobhit Katiyar	IMD
1230 India 0700 UK	Study of rainfall thresholds for Impact based forecast for monsoonal rainfall over Gujarat using percentile analysis	ViginLal F	IMD
1245 India 0715 UK	Steps towards a probabilistic seamless blended multi-model weather pattern forecasting tool for India	Robert Neal	Met Office [online]
1300 India 0730 UK	LUNCH		

PARALLEL SESSION 2: Understanding model error evolution, physical processes and scale interactions			
Chair: <i>Abhijit Sarkar (NCMRWF)</i>		Room: Hall 1	
		Online: Click here to join Parallel 2	
Time	Session / Title	Speakers	
1015 India 0445 UK	Examining the behaviour of monsoon low-pressure systems under contrasting soil moisture conditions in India	Akshay Deoras	University of Reading
1030 India 0500 UK	Nonlinear intensification of monsoon low pressure systems by the BSISO	Kieran M R Hunt	University of Reading
1045 India 0515 UK	The diagnosis of the extended range ERPAS and GloSea5 models under the influence of the extratropical-tropical interactions	Mahesh Kalshetti	IITM
1100 India 0530 UK	Seasonal uncertainty assessments of NCMRWF global ensemble prediction system	Paromita Chakraborty	NCMRWF
1115 India 0545 UK	BREAK / NETWORKING		
1145 India 0615 UK	Intraseasonal Oscillation of Land Surface Moisture and its link with the active phases of the Indian Summer Monsoon	Pratibha Gautam	IITM
1200 India 0630 UK	Process-oriented diagnostics in NCUM global forecasts during monsoon season	Mohana S Thota	NCMRWF
1215 India 0645 UK	Cohesive influence of Greenland Sea ice, Eurasian snow and ENSO on the diverse nature of South and East Asian Monsoons	Amita Prabhu	IITM
1230 India 0700 UK	Global wave model coupling to GC5 climate model	Nikesh Narayan	Met Office [online]
1245 India 0715 UK	THEME DISCUSSION: <i>Designing future process-based studies in collaboration to address priority model deficiencies through WCSSP India</i>		
1300 India 0730 UK	LUNCH		

PARALLEL SESSION 3: Improving prediction of visibility and fog over the Indian subcontinent			
Chair: <i>A. Jayakumar (NCMRWF)</i>		Room: Hall 3	
		Online: Click here to join Parallel 3	
Time	Session / Title	Speakers	
1015 India 0445 UK	Development and implementation of drop Size distribution parameterization based on CAIPEEX observation data in high resolution GFS-T1534 model	Sahadat Sarkar	IITM
1030 India 0500 UK	WiFEX: Walk into the warm fog over Indo-Gangetic Plain region	Sandeep Wagh	IITM
1045 India 0515 UK	Radiometer-derived thermodynamical properties of Dense fog, Haze and Clear events during the Winter Fog Experiment	Narendra Gokul Dhangar	IITM
1100 India 0530 UK	Visibility prediction – update on Vera	Bernard Claxton	Met Office
1115 India 0545 UK	BREAK / NETWORKING		
1145 India 0615 UK	Sensitivity of the VERA-simulated visibility over Delhi to its meteorological input parameters	Gayatry Kalita	IITM
1200 India 0630 UK	Understanding factors influencing MetUM forecasts of fog over India: An irrigation perspective	Srinivas Reka	University East Anglia
1215 India 0645 UK	Sensitivity of fog simulation over Delhi region to the latest LULC in WRF Model	Utkarsh P. Bhautmage	IITM
1230 India 0700 UK	Understanding the role of aerosol-chemistry for Delhi fog simulation using particle-based Eulerian-Lagrangian model	Moumita Bhowmik	IITM [online]
1245 India 0715 UK	Progress towards Implementing a Vertically Distributed Urban Canopy in the Unified Model	Jon Shonk	Met Office [online]
1300 India 0730 UK	LUNCH		

Wednesday 1st March 2023

LOCATION: NCMRWF, Noida

0945 – 1800 India (IST); 0415 – 1230 UK (GMT)

Time	Session / Title	Speakers	Joining Links
0900 India	CLOSED SCIENCE REVIEW PANEL MEETINGS (by invitation only) Hall 3 SRP meeting with Met Office Work Package leads and Project Management		
0945 India	ARRIVAL FOR MAIN DELEGATION		
1000 India 0430 UK	PARALLEL SESSIONS 4, 5, 6 • See parallel session agenda below	See session agendas for joining links	
1115 India 0545 UK	BREAK / NETWORKING		
1145 India 0615 UK	PARALLEL SESSIONS 4 & 5 cont., 7 • See parallel session agenda below	See session agendas for joining links	
1300 India 0730 UK	LUNCH		
	Room: Hall 1	Online: TEAMS - Click here to join Plenary Sessions	
PLENARY 7: Impact modelling and forecasting techniques		Chair: Steven Cole	
1400 India 0830 UK	Impact-Based Forecasting and Warning: Methodology, and Implementation for NEast India	Arun Kumar VH, IMD <i>[15min talk + 5min Q&A]</i>	
1420 India 0850 UK	Satellite derived impacts of flooding in Bihar, India	Barbara Hofmann, HR Wallingford <i>[15min talk + 5min Q&A]</i>	
1440 India 0910 UK	Impact based forecasting of heavy rainfall over Maharashtra	Nitha.T.S, IMD <i>[15min talk + 5min Q&A]</i>	
1500 India 0930 UK	BREAK / NETWORKING		
PLENARY 8: Improving prediction of visibility and fog over the Indian subcontinent		Chair: G Pandithurai	
1530 India 1000 UK	Operational Probabilistic Fog Forecast Using Ensemble Prediction System: Development, Verification and Challenges	Avinash N Parde, IITM <i>[15min talk + 5min Q&A]</i>	
1550 India 1020 UK	Sensitivity of fog over Delhi to aerosol concentrations	Andrew Ross, University of Leeds <i>[15min talk + 5min Q&A]</i>	
1610 India 1040 UK	Impact of Aerosol-cloud interactions in simulating extreme weather events during winter season over Delhi	Anurose TJ, NCMRWF <i>[15min talk + 5min Q&A]</i>	
1630 India 1100 UK	BREAK / NETWORKING		
PLENARY 9: Understanding model error evolution, physical processes and scale interactions		Chair: Vinu Valsala	
1700 India 1130 UK	Using relaxation experiments to understand drivers of systematic errors in the Asian Summer Monsoon	Gill Martin, Met Office <i>[10min talk + 5min Q&A]</i>	
1720 India 1150 UK	Indian Monsoon Subseasonal Variability and Arctic Amplification	Rajib Chattopadhyay, IITM <i>[10min talk + 5min Q&A]</i>	
1740 India 1210 UK	Progress towards km-scale coupled global modelling	Huw Lewis, Met Office <i>[15min talk + 5min Q&A]</i>	
1800 India 1230 UK	CLOSE		
1930 India	WORKSHOP DINNER hosted by Secretary MoES Location: Northern Railway Eco Park, Chanakyapuri, New Delhi		

WEDNESDAY 1 MARCH 2023 - MORNING PARALLEL SESSIONS AGENDA:

PARALLEL SESSION 4: Impact based forecasting			
Chair: <i>Ashis Routray (NCMRWF)</i>		Room: Hall 1	
		Online: Click here to join Parallel 4	
Time	Session / Title	Speakers	
1000 India 0430 UK	Impact Based Forecasting for Intense Precipitation Events in Uttar Pradesh: Recent Developments, Status, Challenges & Future Perspectives	Atul Kumar Singh	IMD
1015 India 0445 UK	Assessment of impact based forecast issued for the state of Andhra Pradesh during 2022	K. Sagar	IMD
1030 India 0500 UK	Assessment of Flood Risk and Enhanced Resilience for frequent floods impacted by high discharges of river in the upper catchments and associated Heavy rainfall in the North Bihar, India	Ananda Shankar	IMD
1045 India 0515 UK	Impact based forecast (IbF) for heavy rainfall in Karnataka	Geetha Agnihotri	IMD **10-min
1055 India 0525 UK	Heavy Rainfall Events Over Chhattisgarh: Understanding its Impact	Gayatri Vani Kanchibhotla	IMD **10-min [online]
1105 India 0535 UK	Impact based forecast (IbF) for heavy rainfall in Bangalore	A Prasad	IMD **10-min [online]
1115 India 0545 UK	BREAK / NETWORKING		
1145 India 0615 UK	Impact-based Very Heavy Rainfall Warning for Bhopal during monsoon 2022	R Balasubramanian	IMD [online]
1200 India 0630 UK	Impact Based Forecast Issued by IMD for the Intense Rainfall/Snowfall Spell over Northwest India during 05th-09th January, 2022	Krishna Mishra	IMD
1215 India 0645 UK	A methodology for computation of district wise heavy rainfall impact score for Rajasthan	Radheshyam Sharma	IMD **10-min
1225 India 0655 UK	Analysis of Heavy Rainfall events during Southwest Monsoon 2022 over Gujarat State as an input tool for Impact Based Forecasting: A Case Study	Parul Trivedi	IMD **10-min
1235 India 0705 UK	Improving Impact Based Forecast of Heavy rainfall in Kerala	V.K.Mini	IMD **10-min [online]
1245 India 0715 UK	THEME DISCUSSION: <i>Motivations and lessons from weather events during 2022 to drive future WCSSP India research</i>		
1300 India 0730 UK	LUNCH		

PARALLEL SESSION 5: Improving models using observations			
Chair: <i>Indira Rani (NCMRWF)</i>		Room: Hall 3 Online: Click here to join Parallel 5	
Time	Session / Title	Speakers	
1000 India 0430 UK	Role of mean dynamic topography on the satellite-derived sea level anomaly data assimilation	Imranali M Momin	NCMRWF
1015 India 0445 UK	Atmosphere and Land Data Assimilation in NCUM-R NWP System and its benefits	Ashish Routray	NCMRWF
1030 India 0500 UK	Land Information System (LIS) with JULES and data assimilation impact on energy fluxes	Hashmi Fatima	NCMRWF
1045 India 0515 UK	Multi-year impact of observation in a UM based operational global NWP system	Sumit Kumar	NCMRWF
1100 India 0530 UK	Assimilation of Indian DBNet ATOVS radiances at NCMRWF	Srinivas Desamsetti	NCMRWF
1115 India 0545 UK	BREAK / NETWORKING		
1145 India 0615 UK	Impact of Assimilation of Radar Reflectivity and Radial Velocity on Simulation of Precipitation Events over Indian Region	Devajyoti Dutta	NCMRWF
PARALLEL SESSION 7: Improving predictions through machine learning and data sciences			
Chair: <i>B. Athiyaman (NCMRWF)</i>		Room: Hall 3 Online: Click here to join Parallel 7	
1200 India 0630 UK	Use of Machine Learning/AI in weather and climate prediction for India - Opportunities and Preliminary Research	Sean Milton	Met Office
1215 India 0645 UK	A Machine Learning Based Generation of Dynamic Blending Weights for Rainfall Analysis Product	Preveen Kumar D	NCMRWF
1230 India 0700 UK	A Novel Approach for Recognizing Remote Sensing Images for Cyclonic Storms Using Deep Learning Algorithms	Manikyala Rao Tankala	IMD [online]
1245 India 0715 UK	THEME DISCUSSION: <i>Prospects for exploiting machine learning across WCSSP India project scope</i>		
1300 India 0730 UK	LUNCH		

PARALLEL SESSION 6: Observing and predicting lightning risk over the Indian region			
Chair: <i>Abhisek Chatterjee (INCOIS)</i>		Room: Hall 2	
		Online: Click here to join Parallel 6	
Time	Session / Title	Speakers	
1000 India 0430 UK	Relationship Between Convective Storm Properties and Lightning Over the Western Ghat	G. Pandithurai	IITM
1015 India 0445 UK	Performance and tuning of the lightning scheme in a convective scale model over India	Saji Mohandas	NCMRWF [online]
1030 India 0500 UK	Development of a Dynamical Prediction System for Lightning Forecast over India	Greeshma M Mohan	NCMRWF
1045 India 0515 UK	Explicit lightning forecasting over North Eastern India and preliminary results over PAN India	T Banik	IMD
1100 India 0530 UK	Analysis of threshold values of Various thermodynamic indices for thunderstorm prediction over Delhi	Shivinder Singh	IMD
1115 India 0545 UK	BREAK / NETWORKING		
1145 India 0615 UK	Severe Convection Products derived from Satellite Imagery	Rory Gray	Met Office
1200 India 0630 UK	The seasonal distribution of lightning fraction over the Indian Region	Rakesh Ghosh	IITM
1215 India 0645 UK	Diurnal Cycle of Thunderstorm activity over the Indian region	Pradeep Sharma	IMD
1230 India 0700 UK	Quantifying the impact of lightning observation representativeness errors using a spatial verification method	Marion Mittermaier	Met Office [online]
1245 India 0715 UK	THEME DISCUSSION: <i>Designing joint observational and modelling experiments to support enhanced lightning risk prediction through WCSSP India</i>		

Thursday 2nd March 2023

LOCATION: NCMRWF, Noida

0945 – 1800 India (IST); 0415 – 1230 UK (GMT)

Time	Session / Title	Speakers	Joining Links
0900 India	CLOSED SCIENCE REVIEW PANEL MEETINGS (by invitation only) Hall 3 SRP meeting with India-based Work-package leads and MoES representatives		
0945 India	ARRIVAL FOR MAIN DELEGATION		
1000 India 0430 UK	PARALLEL SESSIONS 8, 9, 10 • See parallel session agenda below	See session agendas for joining links	
1115 India 0545 UK	BREAK / NETWORKING		
1145 India 0615 UK	PARALLEL SESSIONS 8, 9, 10 continued • See parallel session agenda below	See session agendas for joining links	
1300 India 0730 UK	LUNCH		
	Room: Hall 1	Online: TEAMS - Click here to join Plenary Sessions	
	PLENARY 10: Improving models using observations	Chair: Dr R Krishnan (Director, IITM - ONLINE)	
1400 India 0830 UK	Assessment of short-range forecast atmosphere-ocean cross-covariances from the Met Office coupled NWP system	Amos Lawless, Uni. Reading [15min talk + 5min Q&A]	
1420 India 0850 UK	Design of an OSSE to assess the impact of ISRO proposed Microwave Humidity Sounder in a low earth inclined orbit	Indira Rani S, NCMRWF [15min talk + 5min Q&A]	
1440 India 0910 UK	Assessment of the impact of adding ocean ensemble capability to the Met Office coupled NWP system	Daniel Lea, Met Office [ONLINE] [15min talk + 5min Q&A]	
1500 India 0930 UK	BREAK / NETWORKING		
	PLENARY 11: Predictability, post-processing and verification of high-impact weather	Chair: Andy Turner	
1530 India 1000 UK	Potential Economic Value of probabilistic forecast from NCMRWF global ensemble prediction system	Abhijit Sarkar, NCMRWF [15min talk + 5min Q&A]	
1550 India 1020 UK	Exploring the use of feature-based verification techniques on ensemble forecasts of tropical cyclone rainfall	Helen Titley, Met Office [ONLINE] [15min talk + 5min Q&A]	
1610 India 1040 UK	Verification of super ensemble products based on high resolution perturbed forecasts by two global ensemble prediction systems	Ashu Mamgain, NCMRWF [15min talk + 5min Q&A]	
1630 India 1100 UK	BREAK / NETWORKING		
	CLOSING CEREMONY	Chair: Gopal Iyengar, MoES	
1700 India 1130 UK	Reflections from Science Review Panel	Kamal Puri, SRP Chair	
1715 India 1145 UK	WCSSP India future directions	Huw Lewis, Met Office	
1730 India 1200 UK	Concluding remarks and next steps	Speaker(s) tbc, MoES	
1745 India 1215 UK	CLOSE		

THURSDAY 2 MARCH 2023 - MORNING PARALLEL SESSIONS AGENDA:

PARALLEL SESSION 8: Coupled model evaluation and inter-comparisons			
Chair: <i>Susmitha Joseph (IITM)</i>		Room: Hall 1 Online: Click here to join Parallel 8	
Time	Session / Title	Speakers	
1000 India 0430 UK	Intraseasonal variability of Summer Monsoon Rainfall in Observations and CMIP6 models simulation	Pradhan Parth Sarthi	U. South Bihar
1015 India 0445 UK	Sub seasonal Drought Assessment in NCMRWF Multi-Week Extended Range Prediction System	Kondapalli Niranjana Kumar	NCMRWF
1030 India 0500 UK	Coupled NWP using the ORCA12 ocean model	Tim Graham	Met Office
1045 India 0515 UK	Development of an India Water Model (IWM) for water management and forecasting applications	Manabendra Saharia	IIT Delhi
1100 India 0530 UK	Simulations of monsoon depressions over the Bay of Bengal using coupled and atmospheric regional models	Sandeep Pattanaik	IIT Bhubaneswar
1115 India 0545 UK	BREAK / NETWORKING		
1145 India 0615 UK	Monsoon Mission Climate Forecast System 2: Preliminary Results	Suryachandra Rao	IITM
1200 India 0630 UK	Regional downscaling of dynamic sea level of the Indian Ocean based on CMIP6 models	Abhisek Chatterjee	INCOIS
1215 India 0645 UK	The Indo-Pacific PEG and common Indian Ocean biases	Hannah Ellis	Met Office [online]
1230 India 0700 UK	Representation of the surface roughness at high wind speeds in atmospheric and wave models	John Edwards	Met Office [online]
1245 India 0715 UK	THEME DISCUSSION: <i>What key conclusions are we drawing from coupled model evaluation and inter-comparisons across WCSSP India?</i>		
1300 India 0730 UK	LUNCH		

PARALLEL SESSION 9: Predictability, post-processing and verification of high-impact weather			
Chair: <i>Raghavendra Ashrit (NCMRWF)</i>		Room: Hall 2	
		Online: Click here to join Parallel 9	
Time	Session / Title	Speakers	
1000 India 0430 UK	Observed Changes in Summer Thermal Discomfort over Indian region during 1990-2020	Pravat R Naskar	IMD
1015 India 0445 UK	An empirical heatwave prediction and monitoring system for operational applications	Lekshmi S	IMD
1030 India 0500 UK	Assessment of temperature forecast from NWP models over Indian cities and its real-time bias correction	M. T. Bushair	IMD
1045 India 0515 UK	To study the impact of change in schemes for generating model perturbations on the NEPS-G forecast	Gauri Shanker	NCMRWF
1100 India 0530 UK	Meteorological aspects of floods in relation to heavy rainfall over Odisha	H.R. Biswas Uma S Das	IMD
1115 India 0545 UK	BREAK / NETWORKING		
1145 India 0615 UK	PQPF for Monsoon 2020 and 2021 using EnsembleBMA and EnsembleMOS Methods	Abhijith V	NCMRWF
1200 India 0630 UK	Evaluation of Multi-source Ensemble Rainfall Analysis Product over the Indian Monsoon Region	Amar Jyothi Kasimahanthi	NCMRWF
1215 India 0645 UK	Indian meteorological ensemble dataset: a gridded ensemble precipitation dataset for the Indian region	Anagha P	IIT Delhi
1230 India 0700 UK	A case study of exceptionally heavy rainfall event over Uttarakhand, India on 18th October 2021 and its forecasting	Rohit T Vikram Singh	IMD
1245 India 0715 UK	Assessment of Extreme weather forecasts	Mike Sharpe	Met Office [online]
1300 India 0730 UK	LUNCH		

PARALLEL SESSION 10: Forecasting extreme weather events			
Chair: <i>Rajeeb Chattopadhyay (IMD)</i>		Room: Hall 3	
		Online: Click here to join Parallel 10	
Time	Session / Title	Speakers	
1000 India 0430 UK	Case study on cold wave conditions over northwest India during 2022	Sri SP Singh	IMD
1015 India 0445 UK	Identification of Heat waves zones over India	G. Ch. Satyanarayana	Koneru Lakshmaiah Education Foundation
1030 India 0500 UK	Spatial verification of heat waves over Indian region	Harvir Singh	NCMRWF
1045 India 0515 UK	Multi-model based Quantitative Precipitation Forecast for River sub-basin-wise during the monsoon season of 2022	Amit Bhardwaj	IMD **10-min
1055 India 0525 UK	Satellite-based study on the extremely heavy rainfall episodes of northeast India during 2022	Shibin Balakrishnan	IMD **10-min
1100 India 0535 UK	Impact of different meteorological parameters on Heat Waves over India	Akhil Srivastava	IMD **10-min [online]
1115 India 0545 UK	BREAK / NETWORKING		
1145 India 0615 UK	Study of the Rapid Intensification and Rapid Weakening of Tropical Cyclone ASANI (May 2022) over the Bay of Bengal using NCUM-R modelling system	Shiva Ji Singh Patel	NCMRWF
1200 India 0630 UK	Impact Assessment of Tropical Cyclone on the Landfall Region: A case study of FANI Cyclone, Odisha, India using NEPS Model	Vivek. G	Azim Premji University
1215 India 0645 UK	Comparison of the region of heavy rainfall for Cyclone AMPHAN, YAAS and JAWAD.	Sourish Bondyopadhyay	IMD
1230 India 0700 UK	Synoptic Features Associated With Heavy Rainfall Events In Andhra Pradesh State During Monsoon Season 2022	Sunanda M	IMD
1245 India 0715 UK	Efficacy of high-density rain gauge network in estimating extreme rainfall events over Mumbai during monsoon 2020-2022	Upal Saha	NCMRWF
1300 India 0730 UK	LUNCH		

Friday 3rd March 2023

1000 – 1200 UK (UCT) / 1430 – 1730 India (IST)

	INFORMAL MEETINGS/WORKSHOPS	
1000 India 0530 UK	Meeting spaces available during Friday morning to support additional 1:1, group discussions and SRP meetings. If interested to schedule and advertise any events either before the workshop, or as ideas develop during the workshop, please contact workshop organisers	
1230 India	LUNCH can be available	
1330 India 0800 UK	Meeting spaces available during Friday morning to support additional 1:1, group discussions and SRP meetings. If interested to schedule and advertise any events either before the workshop, or as ideas develop during the workshop, please contact workshop organisers	
1630 India	DEPART	

Background reading

The latest meeting agenda and other workshop details can be accessed via the [NCMRWF meeting webpages](#).

All presentation Abstracts are available in the Annual Science Workshop [Book of Abstracts](#).

A copy of the WCSSP India Annual Science Highlights Report 2022-2023 providing a UK WP-lead summary of project progress is accessible via the [project sharepoint](#) pages.

Further project background, archive of project deliverables, meeting materials and Collaboration Space are also accessible to registered users via the [WCSSP Sharepoint](#). For more information on accessing these pages, please contact the WCSSP Programme Office WCSSPProgrammeOffice@metoffice.gov.uk