पृथ्वी विज्ञान मंत्रालय
Ministry of Earth Sciences

SOUVENIR
TROPMET 2024
NATIONAL SYMPOSIUM

on

Recent Advances and Challenges in Understanding and Predicting High-impact Weather and Climate Extremes over Indian Subcontinent in the Climate Change Context

JOINTLY HOSTED BY

Indian Meteorological Society (IMS) Rourkela Chapter

&

National Institute of Technology, Rourkela

ORGANISED BY
Indian Meteorological Society

10-12 December 2024

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TROPMET 2024

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Indian Meteorological Society

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VENUE: National Institute of Technology Rourkela, Rourkela, Odisha, India
https://www.nitrkl.ac.in/

Contact Us

Dr. Naresh Krishna Vissa
Convenor, TROPMET 2024,
Chairman, IMS Rourkela Chapter,
Department of Earth and Atmospheric Sciences,
National Institute of Technology Rourkela,
Rourkela 769008, Odisha, India.
Email: tropmet24@gmail.com

TROPMET 2024

National Symposium

on

Recent Advances and Challenges in Understanding and Predicting High-impact Weather and Climate Extremes over Indian Subcontinent in the Climate Change Context

10th - 12th December 2024
National Institute of Technology Rourkela, Rourkela, Odisha

Organised by

Indian Meteorological Society

Jointly hosted by

Department of Earth and Atmospheric Sciences, National Institute of Technology Rourkela, Rourkela

&

Indian Meteorological Society Rourkela Chapter

TROPMET is a series of national conferences organized annually by the Indian Meteorological Society (IMS). This year TROPMET will be jointly hosted by the National Institute of Technology (NIT) Rourkela, and IMS Rourkela chapter, at Rourkela, Odisha, from 10-12 December 2024. TROPMET series have received generous support from several government and private agencies in the past, and efforts are underway to seek their sponsorship this year. The TROPMET-2024 focuses on High Impact Weather and Climate Extremes over the Indian Subcontinent. Extreme weather and climate events have increased in frequency and severity due to human-caused climate change. Such extremes have far-reaching effects on many areas, including ecosystem damage, human health, and biodiversity. These extreme weather events affect both social and economic sectors, and society needs better risk assessments and earlier alerts for these high-impact weather extremes. TROPMET-2024 will provide an opportunity to exchange the ideas among various stakeholders. Keeping this in view, TROPMET-2024 deliberates on the following subthemes:

- **In-situ and space-based observational and monitoring aspects of extreme weather and climate events**
- **Diagnostics and numerical modelling of extreme weather events over the Indian subcontinent**
- **Impact of land use and land cover changes on extreme weather and climate events**
- **Impact of large-scale climate modes on weather extremes (e.g., ENSO, IOD, MJO, etc.)**
- **Climate data analysis, assessments and projections**
- **Analysis and prediction of weather and climate extremes using AI/ML/DL techniques etc.**
- **Early warning systems, mitigation, preparedness and response actions for weather and climate extremes in disaster risk reduction**
- **Air Pollution Interactions with weather extremes**
- **Impact of weather extremes on Agriculture, livestock, fisheries including climate change and climate variability**
- **Attribution of weather extremes to climate change aspects**
- **Developments of innovative and indigenous met-sensors and ocean technologies**
- **OSI Special Session on Role of oceanic and atmospheric processes in the development of weather and climate extremes**

REGISTRATION FEES

CATEGORY	BY 18th November 24	ON SPOT
IMS/OSI Members	₹ 3000/-	₹ 4000/-
Non-IMS/OSI Members	₹ 4000/-	₹ 5000/-
Scholars/Students	₹ 1000/-	₹ 1500/-
Post-Doctoral Researchers	₹ 2500/-	₹ 3000/-
Industry Exhibitions	₹ 100000/- onwards	
Associated Persons	₹ 4000/-	₹ 4500/-

The Registration Fee can be paid through multiple payment options such as net banking or UPI/bank drafts. There is no registration fee for Honorary Fellows and Fellows of the IMS/OSI.

TRANSPORT AND ACCOMMODATION

TROPMET-2024 has limited resources for offering travel and accommodation support, and all participants are expected to secure support from their own sources. However, some support may be extended to a few case-to-case basis subject to the availability of resources, with priority given to IMS members with no affiliations and students without financial support.

Industry Presentation & Exhibition Special sessions are planned to provide a platform for industry/entrepreneurs. A presentation slot of 15 to 20 minutes duration will be allowed for selected industry/entrepreneurs. Provision is also made for vendors to exhibit their products and services.

Best Paper Award

The best paper award in the student category (lead author of the paper/poster must be a student) will be given to the selected papers presented.

More Details about TROPMET 2024 can be found at https://www.tropmet2024.in/

Scan Me

सत्यमेव जयते
डॉ. एम. रविचंद्रन
Dr. M. Ravichandran

सचिव
भारत सरकार
पृथ्वी विज्ञान मंत्रालय
पृथ्वी भवन, लोदी रोड, नई दिल्ली–110003

SECRETARY
GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
PRITHVI BHAWAN, LODHI ROAD, NEW DELHI-110003

MESSAGE

I am delighted to know that the Indian Meteorological Society (IMS) is organizing its annual National Conference on Tropical Meteorology (TROPMET-2024). The event, hosted by the IMS Rourkela Chapter and the National Institute of Technology (NIT) Rourkela, is set to take place from December 10-12, 2024. This year's conference will focus on "Recent Advances and Challenges in Understanding and Predicting High-impact Weather and Climate Extremes over the Indian Subcontinent in the Climate Change Context."

This topic is of immense importance as it delves into the urgent need to better understand and predict high-impact weather and climate extremes, which are becoming more frequent and severe due to climate change. In recent years, the spatial and temporal variabilities have altered significantly, necessitating increased focus and research. The Indian subcontinent, being particularly susceptible, faces escalating threats from cyclones, floods, droughts, heatwaves, and extreme rainfall events. Progress in this domain is critical for enhancing Disaster Risk Reduction, Agricultural Resilience, Water Management, Infrastructure Planning, and Policy Formulation. Understanding these extremes is essential for fostering a sustainable and climate-resilient future for the region.

I hope that the conference will play a pivotal role in improving Risk Mitigation Strategies, informing policy decisions on climate adaptation and resilience building, fostering collaborative research opportunities, and developing actionable strategies for various socio-economic sectors. Additionally, it should promote awareness about the impacts of climate change and the necessary preparedness measures.

I am confident that TROPMET-2024 will serve as an essential platform for scientists, academicians, and industry leaders to exchange knowledge and provide actionable recommendations for enhancing weather and climate services in the region.

I extend my best wishes for the success of this significant conference.

M. Ravichandran

(M. Ravichandran)

Tel. : +91-11-24629771, 24629772 ❑ Fax : +81-11-24629777 ❑ E-mail : secretary@moes.gov.in

डॉ. मृत्युंजय महापात्र
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Dr. Mrutyunjay Mohapatra
Director General of Meteorology,
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Government of India
Ministry of Earth Sciences
India Meteorological Department
Mausam Bhawan, Lodi Road
New Delhi-110003

Message

It gives me immense pleasure to know that Indian Meteorological Society (IMS) is organizing TROPMET-2024, a National Conference on Tropical Meteorology, on the topical theme " Recent Advances and Challenges in Understanding and Predicting High-impact Weather and Climate Extremes over Indian Subcontinent in the Climate Change Context " from 10th to 12th December,2024 at National Institute of Technology, Rourkela, Odisha.

Recently, India Meteorological Department (IMD), Ministry of Earth Sciences (MoES) has taken major steps in improving the weather & climate monitoring, forecasting and warning services capabilities in the country. With the improvement in observational and forecasting tools including augmentation of Numerical Weather Prediction Models, Radar network and satellite products, forecasting/warning services with respect to tropical cyclones, severe thunderstorms, heat/cold wave, fog, heavy rainfall and advisories to various socio economic sectors have been further strengthened. Scientists of IMD in collaboration with other institutes of MoES and National & International R&D Institutes are working strenuously in providing better weather and climate services. There has been an improvement of severe weather forecasting accuracy by 40 to 50% in last 10 years compared to previous decade.

I am very optimistic that the TROPMET-2024 symposium organized by IMS will provide an excellent opportunity for interaction among weather scientists, academicians and industrialists to discuss different aspects of weather and climate forecasting and warning services and share information for further improvement of weather & climate forecasting in spite of the challenges faced by the society due to the climate change.

I wish the event a grand successes

(Mrutyunjay Mohapatra)

Phone : 91-11-24611842, Fax : 91-11-24611792
E-mail : directorgeneral.imd@imd.gov.in / dgmmet@gmail.com / m.mohapatra@imd.gov.in

Anand Kumar Sharma
President, Indian Meteorological Society
Former Scientist-G/ Additional Director General of Meteorology
Email: anand.sharma870@gmail.com

MESSAGE

I am delighted to extend my warm greetings to the esteemed members of the Indian Meteorological Society (IMS), as well as its patrons and partners, for organizing TROPMET-2024 on the highly relevant theme, *"Recent Advances and Challenges in Understanding and Predicting High-Impact Weather and Climate Extremes over the Indian Subcontinent in the Context of Climate Change."* I commend the Rourkela Chapter of IMS and the Department of Earth and Atmospheric Sciences at NIT Rourkela for hosting this prestigious event and ensuring exceptional organizational arrangements. I warmly welcome all participants to this renowned annual flagship event, which has proudly upheld its legacy for over three decades.

Climate change is no longer a distant threat; it is a present reality, reshaping our world in profound ways. The frequency and intensity of extreme weather events-ranging from devastating floods to prolonged droughts-serve as stark reminders of our planet's vulnerability. These phenomena not only disrupt ecosystems but also endanger lives and livelihoods, challenging our resilience and adaptation strategies. As scientists, policymakers, and global citizens, we bear the collective responsibility to act decisively. By advancing research, embracing sustainable practices, and promoting international cooperation, we can mitigate the impacts of climate change and build a more resilient future. TROPMET-2024 provides us such a platform to discuss, take lead, and rise to this challenge with urgency and unwavering commitment. It is a distinctive event spotlighting the scientific dimensions of weather and climate extremes over the Indian subcontinent in the context of global warming. This symposium provides a dynamic platform for experts, researchers, students, policymakers, and stakeholders from diverse sectors to engage in interactive sessions, brainstorming discussions on the latest advancements in weather, climate, and allied sciences.

This is the time we all should start working for climate action, ensuring climate justice with a balanced climate financing. These are not just aspirations-they are imperatives. Climate action demands urgency; the choices we make today will define the future of our planet. Climate justice requires fairness; those who have contributed the least to global warming should not bear its greatest burdens. Climate finance is the bridge; it enables equitable solutions, empowering vulnerable communities to adapt and thrive. Together, these pillars form the foundation of a sustainable future. Let us act decisively, ensure justice, and mobilize resources to combat the climate crisis. The time for transformative change is now.

With this, I once again welcome you all and convey my best wishes for the grand success of TROPMET-2024.

(Anand Kumar Sharma)

राष्ट्रीय प्रौद्योगिकी संस्थान, राउरकेला
NATIONAL INSTITUTE OF TECHNOLOGY
ROURKELA- 769008, ओडिशा ODISHA.

Prof. K. Umamaheshwar Rao
Director

प्रो. के. उमामहेश्वर राव
निदेशक

MESSAGE

It gives me great pleasure to learn that the National Institute of Technology Rourkela, in association with the Rourkela chapter of the Indian Meteorological Society, will be organizing a national symposium on "Recent Advances and Challenges in Understanding and Predicting High-impact Weather and Climate Extremes over Indian Subcontinent in the Climate Change Context" (TROPMET 2024) at the NIT Rourkela during 10-12 December 2024.

Global warming is a major concern to the global community in the 21st century. Our nation is primarily rain-fed and agriculture-dependent, and climate change challenges harvesting and the economy. In particular, Odisha has experienced severe extreme weather events in recent decades, and it has become imperative to mitigate these events. I am glad the TROPMET 2024 will focus on advances and challenges in forecasting high-impact weather and climate extremes. TROPMET 204 will provide an excellent platform for eminent scientists, academicians and policymakers to discuss and share information with society.

I am happy that the faculty members of the Department of Earth and Atmospheric Sciences and allied departments were associated and actively involved in conducting this event.

I convey my best wishes for the success of this conference.

Prof. K. Umamaheshwar Rao
Director
NIT Rourkela, Odisha

दूरभाष, Phone - 0661-2472050, 0661-2462001 (O), 0661-2472081 (R), मोबाईल/Mobile : 9437972455
फेक्स/Fax : 0661-2472926, 0661-2462999, ईमेल/E-mail : director@nitrkl.ac.in
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NATIONAL INSTITUTE OF TECHNOLOGY
ROURKELA- 769008, ओडिशा ODISHA.

Message

I am glad to learn that National Institute of Technology Rourkela and Indian Meteorological Society Rourkela chapter is organizing the annual symposium TROPMET from 10-12 December 2024. This year theme of the symposium is very important in the context of climate change with escalating extreme weather and climate extremes over the Indian subcontinent. We have received nearly 450 abstracts from various institutions across the country for this event. In this symposium the national council of IMS selected eminent plenary speakers and many lead speakers. I am confident that the national symposium TROPMET 2024 will provide a great platform to the scientists, academicians, young research scholars, industrializes and policy makers from various organizations and will help in drawing useful recommendations on the issues of climate services.

I wish best wishes for the success of the symposium.

Prof. Sk. Md. Equeenuddin
LOC, Chairman TROPMET 2024,
Department of Earth and Atmospheric Sciences,
National Institute of Technology Rourkela

राष्ट्रीय प्रौद्योगिकी संस्थान, राउरकेला
NATIONAL INSTITUTE OF TECHNOLOGY
ROURKELA- 769008, ओडिशा ODISHA.

Message

I am immensely pleased that National Institute of Technology Rourkela along with Indian Meteorological Society Rourkela chapter is hosting the annual symposium TROPMET 2024 in NIT Rourkela from 10-12 December 2024. With its central theme, “Recent Advances and Challenges in Understanding and Predicting High-impact Weather and Climate Extremes over Indian Subcontinent in the Climate Change Context”, this symposium primarily focuses on high-impact weather and climate extremes over the Indian subcontinent specially under the global warming scenario. I am glad to inform to that this edition of TROPMET 2024 coincides with the completion of ten years of the Department of Earth and Atmospheric Sciences, NIT Rourkela. This year TROPMET 2024, we have received nearly 450 abstracts across the institutions from different parts of the country. We except that the TROPMET 2024 will have a participation of approximately 400 attendees from all over India. The delegates will deliberate on a wide range of topics that are related to high-impact weather and climate extremes across twelve distinct sub-themes. I am hopeful that TROPMET 2024 will also foster interactions between young scientists and field pioneers, thereby nurturing a cadre of young talent to uphold the torch of modelling extreme weather events in the years ahead. I wish all the attendees a very memorable and engaging time at NIT Rourkela.

Prof. Naresh Krishna Vissa

LOC, Convener TROPMET 2024
Head of the Department,
Department of Earth and Atmospheric Sciences,
National Institute of Technology Rourkela

राष्ट्रीय प्रौद्योगिकी संस्थान, राउरकेला
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ROURKELA- 769008, ओडिशा ODISHA.

Message

The Indian Meteorological Society (IMS) Rourkela Chapter and the National Institute of Technology Rourkela are pleased to announce that the TROPMET-2024, which is being organized by the Indian Meteorological Society, will take place at the National Institute of Technology Rourkela from December 10–12, 2024. Each year, the IMS organizes national symposium on various topics in collaboration with the local IMS chapters to showcase scientific and technological advancements, called TROPMET conferences, since 1992. TROPMET-2024 will focus on weather and climate prediction with a specific theme on “Recent Advances and Challenges in Understanding and Predicting High-impact Weather and Climate Extremes over Indian Subcontinent in the Climate Change Context”.

I appreciate the scientific community's tremendous response to the symposium's theme. This symposium will give scholars working in environmental pollution, climate change, high-impact weather and climate extremes, numerical weather prediction, etc., a forum to share ideas. Prominent Plenary and keynote speakers will offer their opinions from various angles. The Souvenir will be widely utilized by researchers interested in the topics and will function as an exhaustive compilation of current knowledge and expertise. I welcome everyone who is taking part in TROPMET-2024. I convey my best wishes for the great success of TROPMET-2024.

Dr. Bhishma Tyagi,
LOC, Organizing Secretary TROPMET 2024,
Department of Earth and Atmospheric Sciences,
National Institute of Technology Rourkela

राष्ट्रीय प्रौद्योगिकी संस्थान, राउरकेला
NATIONAL INSTITUTE OF TECHNOLOGY
ROURKELA- 769008, ओडिशा ODISHA.

Message

It is with great enthusiasm that we welcome you to TROPMET-2024, a platform dedicated to advancing meteorological science, technology, and its applications in addressing global and regional challenges. This year's TROPMET-2024 focuses on High Impact Weather and Climate Extremes over the Indian Subcontinent. Extreme weather and climate events have increased in frequency and severity due to human-caused climate change. Such extremes have far-reaching effects on many areas, including ecosystem damage, human health, and biodiversity. These extreme weather events affect both social and economic sectors, and society needs better risk assessments and earlier alerts for these high-impact weather extremes. It underscores the critical role of meteorology in shaping sustainable and resilient communities. TROPMET-2024 will provide an opportunity to exchange ideas among various stakeholders.

As a co-convener, I am proud to collaborate with an esteemed panel of experts, policymakers, and young scientists, fostering discussions that push the boundaries of innovation in atmospheric science. TROPMET has always been a beacon for interdisciplinary exchange, and this year, we aim to further strengthen this tradition. We look forward to engaging sessions, inspiring keynotes, and groundbreaking research presentations that promise to redefine how we address contemporary challenges such as climate change, disaster risk reduction, and weather prediction.

Your active participation and insights will be the cornerstone of TROPMET-2024's success. Together, let us harness the power of science and collaboration to pave the way for a better, safer, and more sustainable future. Welcome to TROPMET-2024!

Prof. Nagaraju Chilukoti
LOC, Co-Convener TROPMET-2024
Department of Earth and Atmospheric Sciences,
National Institute of Technology Rourkela

CONTENT

TROPMET 2024

About Odisha

Odisha is an Indian state located in Eastern India and the eighth-largest state by area. The state has a rich historical legacy that dates back over 2,000 years. It was once the heart of the Kalinga Empire, which flourished during the ancient period. The region gained prominence in world history during the Kalinga War (261 BCE), fought by Emperor Ashoka. After the battle, Ashoka embraced Buddhism, making Odisha a significant hub for the spread of the religion. Over the centuries, Odisha saw the rise and fall of various dynasties, including the Mauryas, Guptas, and the Eastern Gangas, who left behind splendid architectural monuments, including the famous Konark Sun Temple and the Jagannath Temple in Puri.

Tradition and Culture

The culture of Odisha is deeply rooted in its ancient traditions, which continue to thrive in contemporary times. The state's cultural identity is best reflected in its classical dance forms like Odissi, one of the oldest surviving dance styles in India, and its intricate handlooms and handicrafts, such as Pattachitra paintings, silver filigree, and stone carving. Odisha is also renowned for its rich tradition of music, with classical ragas and folk songs being an integral part of daily life.

Tourist Attractions

Odisha is home to several breathtaking attractions that showcase its natural beauty, architectural wonders, and spiritual significance. Some of the key tourist destinations

include:

- **Konark Sun Temple**: A UNESCO World Heritage site, known for its stunning architecture and intricate carvings.
- **Jagannath Temple, Puri**: One of the Char Dham pilgrimage sites and an architectural marvel.
- **Chilika Lake**: Asia's largest brackish water lagoon, famous for bird watching and scenic beauty.
- **Buddhist Monuments at Dhauli**: Commemorating Emperor Ashoka's conversion to Buddhism.
- **Simlipal National Park**: A rich biodiversity hotspot with picturesque landscapes.

Overall, unique blend of scenic beauty from the golden beaches of Puri and Gopalpur to the serene hill stations in the Eastern Ghats, culture with vibrant festivals such as **Rath Yatra** in Puri, Odisha attracting millions of devotees and tourists every year, be it for spiritual solace, historical exploration, or nature's tranquility.

About Rourkela

Rourkela is a vibrant and dynamic city of Sundargarh District located in the north-western part of the Odisha state. The city is famously known as "A City Forged in Steel and Steeped in Culture" by acting as not only just an industrial hub; but also boasts a rich historical natural heritage, and diverse culture. This makes it a fascinating destination for industrial prowess to experience cultural vibrancy. The city's foundation as an industrial town can be traced back to the establishment of the **Rourkela Steel Plant** in the late 1950s. The city is also known for producing International Hockey Player and is a hub of Hockey.

Tradition and Culture

Despite its industrial reputation, Rourkela is home to a rich cultural heritage and diverse traditions. The city is a melting pot of various ethnic groups, contributing to a colorful cultural tapestry. The traditional art forms, folk music, and dances of Odisha, such as **Odissi** dance, are celebrated and performed during festivals and cultural events in Rourkela. The city also celebrates a wide variety of festivals, including **Durga Puja**, **Diwali**, **Makar Sankranti**, and **Rath Yatra**. The integration of tribal traditions, particularly those of the Santhal community, adds a distinct flavor to Rourkela's cultural fabric. Handicrafts from the region, such as **Dokra art**, **Pattachitra paintings**, and **tribal jewelry**, are also

significant cultural exports.

Cuisine

Rourkela's cuisine reflects the diverse cultures of its people. Traditional **Odisha** dishes, such as **Dalma**, **Pakhala Bhata**, and **Chhena Poda**, are popular in the city. The city also offers a variety of snacks and sweets, such as **Chhena Jhili** and **Rasgulla**, which are loved by locals and visitors alike. **Tribal cuisine**, featuring rice, leafy vegetables, and wild herbs, adds another layer of culinary diversity to the city.

Famous Places in and around Rourkela

While Rourkela being a **steel giant** with its industrial might, it also offers a wealth of natural beauty and historical attractions around the city. The natural scenic beauty of Rourkela, with its rolling hills, riverbanks, and forests, provides ample opportunities for trekking, picnics, and outdoor activities. The city's most important tourist destinations include

- **Rourkela Steel Plant**: One of India's largest steel manufacturing units, it symbolizes the industrial growth of India.
- **Koel River**: A scenic river that flows through the city, offering opportunities for boating and picnics along its banks.
- **Mandira Dam**: A popular spot for nature lovers and a place for boating, fishing, and enjoying the serene surroundings.
- **Khandadhar Waterfalls**: A stunning waterfall located on the outskirts of Rourkela,

surrounded by lush greenery, providing a perfect getaway for nature enthusiasts.

- **Vedvyas Temple**: An ancient temple dedicated to sage Ved Vyasa. A significant spiritual site in Rourkela, where the revered sage Vedvyas is believed to have meditated.
- **Hanuman Vatika**: A serene temple complex dedicated to Lord Hanuman.

Rourkela's Climate

Rourkela experiences a tropical climate that is characterized by distinct hot summers, pleasant winters, and well-distributed monsoonal rains.

Hot Summers (March to June): Summer is the dominant season in Rourkela. May is the hottest month, with average highs reaching around 32.5°C (90.5°F). Throughout the summer, expect hot days with highs exceeding 30°C (86°F) and lows hovering around 25°C (77°F).

Pleasant Winters (December to February): Winter offers a welcome respite from the summer heat. January is the coolest month, with average lows dipping to around 19.3°C (66.7°F). Generally, winter days are pleasant with highs in the mid-20s°C (70s°F) and lows dropping to around 15°C (59°F).

Monsoonal Rainfall: Rourkela receives a good amount of rainfall throughout the year, with a distinct peak during the southwest monsoon season with annual average rainfall around 1389 mm (54.7 inches).

About National Institute of Technology Rourkela

NIT Rourkela has a diversified academic program with 17 academic departments offering specialized courses at undergraduate, postgraduate and doctoral levels of studies. The Institute currently offers 21 undergraduate programs in the major disciplines of engineering, architecture, science, humanities and management, and post graduate programs in diversified fields of research areas. The Institute offers distinct BTech, MSc, and MTech degrees in various disciplines along with Bachelor of Architecture, and MBA to meet the demands of contemporary times. While the academic programs offered by NIT Rourkela are in tune with the National Education Policy, the quality of education is continuously upgraded by periodical revision of syllabi based on the needs of industry and academia. With different inclusive initiatives and the introduction of a standardized education policy, over the years, the Institute's graduates have been great performers at professional fronts in India and abroad. With the focus on teaching and learning across departmental boundaries, the mix-technology and management skills, NITians have been valuable assets to our country.

Today, NIT Rourkela is a highly prestigious institute with a reputation for excellence in research, consultancy and education at undergraduate, postgraduate and doctoral levels. It is passionately committed to making our country a world leader in technology and science and to inculcate this commitment among all its students. Our target is to be known around the world for our academic standards and to be counted among the best technological institutes of India in terms of innovation, entrepreneurship and creation of intellectual wealth. NIT Rourkela was ranked between 291 - 300 in the QS Asia Ranking. In India, it was ranked 09th in Architecture, 19th among engineering colleges, 30th in research and 34th rank overall by the National Institutional Ranking Framework (NIRF) in 2024.

Department of Earth and Atmospheric Sciences (ER) is set up in 2013 to promote interdisciplinary research on numerical modeling of Ocean & Atmosphere state, monsoon studies, climate modeling, extreme weather as well as academic programs at graduate, post-graduate and doctoral levels. Earth and Atmospheric Science is a strongly interdisciplinary subject which links different resources (e.g., minerals, energy and water), natural hazards, environmental issues, and serves as a significant relation to weather and climate, which is inevitable for human life and our society.

The department is playing a vital role in providing resourceful manpower through interdisciplinary way of teaching and research programmes. The academic activities are oriented towards achieving fundamental understanding of the interaction among lithosphere, hydrosphere, atmospheric and oceanic processes for sustainable development. The department would focus on the exploration of economically important mineral and energy resources, evolution and internal dynamics of Earth, surficial processes, natural & human-induced hazards, groundwater, environmental issues, weather and climate and air quality modelling.

IMS Rourkela Chapter details

IMS Rourkela chapter was formed on 12th August 2024 with 34 life members from National Institute of Technology Rourkela. The main objective of the IMS Rourkela chapter is to promote and involve researchers and students to dissemination of knowledge about meteorology and climate change to various stake holders in and around the Rourkela.

Details of the office bearers are given below.

1) Chairman: Dr Naresh Krishna Vissa

2) Vice Chairman: Dr Bhishma Tyagi

3) Secretary: Dr Krishna Kishore Osuri

4) Joint-Secretary: Prof. Jagabandhu Panda

5) Treasurer: Dr Nagaraju Chilukoti

IMS Rourkela chapter and NIT Rourkela are hosting the national symposium TROPMET 2024 with the theme “Recent Advances and Challenges in Understanding and Predicting High-impact Weather and Climate Extremes over Indian Subcontinent in the Climate Change Context”. This year TROPMET will be held from 10-12 December 2024. The TROPMET-2024 focuses on High Impact Weather and Climate Extremes over the Indian Subcontinent. Extreme weather and climate events have increased in frequency and severity due to human-caused climate change. Such extremes have far-reaching effects on many areas, including ecosystem damage, human health, and biodiversity. These extreme weather events affect both social and economic sectors, and society needs better risk assessments and earlier alerts for these high-impact weather extremes. TROPMET-2024 will provide an opportunity to exchange ideas among various stakeholders.

Overview of IMS Activities since its Inception

Dr. S. I. Laskar[1] and Dr. M. T. Bushair[2]

[1]Secretary, Indian Meteorological Society, New Delhi

Email: drsebul@gmail.com

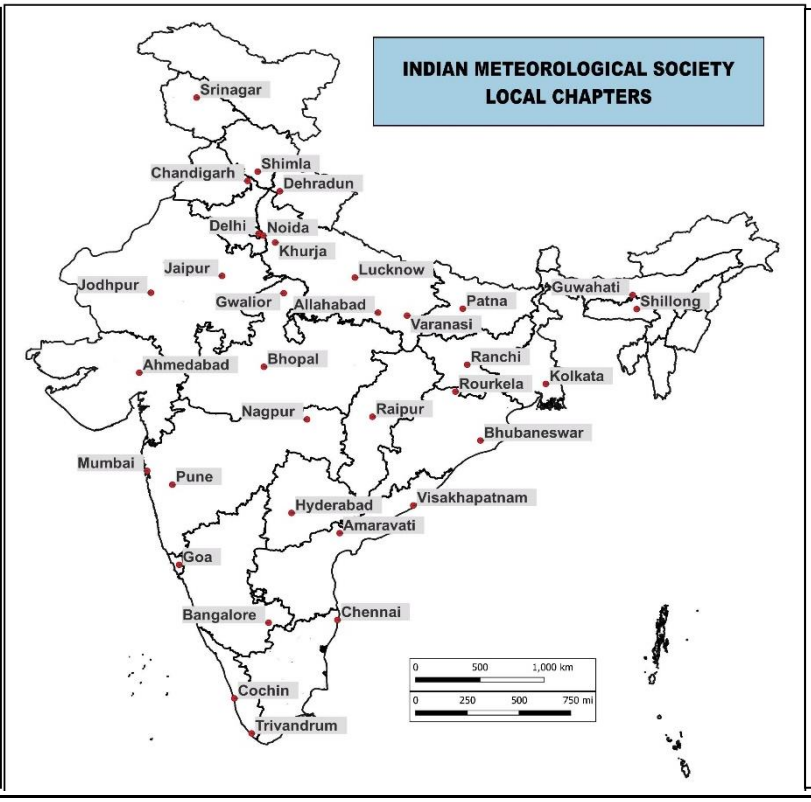
[2]Council Member, Indian Meteorological Society, New Delhi

Email: bushairmt@gmail.com

1. Establishment of IMS

The Indian Meteorological Society (IMS) established in 1956 during the Session of the Indian Science Congress, has made more than 3900 members at present. It was registered as a Society under the Societies Registration Act in 1972 in New Delhi. The society has its head Quarter in Delhi with 34 chapters spread across the country. The society is a non-profit organization and none of its income or assets shall accrue to the benefit of its members. A well discussed constitution is its major assets of IMS. The constitution is available at IMS website at the following URL: *https://imetsociety.org/wp-content/pdf/docs/others/IMS_Constitution.pdf*

Amarawati
Ahmedabad
Allahabad
Bangalore
Bhopal
Bhubaneswar
Chandigarh
Chennai
Cochin
Dehradun
Delhi
Goa
Guwahati
Hyderabad
Jaipur
Jodhpur
Kolkata



Khurja
Lucknow
Gwalior
Mumbai
Nagpur
Noida
Patna
Pune
Raipur
Ranchi
Rourkela
Shillong
Shimla
Srinagar
Trivandrum
Varanasi
Visakhapatnam

IMS Local Chapters

2. The main objectives of the society are:

- Advancement of Meteorological and allied sciences in all their aspects.
- Dissemination of the knowledge of such sciences both among the scientific workers and among the public.
- Application of Meteorology and allied sciences to various constructive human activities, such as, agriculture and land uses, irrigation and power development, navigation of sea and air, engineering and technology, medicine and public health etc.

3. Membership of IMS

Any person who is interested in the aims and objectives of the Society is eligible to become a member. He shall apply for membership in the prescribed form available in the website and shall be notified on acceptance by the Council.

- ***Life Member (LM)***

A Member who pays all his dues in a lump sum as prescribed by the General Body shall be a Life Member. The society has about 3900 life members.

- ***Annual Member (AM)***

A Member who pays all his dues in a lump sum as prescribed by the General Body shall be a Life Member. The society has about 3900 life members.

- ***Student Members (SM)***

In order to encourage students to become IMS member, IMS recently introduced student membership where a student can become IMS student member by paying Rs. 1000/- along with the forwarded application from head of the institution where he/she is working. The membership will be valid till the time he/she becomes 30 years of age or get some employment in any place whichever is early. He/she can become a regular life member of IMS by paying the balance amount.

- ***Institutional Members (Annual)***

Any institution which is interested in the aims and objectives of the Society is eligible to become an Institutional Member on payment of an annual subscription. The institution shall apply for Membership and shall be notified on acceptance by the Council. The Institutional Member may nominate its representative to exercise the Membership privileges.

- ***Patron***

A person or an institution who is interested in the aims and objectives of the Society and makes a donation of substantial sum to the Society will, at the discretion of the Council, be admitted as Patron.

SUBSCRIPTION

Annual Member	Indian : Rs.300
Life Member	Indian : Rs. 3000; Foreign : US$ 150
Entrance Fee	Indian : Rs. 00 ; Foreign : US$ 10
Student Member	Indian : Rs. 1000
Institutional Member	Indian : Rs. 10000 (annual); : US$ 250
Patron	Indian : Rs. 100000 ; Foreign : US$ 2500
Institutional Patron	Indian : Rs. 1000000 ; Foreign : US$ 25000

4. IMS Fellows

Honorary Fellow and Fellow

- Persons of acknowledged eminence in Meteorology and allied fields of Science and Technology or in their furtherance may be elected as honorary fellows by the General Body on proposal from the Council.

- Life members, who have made outstanding contribution of Meteorology and allied fields of Science and Technology, may be elected as Fellows by the General Body on proposal from the council. The following outstanding members of the society have been elected as Fellows/Honorary.

- IMS has also given Life Time Achievement Awards to three eminent scientists.

- **IMS LIFETIME ACHIEVEMENT AWARDS**

S. No.	Name
1	Prof. P. V. Joseph
2	Shri Soundararajan Raghavan
3	Late Shri Dev Raj Sikka

- **List of IMS Honorary Fellows**

S. No.	Name
1	Late Dr. A. P. J. Abdul Kalam
2	Late Dr. J. S. Fein
3	Dr. P. S. Goel
4	Late Prof. V. R. Gowariker
5	Prof. Murli Manohar Joshi
6	Dr. Ramesh Kakar
7	Dr. K. Kasturirangan
8	Late Prof. T. N. Krishnamurti
9	Prof . G. O. P. Obasi
10	Dr. Kamal Puri
11	Prof. V. S. Ramamurthy
12	Prof. Veerabhadran Ramanathan
13	Dr. P. Krishna Rao
14	Dr. M. V. K. Siva Kumar
15	Dr. M. S. Swaminathan
16	Dr. Petteri Taalas
17	Er. Avinash Chand Tyagi
18	Dr. Upendra Narayan Singh
19	Prof. V. Chandrasekar
20	Dr. Jothiram Vivekanandan
21	Dr. Rajagopalan Balaji

- **List of IMS Fellow**

S. No.	Name
1	Late Dr. R Ananthakrishanan
2	Late Dr. G.C. Asnani
3	Dr. Swati Basu
4	Prof. G. S. Bhat
5	Dr. V. K. Dadhwal
6	Late Prof. P. K. Das
7	Late S. K. Das
8	Prof. S. K. Dash
9	Dr. R.K. Datta
10	Dr. U. S. De
11	Dr. B. L. Deekshatulu
12	Late Dr. O.N. Dhar
13	Prof. S.K. Dube
14	Prof. (Mrs.) Sulochana Gadgil
15	Dr. B. N. Goswami
16	Dr. Akhilesh Gupta
17	Dr. George Joseph
18	Prof. P.V. Joseph
19	Dr. P.C. Joshi
20	Dr. A.K. Kamra
21	Dr. R.R. Kelkar
22	Prof. R. N. Keshavamurthy
23.	Late Dr. P. Koteswaram
24	Dr. R. Krishnan
25	Dr. S. M. Kulshrestha
26	Dr. Rupa Kumar Kolli
27	Sh. A. S. Kiran Kumar
28	Dr. Santosh Kr. Mishra
29	Prof. U.C. Mohanty
30	Late Dr. D.A. Mooley
31	Dr. Shailesh Nayak
32	Prof. P.C. Pandey
33	Late Dr. G.B. Pant
34	Late Prof. P.R. Pisharoty
35	Late Mr. S. Raghavan
36	Dr. M. Rajeevan
37	Late Dr. Y. Ramanathan
38	Dr. K. J. Ramesh
39	Dr. DV Bhaskar Rao
40	Dr. L. S. Rathore
41	Late Prof K. R. Saha
42	Late Dr. R. P. Sarkar
43	Dr. N. Sen Roy
44	Prof J. Shukla
45	Late Sh. D.R. Sikka
46	Prof. J. Srinivasan
47	Dr. S. K. Srivastav
48	Dr. H. N. Srivastava
49	AVM. Dr. Ajit Tyagi
50	Dr. G.Viswanathan
51	Prof. B. Padmanabha Murty
52	Prof. Ravi Sankar Nanjundiah
53	Dr. Mrutyunjay Mohapatra
54	Prof. S. K. Satheesh
55	Dr. (Mrs.) N. Jayanthi
56	Dr. G. Srinivasan
57	Dr. M. Ravichandran
58	Prof. V.B. Rao
59	Dr Raj Kumar
60	Dr A.K. Sahai
61	Prof. V. Geethalakshmi
62	Prof. K. Mohanakumar

63	Dr D.R. Pattanaik
64	Dr. V. Krishnamurthy
65	Prof. Vimal Mishra
66	Prof. A.P. Dimri
67	Prof. Dev Niyogi
68	Dr. Kamaljit Ray
69	Dr. V.S. Prasad
70	Dr Parvinder Maini

71	Dr. Someshwar Das
72	Dr. Thara Prabhakaran
73	Dr. Vijay Tallapragada
74	Prof. C. Venkateswara Naidu
75	Dr. Sunil Kumar Peshin
76	Prof. Gufran Beig
77	Prof. P. Parth Sarthi
78	Prof. Rajeev Bhatla

- **List of IMS Presidents**

S. No.	Name	Period
1	Dr. P. Koteswaram	1971-74
2	Sh. Y. P. Rao	1974-78
3	Dr. P. K. Das	1978-83
4	Sh. S. K. Das	1983-86
5	Dr. R. P. Sarkar	1986-89
6	Dr. S. M. Kulshrestha	1989-91
7	Prof. P.R. Pisharoty	1991-93
8	Dr. N. Sen Roy	1993-95
9	Dr. R.K. Datta	1995-97
10	Dr. R. R. Kelkar	1997-99
11	Dr. S. K. Srivastav	1999-2001
12	Prof. S. K. Dube	2001-2003
13	Dr. S.K. Srivastav	2003-05
14	Dr. G. B. Pant	2005-07
15	Sh. R. C. Bhatia	2007-09
16	Dr. L. S. Rathore	2010-12

17	Dr. Shailesh Nayak	2012-14
18	Dr. Akhilesh Gupta	2014-16
19	AVM Dr. Ajit Tyagi	2016-18
20	Prof. S. K. Dash	2018-20
21	Dr. M. Mohapatra	2020-22
22	Dr. Rupa Kumar Kolli	2022-24
23	Sh. Anand Kumar Sharma	2024-26

- **List of IMS Associate Fellow**

S. No.	Name
1	Prof. Sandeep Pattnaik
2	Dr. Ayantika Dey Choudhury
3	Dr G.C. Satyanarayana
4	Dr. Vinoj Velu
5	Dr. Debabrata Swain
6	Prof. Kandula V Subrahmanyam
7	Dr T.P. Sabin
8	Dr. Gaurav Govardhan
9	Dr. Susmitha Joseph
10	Dr. Bhupendra Bahadur Singh
11	Prof. Jagabandhu Panda
12	Prof. T. V. Lakshmi Kumar

- **IMS National Council (2024-26):** The IMS new National Council took over the charge from the previous council on 26th April, 2024.

Indian Meteorological Society, National Council 2024-26	
President	**Sh. Anand Kumar Sharma**
Immediate Past President	**Dr. Rupa Kumar Kolli**
Vice President	**Dr. Samanti Sarkar** **Dr. N. Subash**
Secretary	**Dr. S. I. Laskar**
Jt. Secretary	**Sh. Sanjay Bist**
Treasurer	**Dr. Ananda Kumar Das**
Member	**Dr. M. R. Ramesh Kumar** **Dr. Pradeep Kumar Thapliyal** **Dr. Kaustav Chakravarty** **Dr. Atul Kumar Srivastava** **Dr. M. T. Bushair** **Dr. Suresh Ram** **Dr. Amit Bhardwaj** **Ms. Laxmi Pathak**

5. General IMS Activities

To achieve the objectives the IMS involves in carrying out the following work.

- Encourages research activity.
- Organizes lectures, meetings, symposia, discussions etc.
- Arranges to publish suitable pamphlets, books, periodicals, brochures etc.
- Promotes Co-operation in scientific work.
- Encourages the members to foster common interests of the Meteorological professions
- Give awards and fellowship to distinguished scientists.

6. Sponsor Scientific Events and Organization of Symposia/Conferences

To Sponsor Scientific Events

- The Society sponsored for the first time a scientific event in April 1970. This was a symposium on Satellite Meteorology held at Pune.
- Later on it sponsored the International Symposium on Monsoons which held in March 1977 at New Delhi.
- It also sponsored the National Symposium on Early Results of Monsoon Experiments held at New Delhi in March 1981.

Organisation of Scientific Symposia

- With a beginning in 1976 the Society has organised the following National Symposia/Seminars so far:
- Seminar on Weather Modification New Delhi February **1976**
- Symposium of Local Severe Storms Calcutta February **1982**
- Symposium on Tropical Cyclones and Disaster Preparedness Bhubaneswar January **1984**

Annual National Symposia Series on Tropical Meteorology (TROPMET)

- Monsoon Variability, Satellite Application and Modelling, Ahmedabad, February **1992**
- Meteorology for National Development, New Delhi, February **1993**
- Climate Variability, Pune, February **1994**
- Advanced Techniques in Meteorology, Hyderabad, February **1995**
- Meteorology and Natural Disasters, Visakhapatnam, February **1996**
- Symposium on Monsoon, Climate and Agriculture, Bangalore, February **1997**
- Meteorology beyond 2000, Chennai, **1999**
- Ocean & Atmosphere, Cochin, February **2000**
- Meteorology for Sustainable Development, Mumbai, February **2001**
- Forecasting & Mitigation of Meteorological Disasters: Cyclones, Floods & Droughts, Bhubaneswar, February **2002**
- Role of Meteorology in National Development, Pune, **2006**
- Advances in Meteorology and their Applications, Bhopal, **2007**
- Meteorology, Atmospheric Science, Weather & Climate and allied services and disaster management, Kolkata **2010**
- Meteorology for Socio-economic Development, Hyderabad, **2011**
- National Symposium on Frontiers of Meteorology with special reference to the Himalayas. Dehradun **2012**
- National Symposium on Weather & Climate Extremes, Chandigarh - **2015**
- National Symposium on Tropical Meteorology: Climate Change and Coastal Vulnerability, Bhubaneswar **2016**
- National Symposium on Tropical Meteorology: Understanding Weather and Climate Variability: Research for Society, Varanasi **2018**
- National Symposium on Tropical Meteorology: Land, Ocean and Atmosphere Interactive Processes in the Context of Weather and Climate, Visakhapatnam **2019**
- National Symposium on Tropical Meteorology on “Weather and Climate Services over Mountainous Regions” at NESAC, Shillong during 14 - 17 December **2020**.

- National Symposium on Tropical Meteorology on “Advances in Weather and Climate Prediction and Climate Change Projection over South Asia: Applications in Water and Agriculture Sectors” at IISER, Bhopal during 29th November - 02 December **2022**
- National Symposium on Tropical Meteorology on “Changing Dynamics of Arid Region and Impact on Weather and Climate over Indian Subcontinent” at Birla Institute of Scientific Research, Jaipur, India during 22 to 24 November **2023**
- National Symposium on Tropical Meteorology on “Recent Advances and Challenges in Understanding and Predicting High-impact Weather and Climate Extremes over Indian Subcontinent in the Climate Change Context” at National Institute of Technology Rourkela, Rourkela, Odisha, India during 10 to 12 December **2024**

<u>International TROPMET (INTROPMET) Organised by IMS</u>

- International Symposium on Asian Monsoon & Pollution over Monsoon Environment, (INTROPMET-1997) New Delhi, December 2-5, **1997**
- International conference on monsoon (ICOM) and WMO Workshop on forecasting monsoons from days to years, New Delhi. March 21-26, **2001**
- International conference on Seismic Hazard with particular reference to Bhuj Earthquake of January 26, 2001. New Delhi, 3-5 October, **2001**
- International Symposium on Natural *hazards* (*INTROPMET 2004*) February 24-27 ,*2004,* Hyderabad.
- Monex-25, Celebrating *25*th Anniversary of Summer Monsoon Experiment-**1979** (Monex-25 and its Legacy), New Delhi, 3-7th February, 2005

On behalf of NSF, Jay Fein accepts a bouquet expressing thanks from the Indian research community for NSF's support of MONEX-1979. Also pictured are (left to right) Late D. R. Sikka, V. S. Ramamurthy (India Department of Science and Technology), S. K. Dube (Indian Institute of Technology), and Peter Webster (Georgia Institute of Technology). IMS function, Delhi 2005.

- International symposium on Challenges & Opportunities in Agro-meteorology (INTROPMET – 2009), New Delhi, 23-25 February **2009.**

- International Tropical Meteorology Symposium on Monsoons- Observation, Prediction and Simulation (MOPS) (INTROPMET -2013), Chennai**,** originally scheduled in 2013 but was organized during 21-24 February **2014.**
- International Tropical Meteorology Symposium on Advancements in Space-based Earth Observations and Services for Weather and Climate (INTROMET- 2017), 03-07 November **2017,** Ahmedabad.
- Virtual International Symposium on Tropical Meteorology (INTROMET-2021) on "Changing Climate: Consequences and Challenges" at CUSAT, Cochin, India during 23 - 26 November **2021**.

A Brief Report of TROPMET-2023, 22 - 24 November, 2024, Jaipur Chapter

The national symposium TROPMET-2023, held under the auspices of the Indian Meteorological Society (IMS) Jaipur Chapter in association with Birla Institute of Technology Mesra (BIT Mesra) and Birla Institute of Scientific Research (BISR) successfully from 22- 24, November 2023 at the Birla Auditorium, located at Statue Circle, Jaipur. TROPMET, an annual national conference organized by IMS, is widely recognized as a key platform for fostering discussions on meteorology, climate science, and atmospheric research in India. Each year, TROPMET focuses on a central theme of national relevance, bringing together scientists, researchers, policymakers, and practitioners to address emerging and critical topics in the field of meteorology.

The theme of TROPMET-2023 symposium is focused on, "*Changing Dynamics of Arid Regions and Their Impact on Weather and Climate over the Indian Subcontinent.*" The theme underscored the growing scientific and practical interest in understanding the evolving climatic patterns of India's arid regions and the subsequent effects on both regional weather and the broader climate. The arid regions of India are among the most complex and varied landscapes in terms of their topography, soil characteristics, ecosystems, water balance, and human habitation. These regions experience high temperatures and significantly limited, irregular precipitation, leading to intense weather phenomena that often have wide-ranging impacts. Events such as prolonged droughts, flash floods, extreme heat waves, dust storms, and unseasonal heavy rainfall are characteristic of these regions and can present serious challenges to infrastructure, agriculture, water resources, and human health. TROPMET-2023 aimed to deepen understanding of the changing dynamics in these arid regions by examining how factors such as land use changes, desertification, and human activities may be influencing local and regional climate systems. The symposium emphasized the critical role of meteorological and climate science research in generating insights that inform policy decisions and long-term planning. Participants deliberated on the need for a coordinated approach to climate adaptation, particularly in sectors such as agriculture, water management, urban planning, and disaster preparedness.

TROPMET-2023 sessions organized with four parallel sessions conducted featured a diverse program that included parallel technical sessions, where researchers presented their latest findings, and culminated in a plenary session at the main auditorium. This year's symposium saw the participation of over approximately more than 400 attendees who presented their work across a range of meteorological and climate science topics. The event brought together a distinguished group of senior scientists, renowned academics, early-career researchers, and emerging scientists, all of whom engaged in knowledge

exchange and collaborative discussions. Representatives from the industry also took part, contributing insights into practical applications and technology transfer. Additionally, officials from state government departments attended to explore science-based solutions for policy and planning, alongside members of the media who actively covered the event, bringing the symposium's outcomes to a wider public audience. This multi-disciplinary participation created a rich platform for exchanging ideas, fostering networking, and building collaborative opportunities across academia, industry, and government sectors.

The opening ceremony of the symposium commenced with the felicitation of Dr. M. Rajeevan on being awarded the prestigious Gilbard Walker Gold Medal, in the esteemed presence of distinguished invited guests. The event featured numerous plenary and keynote lectures delivered by eminent scientists, including Dr. M. Mohapatra, Prof. V. Geetha Lakshmi, Dr. M.N. Rajeevan, Dr. R. Krishnan, Dr. Anshu Sharma, and others, which served as major highlights of TROPMET-2023. Additionally, representatives from various government and private organizations, including C-DAC, SAMEER, Airshed, Skymet, MoES, Alfattech Services, and Manglam Build-Developers Limited actively participated, contributing to the success and interdisciplinary exchange at TROPMET-2023.

During TROPMET-2023, a wide array of scientific papers was presented, sparking insightful discussions on advancing meteorological and climate science. In a special side event, eminent scientists addressed the vital topic of integrating climate science into undergraduate curricula, underscoring the importance of equipping future generations with foundational climate knowledge. This initiative aligns with the symposium's overarching aim to bridge gaps across academic, scientific, industrial, and governmental sectors. The success of TROPMET-2023 is expected to drive significant advancements in forecasting techniques weather and climate-related extreme events across India, with particular emphasis on the arid regions of Rajasthan, including Jaipur. These advancements hold promising implications for sectors such as agriculture, water resources, industry, and trade, offering tools and insights to improve resilience and response to climate variability.

Panel Discussion was organized on the theme "Vision 2030 for Weather and Climate Research in India" Dr. A.P. Dimri, Director, IIG Mumbai moderated with panel members including Dr. Ajit Tyagi, Former DGM IMD, Dr. M. Rajeevan, Former MoES secretary, MoES,Dr. R. Krishnan, Director, IITM Pune, Dr. Rupa Kumar Kolli, President IMS, Dr. Ratnam, Senior Scientist, NARL Tirupati, Dr. S. Fadnavis, Senior Scientist, IITM Pune. Dr. Ajit Tyagi mentioned that In recent decades, there have been a lot of improvements in weather-climates services in India and further improvement id required in research and operational forecast. Dr. R. Krishnan pointed out the while using AI/ML technique one has to be clear understanding on the fundamental theories of weather and climate sciences. Dr. Ratnam highlighted that stringent quality checked datasets for not only at surface levels but also for many upper layers as well for improvement of the model initial condition". Dr. Rajeevan discussed his views that There are still many grey area existing in monsoon research fields and those have to be explores with utmost enthusiasm. Dr. Rupa Kumar Kolli emphasized on Climate services to be utilized at maximum extent Dr. S. Fadnavis discussed that the synergy between the atmospheric chemistry and the modelers has to be explored furthermore.

A highlight of this year's symposium was the active engagement of young researchers from across India. Their participation, alongside senior scientists, created a vibrant exchange of

ideas and expertise, fostering mentorship and providing the next generation with invaluable insights into the field. A overwhelming responses from each corner of the country, particularly from the research students and early career scientists. A total of 690 abstracts were received in TROPMET-2023, however, only 550 abstracts are selected based on the thematic area. For this three-day event, there are 6 Plenary talks, 48 lead/invited talks, 160 oral talks, 100 Short oral talks, and around 250 poster presentations covering diverse topics on the Dynamics of the Arid Region and its Impact on Weather and Climate over the Indian Subcontinent. Additionally, taking advantage of the strong turnout of IMS members, the Indian Meteorological Society held its General Body Meeting on November 23, 2023, at the venue. Key discussions focused on IMS's role in promoting climate science education at the undergraduate level, reflecting a shared commitment to strengthening climate literacy nationwide

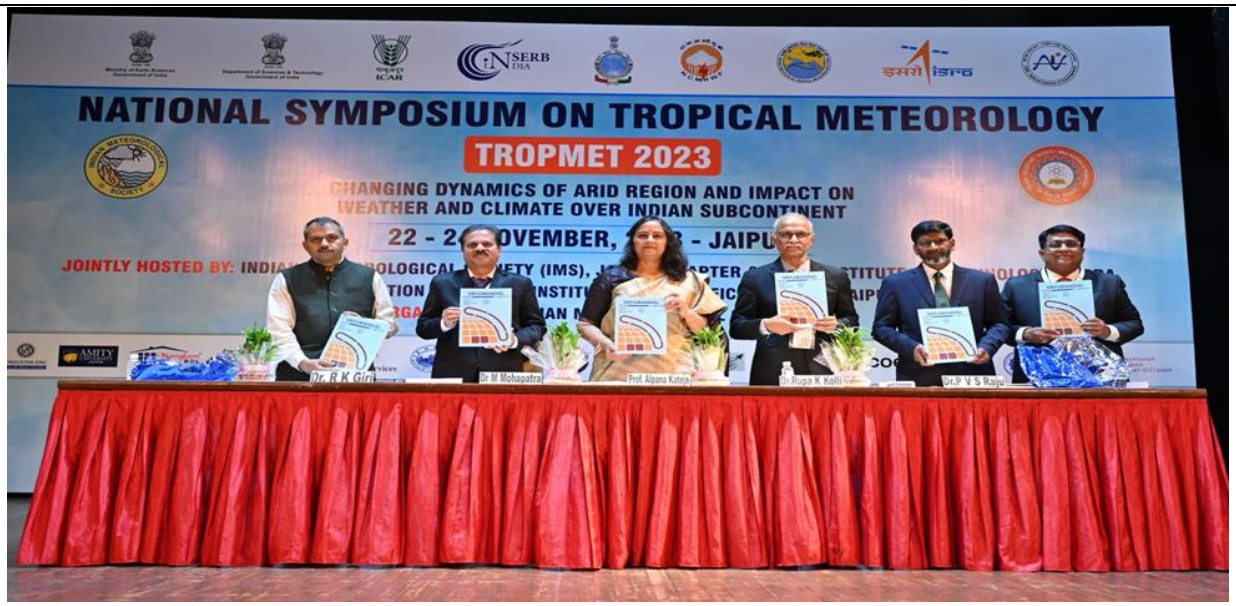
The insights from TROPMET-2023 are expected to guide and empower scientists, policymakers, and planners in addressing the challenges posed by climate change and weather variability in India's arid regions. By fostering collaboration between the scientific community and policymakers, the symposium underscored the importance of informed strategies to mitigate adverse impacts on society and ensure sustainable development in the face of climate uncertainty.

Lightening of the Lamp at Inaugural ceremony of TROPMET 2023

Chief Guest of TROPMET 2023 Prof. Alpana Kateja, Vice Chancellor, University of Rajasthan	Inaugural address by Dr. Rupa Kumar President, IMS

Address by Dr. M. Ravichandran, Secretary, MOES

Felicitation of Dr. M. Rajeevan, Former Secretary, MOES with Sir Gilbert walker Award



Release of Souvenir and Vayumandal issue

Group Picture: TROPMET2023

Panel Discussion: Vision 2030 for Weather and Climate Research in India

Poster Session

Poster Session

Felicitation of newly elected IMS fellows

Felicitation of newly elected associated fellows of IMS

IMS awards Biennial Awards and Young scientist awards for best paper published

Best Oral Presentation in TROPMET2023

Felicitation of Exhibitors in TROPMET 2023

7. IMS Publications

To popularize Meteorology and Atmospheric Sciences, the Indian Meteorological Society (IMS) brings out the Research journal "Vayu Mandal", which is the official Bulletin of IMS. This is brought out twice a year since 1971 to encourage research work and provide information on latest developments in the atmospheric sciences. At present the Chief Editor, Managing Editor and Executive Editor are given below.

Chief Editor: Prof. D. V. Bhaskar Rao, Professor of Meteorology (Retd.), Andhra University, dvbrao@gmail.com

Managing Editor: Dr. S. I. Laskar, IMD New Delhi, drsebul@gmail.com

Executive Editor: Dr. Raghavendra Ashrit, NCMRWF, rgashrit@gmail.com

The article can be submitted to:

Executive Editor

Vayu Mandal
Indian Meteorological Society
Room No. 605, VI Floor, Satellite Meteorological Building,
Mausam Bhavan Complex, Lodi Road, New Delhi-110 003.
Email: vayumandal.ims@gmail.com

8. IMS Awards and Fellows

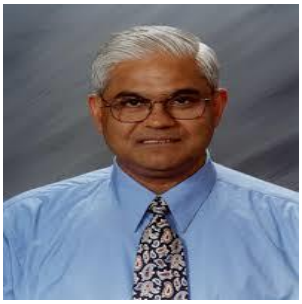
8.1 IMS International Award: "Sir Gilbert Walker Gold Medal"

IMS has instituted "Sir Gilbert Walker Gold Medal" in 2001 to be given biennially to an eminent Indian or foreign scientist of international recognition in the field of monsoon studies. There is no bar on the age and nationality. Now the Prize money for this award is Rs. 100000/- and a gold plated silver medals (100gm weight) and a Citation. The selection will be made by a judging committee with IMS President and minimum two Fellows of IMS as members. Sir Gilbert Walker, the legendary meteorologist who did pioneering and monumental work on long range forecasting of Indian monsoon, was the Director General of India Meteorological Department for 20 years (1904-1924).

"List of Sir Gilbert Walker Gold Medal Awardees" so far are:

(1) **Prof. J. Shukla,** COLA, USA
(2) **Late Prof. P. K. Das,** Former DGM, IMD
(3) **Prof. U. C. Mohanty,** IIT Delhi
(4) **Late Shri. D. R. Sikka,** Former Director, IITM, Pune
(5) **Late Prof. T. N. Krishnamurti,** Professor FSU, USA
(6) **Prof. (Mrs) Sulochana Gadgil,** IISC, Bangalore
(7) **Prof. R. N. Keshavmurty,** Former Director IITM, Pune.
(8) **Prof. P. V. Joseph,** UGC Visiting Prof./Emeritus Prof., CUSAT, Cochin
(9) **Dr. M. N. Rajeevan,** Former Secretary, MoES

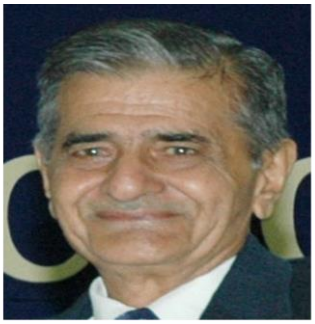
Sir Gilbert Walker Gold Medal Awardees of IMS



Prof. J Shukla is a Distinguished University Professor at George Mason University, USA, where he founded the Department of Atmospheric, Oceanic, and Earth Sciences and Climate Dynamics PhD Program. Prof. Shukla's scientific contributions include studies of: the dynamics of monsoon depressions; the climate variability; the influences of SST on seasonal variability; the intraseasonal and inter-annual variability of monsoons; the predictability and prediction of monsoons, tropical droughts, and ENSO.

Late Prof. P. K. Das, former Director General of Meteorology, India Meteorological Department (during 1979-1983) passed away on 14 January, 2011 at the age of 84. He had joined the IMD in 1949. Prof. Das made pioneering research and contributions to Meteorology, in particular to the development of Numerical Weather Prediction in India. He worked on cloud physics with Sir John Mason at Imperial College, London. He also worked with Prof. Jule Charney, Prof. Norman Philips and Ed Lorenz of the MIT and Reid Bryson at the University of Wisconsin.

Prof. U. C. Mohanty worked at IIT Delhi before shifting to IIT Bhubaneswar as Visiting Professor, in the School of Earth Ocean and Climate Sciences (SEOCS). He has made outstanding contribution in the field of tropical meteorology, in particular, Asian summer monsoon dynamics, tropical cyclone research, numerical weather prediction in tropics, mesoscale modeling of extreme weather events over Indian monsoonal regime, extended range prediction of Indian summer monsoon and regional climate modeling.



Late Prof. D. R. Sikka, Former Director of IITM (1986-1992) is an international expert on monsoon in particular and on Tropical Meteorology in general. His knowledge and experience of last six decades are considered brilliant. He never retired from the limits of his scientific capability. He was very active even at the age of more than eighty. He was spearheading many important projects/missions of Ministry of Earth Sciences, Department of Science & Technology related to Atmospheric Sciences.

Late Prof. T. N. Krishnamurti, at present is Professor Emeritus in the Department of Meteorology, Florida State University, where prior to his retirement he was the Lawton Distinguished Professor of Meteorology. He has specialized in studies of monsoon, hurricanes and numerical weather prediction and more recently on multi-model super-ensemble forecasts for global weather (including hurricanes) and climate. He has published over 250 papers and two textbooks.

Prof. Sulochana Gadgil, Worked at the Centre for Atmospheric and Oceanic Sciences (CAOS) in Bangalore, India for most of her career. She has studied the how and why of monsoon, including farming strategies to cope with rainfall variability and modeling ecological and evolutionary phenomena. Her research led to the discovery of a basic feature of the sub-seasonal variation in the monsoon cloud bands. She demonstrated monsoon is a manifestation of the seasonal migration of a planetary scale system.

Prof. R. N. Keshavamurty was born on 6th May 1936. He did M.Sc. in Physics and Ph.D. in Physics/Atmospheric Science. He joined IMD in the year 1959 and later he joined IITM, Pune as Senior Scientist in the year 1968. Other important positions held by him was Associate Professor and Professor at Physical Research Laboratory, Ahmedabad (1978-1992), Director of Indian Institute of Tropical Meteorology, Pune (1992-1996) and Member, WMO/ICSU Joint Scientific Committee of the World Climate Research Programme (WCRP) during 1987-1990.

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Prof. P. V. Joseph was born on 29th December 1932 in Kerala, Prof. Porathur Vareed Joseph did his Master's degree in Physics in 1953 from the University of Madras. In 1957, he joined the India Meteorological Department (IMD) at Colaba and Alibag Observatories, Bombay. During 1980 to 1989 he was Director of the Meteorological Training School of IMD / WMO at Pune. In 1983 he obtained PhD degree in Physics from the University of Poona for research on monsoon variability. The IMS conferred upon Prof. (Dr.) P. V. Joseph – the Life Time Achievement Award of the IMS in 2016.

Dr. M. N. Rajeevan was born on 27 July 1961 in Kanyakumari, Tamil Nadu. He did his Post-graduation in Physics from Madurai Kamaraj University (1983) and Ph.D. in Physics (1997) from University of Pune. He started his career with TIFR, Mumbai, in IR Astronomy Group in 1983 & IMD in 1985 as Meteorologist at Ahmedabad and subsequently became Director at National Climate Centre, IMD, Pune. He got much recognition awards, like START Young Scientist Award (2001), 20th Biennial Mausam Award (2001), Young Scientist Award in Atmospheric Sciences by MoES (2007), Fellow of IASc, INSA and NASI, Member of the International Academy of Astronautics.

Dr. Jothiram Vivekanandan
INDIAN METEOROLOGICAL SOCIETY
HONORARY FELLOWSHIP

Dr. Jothiram Vivekanandan (Vivek) is an accomplished Senior Scientist at the Earth Observing Laboratory, NCAR, in Boulder, Colorado, USA. His extensive research and development expertise includes polarimetric radar, dual-wavelength radar, phased array radar, lidar, and microwave radiometer. His journey from a humble background in Tamil Nadu to becoming a renowned expert in atmospheric remote sensing is a testament to his dedication, hard work, and exceptional talent. Vivek grew up in Tamil Nadu and studied in Tamil medium before pursuing higher education in a government engineering college. He was a National Merit Scholarship holder and secured top ranks at his university and the Indian Institute of Technology (IIT). His journey through academics, sports, and research in science and engineering inspires many, especially those from humble backgrounds. His achievements underscore the power of dedication, hard work, and the belief that anyone can excel in multiple areas of life.

He has been honored as a Fellow of the American Meteorological Society for his distinguished contributions to the field. He also serves as an Associate Editor for Radio Science. He holds the esteemed position of founding the EGU's Geoscientific Instrumentation Methods and Data Systems journal and served as Chief Executive Editor of the journal https://www.geoscientific-instrumentation-methods-and-data-systems.net.

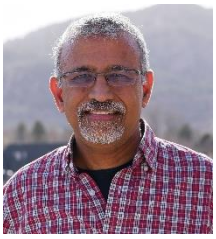
In recognition of his groundbreaking work on the microphysical characterization of clouds and precipitation using advanced remote sensors, Dr. Vivekanandan received the prestigious 2018 Christiaan Huygens Medal https://www.egu.eu/awards-medals/christiaan-huygens/2018/jothiram-vivekanandan/.

The journal paper he co-authored with the Indian Institute of Tropical Meteorology (IITM) scientists and engineers was recognized for the prestigious Indian Meteorological Society (IMS) award for the best paper on Monsoon Research for 2020-2021. The award-winning Monthly Weather Review paper 'The Life Cycle of a Stationary Cloud Cluster during the Indian Summer Monsoon: A Microphysical Investigation Using Polarimetric C-Band Radar' is a trailblazer study of microphysical characterization of a mesoscale event in the Indian summer monsoon region.

Vivek led the composing of the $90 million National Science Foundation Mid-Scale Research Infrastructure-2 Airborne Phased Array Radar (APAR) proposal Project Description (PD), working closely with the APAR team. The PD made a clear and compelling case for the need for APAR. He is the APAR science and engineering liaison. The implementation of APAR is poised to revolutionize weather remote sensing, offering several innovative ideas and concepts that will lead to more accurate weather forecasting. The IMS is privileged to confer upon Dr. Jothiram Vivekanandan the Honorary Fellowship of the Indian Meteorological Society on this day, the 10th December, 2024.

Rourkela India
10th December, 2024

(Anand Kumar Sharma)
President, IMS



Dr. Rajagopalan Balaji
INDIAN METEOROLOGICAL SOCIETY
HONORARY FELLOWSHIP

Dr. Rajagopalan Balaji, born in 1967, has a doctorate in Civil and Environmental Engineering and is currently serving as a Professor in the Department of Civil, Environmental and Architectural Engineering (CEAE) and a Fellow of Cooperative Institute of Research in Environmental Sciences (CIRES), at University of Colorado, Boulder, USA. He is the former Chair of the Department during 2014 – 2022.

He is a global leader in hydroclimatology, advancing transdisciplinary insights into understanding the large-scale climate drivers of year-to-year and multidecadal variability of regional hydrology, developing ensemble hydrologic forecast and simulation tools that incorporate the large-scale climate information and, Coupling the forecasts with water resources, agricultural and ecological decision support system. His research has proven to be of immense value in the operations, management and planning of water resources in the semi-arid river basins of Western USA, especially the Colorado River System. For this he was a co-recipient of the Partners in Conservation Award from the Department of Interior, USA, in 2009.

In addition, he has made significant contributions to understanding the Indian summer monsoonal climate variability and predictability from contemporary to paleo time scales. For his joint work on unraveling the mystery of Indian summer monsoon droughts that appeared in SCIENCE in 2006 he was a co-recipient of the prestigious Norbert Gerbier Mumm Award from the World Meteorological Organization in 2009. His research has shed light on the role of Tibetan Plateau heating in the sub-seasonal variability of Indian summer monsoon. Further, his research developed novel methods for paleoclimate reconstruction resulting in a complimentary paradigm for wetter India during mid-Holocene and the connection to tropical Pacific Ocean.

He has contributed robustly towards advancing the goals of Monsoon Mission initiative of Ministry of Earth Sciences (MoES). He led a multi-institution team on a Monsoon Mission-II project (2019 – 2024), ‘An experimental operational hydrologic modelling and forecasting system for river basin hydrology and extremes for India’. The project developed a suite of flood forecasting modeling approaches – physical, statistical and combination, and demonstrated it on the Narmada River Basin. Following this, his co-leading with an early career researcher on a second project from Monsoon Mission Project III (2023 – 2027), BrahmaSATARK: A real-time impact-based 2D flood forecasting system for the Brahmaputra River basin using hydrologic-hydrodynamic and statistical-dynamical approaches, with applications to Brahmaputra Basin and specific focus on flooding in Guwahati region.

In 2023 I was awarded the Fulbright-Kalam Climate Fellowship, a 2-year fellowship to spend 6-months in India on research collaborations, curriculum development and mentoring. During the Monsoon Mission projects and his Fulbright-Kalam Climate Fellowship (2023 – 2025), he has, developed collaborations on research, curriculum development and mentored early career researchers and graduate students from several institutions in India.

In recognition of his fundamental contributions in understanding the variability and predictability of Indian monsoon rainfall and hydrology, and in helping to shape India's younger generation of researchers, particularly in the field of Hydroclimatology. The IMS is privileged to confer upon Dr. Rajagopalan Balaji the Honorary Fellowship of the Indian Meteorological Society on this day, the 10th December, 2024.

Rourkela India
10th December, 2024

(Anand Kumar Sharma)
President, IMS

Dr. V. S. Prasad
INDIAN METEOROLOGICAL SOCIETY
FELLOWSHIP

Dr V. S. Prasad (LM-148), born in 1966, has obtained his Ph.D. degree in Meteorology and Oceanography from Andhra University, Visakhapatnam and carried out Post-Doctoral Studies at Kyoto University Japan. Presently he is heading the National Center for Medium Range Weather Forecasting (NCMRWF), Ministry of Earth Sciences, Government of India. He played very significant role in developing state-of-the-art data assimilation systems and in implementing operational ensemble forecasting system for the first time in India. Under his leadership, the NCMRWF has successfully carried out the first ever Indian global-scale re-analysis project. In the early part of his career, he was a member of the team that popularised the concept of 'Potential Fishing Zones (PFZ)' in India.

Dr. Prasad published more than 100 scientific papers in various national and international journals. He guided several M. Tech and Ph.D. students. He received many awards such as B.N. Desai gold medal, N. Melatchthon Phillip Prize, JSPS fellowship, Mausam Bi-annual award, Merit certificate from Ministry of Earth Science etc. Dr Prasad also made significant contributions to studies on the characteristics of Indian Summer Monsoon, viz, its onset and withdrawal features. He also contributed in the field of retrieval and application of meteorological parameters from satellite data.

His main areas of research are data processing, satellite data retrieval and data assimilation. He has extensive experience in the field of weather forecasting and has made significant contributions through his research and development of advanced models and techniques for predicting weather patterns.

In recognition of his outstanding contributions in Atmospheric science the IMS is privileged to confer upon Dr V. S Prasad the Fellowship of the Indian Meteorological Society on this day, the 10th December, 2024.

Rourkela India
10th December, 2024

(Anand Kumar Sharma)
President, IMS

Dr. V. Krishnamurthy
INDIAN METEOROLOGICAL SOCIETY
FELLOWSHIP

Dr V. Krishnamurthy (LM-1415), born in 1950, has done his Ph.D. degree in Meteorology from Massachusetts Institute of Technology (MIT) with Prof. Edward Lorenz as advisor. He has been a Professor in the Department of Atmospheric, Oceanic and Earth Sciences and Center for Ocean-Land-Atmosphere Studies at George Mason University in USA since 2002. He earlier worked at MIT, University of Maryland, International Centre for Theoretical Physics in Trieste (Italy), and Institute of Global Environment and Society (USA). His research activities include variability and predictability of Indian monsoon at intraseasonal, interannual and decadal time scales, South American monsoon, mid-latitude oscillations, nonlinear dynamical systems and chaos, and data-driven modeling. His work has applied dynamical systems theory to reveal the existence of nonlinear oscillations in the monsoon systems and mid-latitude. He showed that seasonally persisting modes in the monsoon, related to the Pacific and Indian oceans, mainly determine the predictability of the seasonal rainfall. Further work demonstrated that certain aspects of climate are predictable at long-time range using data-driven models.

Dr Krishnamurthy has been involved in establishing new graduate programs in atmospheric science at Indian universities and has promoted the research in monsoon at several colleges and universities in India. He has been involved in activities at international organizations such as the ICTP at Trieste and the IPCC.

He has served as an Executive Editor of Climate Dynamics, a Springer-Nature journal. He is a Fellow of American Physical Society, Foreign Fellow of Indian Geophysical Union and Lorenz Lecturer of American Geophysical Union

In recognition of his outstanding contributions in Atmospheric Science, the IMS is privileged to confer upon Dr V. Krishnamurthy the Fellowship of the Indian Meteorological Society on this day, the 10th December, 2024.

Rourkela India
10th December, 2024

(Anand Kumar Sharma)
President, IMS

Prof. Vimal Mishra
INDIAN METEOROLOGICAL SOCIETY
FELLOWSHIP

Prof. Vimal Mishra (LM-3634), born in 1979, obtained his PhD from Purdue University, West Lafayette, USA, in 2010. Currently he is working as Vikram Sarabhai Chair Professor in the Department of Civil Engineering and Earth Sciences, Indian Institute of Technology (IIT), Gandhinagar.

Prof. Mishra has made outstanding contributions using new methods and modelling to quantify the role of anthropogenic and natural climate on surface and groundwater resources in India. In addition, he has made significant and novel contributions towards understanding the role of irrigation on land-atmospheric interactions and hydroclimatic extremes. Scientific novelty combined with societal relevance has been the focus of Dr Mishra's exceptional research in land surface hydrologic modelling in India. He has pioneered the development of a country-wide hydrologic framework to study the impacts of hydrologic extremes on surface and groundwater availability in India. Dr Mishra led breakthroughs in understanding the role of irrigation on hydroclimatic extremes in India, which resulted in publications in leading international journals.

Prof. Mishra's exemplary work on modeling of hydrological extremes have not only provided the basic canvas to enable forecasting of hydrological extremes, but has also been operationalized by India Meteorological Department (IMD) for offering real-time monitoring and forecasts, which has a great societal relevance.

Prof Vimal Mishra has been awarded the prestigious Shanti Swarup Bhatnagar Prize 2022 in Earth, Atmosphere, Ocean, and Planetary Sciences for his outstanding contributions towards examining the role of anthropogenic and natural factors on hydrologic extremes and water resources in India. Earlier, he was awarded the prestigious Devendra Lal Memorial Medal by the American Geophysical Union (AGU) in 2021.

In recognition of his outstanding contributions in Atmospheric Science, the IMS is privileged to confer upon Prof. Vimal Mishra the Fellowship of the Indian Meteorological Society on this day, the 10th December, 2024.

Rourkela India
10th December, 2024

(Anand Kumar Sharma)
President, IMS

Prof. Dev Niyogi
INDIAN METEOROLOGICAL SOCIETY
FELLOWSHIP

Prof. Dev Niyogi (LM-3229) obtained from the North Carolina State University, USA in the year 2000. Dr. Niyogi serves many prestigious positions in his carrier like Professor and William Stamps Farish Chair, with appointments in the Department of Geological Sciences (Earth and Planetary Sciences), Jackson School of Geosciences, and Department of Civil, Architectural and Environmental Engineering, Cockrell School of Engineering, The University of Texas at Austin. Also, Professor Emeritus, Purdue University with Joint appointments in Department of Agronomy- and Department of Earth, Atmospheric, and Planetary Sciences, also with Division of Ecological and Environmental Engineering (Courtesy).

Dr. Niyogi has coauthored over 210 papers for international journals, 18 book chapters, and over 150 conference proceedings or abstracts for professional conferences such as the AMS and AGU meetings. According to Google Scholar, his research has been cited nearly 20,000 times (h-index 70; i-index 225), and his work has been read over 120,000 times per Research Gate statistics. His work has been highlighted in various media outlets including in the popular press such as Yahoo!, MSNBC, Wired, CNN, LiveScience, National Geographic, Tedx Talk, NASA press release.

He has been the former Indiana State Climatologist (2005- 2018). Dr. Niyogi is part of the U.S. Department of Energy Biological and Environmental Advisory Committee, and was the most recent chair of the American Meteorological Society (AMS) Board of Urban Environment and elected advisory board member of the International Association of Urban Climate. He is currently part of AMS Committee on Applied Climatology, and recently formed AMS-wide International Mentoring/Visitors Committee.

He has contributed significantly for understanding of the Earth system, particularly the urban and agricultural landscapes, and the dynamic role of coupled land surface processes on weather and regional meteorological extremes. An important ongoing and emerging focus of his research is to translate the scientific work undertaken into decision tools and portals with a particular focus on hydroclimatology and sustainable climate-ready/resilient cities using stakeholder partnerships, AI/ML approaches and development of Digital Twins.

In recognition of his outstanding contributions in Atmospheric science the IMS is privileged to confer upon Prof Dev Niyogi the Fellowship of the Indian Meteorological Society on this day, the 10th December, 2024.

Rourkela India
10th December, 2024

(Anand Kumar Sharma)
President, IMS

Prof. A. P. Dimri
INDIAN METEOROLOGICAL SOCIETY
FELLOWSHIP

Prof. A. P. Dimri (LM-318), born in 1970, did his Ph.D. in 2004 from Center for Atmospheric Sciences, Indian Institute of Technology, New Delhi. He is currently serving as Director Indian Institute of Geomagnetism, Mumbai, India. He has also been serving as a Professor at the Jawaharlal Nehru University, New Delhi, since 2008. Earlier, he served at the Snow and Avalanche Study Establishment, Defense Research & Development Organization, Government of India, during 1994-2008. Throughout his scientific career spanning three decades, Prof. Dimri has been actively working in the field of Himalayan Meteorology.

Prof. Dimri's main research interest is on winter weather and climate using observations and modeling. He has contributed to many areas, including regional climate dynamics, change and variability, and numerical modeling, statistical and dynamical downscaling of numerical model outputs, science of climate and climate change, extreme events and their physical understanding, Indian winter monsoon and Western Disturbances and snow and glacier physics/Himalayan climate interactions. A key contribution of Prof. Dimri has been in determining and providing comprehension on the Western Disturbances, and in providing important illustration to cloudburst and whirlwinds observed in the southern rim of the Indian Himalayan Region.

He has received prestigious awards and recognitions viz., '2022 Grove Karl Gilbert Award for Excellence in Geomorphological Research' of the Geomorphology Specialty Group (GSG) of the American Association of Geographers; IMS Award for his publications and is Fellow of Indian National Science Academy and National Science Academy, India. Apart from these he is serving various committees and projects.

In recognition of his outstanding contributions in Atmospheric science the IMS is privileged to confer upon Prof. A. P. Dimri the Fellowship of the Indian Meteorological Society on this day, the 10th December, 2024.

Rourkela India
10th December, 2024

(Anand Kumar Sharma)
President, IMS

Dr. Someshwar Das
INDIAN METEOROLOGICAL SOCIETY
FELLOWSHIP

Prof. (Dr.) Someshwar Das (LM-86), born in 1956, received his Ph. D. degree in Atmospheric Science from Indian Institute of Technology, Delhi in 1987 and M. Sc. Degree in Meteorology from Andhra University, Visakhapatnam. He has more than 45 years of working experience in Meteorology. He is currently serving as Secretary of the South Asian Meteorological Association (SAMA). Earlier, he was the founding Chairman of Indian Meteorological Society Jaipur Chapter. During 2017-21, he was the founding Chair Professor of Department of Atmospheric Science at Central University of Rajasthan, Jaipur. He played a key role in the SAARC STORM project and supported capacity building for South Asia in NWP. His areas of interests are cumulus convection, cloud microphysics, global and mesoscale modeling, and high impact severe weather forecasting.

Prof. Das worked at the National Centre for Medium Range Weather Forecasting (NCMRWF) during 1989-2016 in different capacities, finally reaching the level of Scientist-G. He provided scientific support in running the global models and started real-time mesoscale weather forecasting at NCMRWF.

Prof. Das worked at many national and international organizations including the SAARC Meteorological Research Centre (SMRC), Bangladesh, National Center for Atmospheric Research, USA, NASA/Goddard Space Flight Center, USA, European Center for Medium Range Weather Forecasts, UK, and Nepal Meteorological Service.

Prof. Das has published more than 200 research papers including peer reviewed journals (66), conference proceedings and scientific reports. He has served as a Co-Guest editor of the Journal ‘Current Science’ and editorial board of the Open Journal of Atmospheric Sciences and Vayumandal. He has mentored 35 students for their M.Sc./ M.Tech. projects and 2 students for Ph.D. degree.

Prof. Das is honoured with many awards and honors; notable among them are the ‘SAARC award for Senior Scientists’, ‘Indian Society of Remote Sensing Award’, Indian Meteorological Society (Visakhapatnam) prize, B.N. Desai Gold Medal and N. Melanchthon Phillip Memorial Prize (Andhra University, India), Mahendra Vidya Bhushan (A Gold Medal awarded by His Majesty the King Birendra of Nepal for academic excellence).

In recognition of his outstanding contributions in atmospheric science and his passionate commitment to strengthening the meteorological community in South Asia, the IMS is privileged to confer upon Dr. Someshwar Das the Fellowship of the Indian Meteorological Society on this day, the 10th December, 2024.

Rourkela India
10th December, 2024

(Anand Kumar Sharma)
President, IMS

Dr. Parvinder Maini
INDIAN METEOROLOGICAL SOCIETY
FELLOWSHIP

Dr. Parvinder Maini (LM-478), born in 1966, has a doctorate in Meteorology and Oceanography and is currently serving as the Scientific Secretary at the Office of the Principal Scientific Advisor to the Government of India, where her contributions have spanned both domestic R&D initiatives and international collaborations, addressing various contemporary S&T challenges. From expanding the national research ecosystem to crafting policies and forging partnerships between industry, academia, and government, her focus has been on citizen-centric solutions. Several national programs like the One Health mission for pandemic preparedness, One Nation One Subscription, National Research Foundation, National Deep Tech Policy, Zero emission trucking, RUTAG (Rural Technology Action Group) 2.0, Regional Science & Technology clusters, Livelihood Mission etc have been initiated during her tenure with a focus on leveraging technological advancements for public well-being.

During her early years as a scientist at the National Center for Medium Range Weather Forecasting, Dr Maini was instrumental in the development of the first Statistical Dynamical Model in India which was implemented by India Meteorological Department for providing district-wise location specific forecast in operational-mode.

She played a pivotal role in coordinating the implementation of the Monsoon Mission program and facilitating collaboration with USA and UK as part of the Monsoon Mission efforts, resulting in the first seamless prediction model in India. Her contribution in leading four successive studies on “The economic benefit and impact analysis of the services rendered by the Ministry of Earth Sciences(MoES)” is noteworthy as it significantly enhanced, the visibility of the Ministry and also brought out the return on investment of the programs of MoES.

Dr. Maini’s leadership role in strategic management of MoES’s international portfolio of both bilateral and multilateral collaborations led to the development of several international collaborative programmes in Earth Sciences with a focus on transnational and trans-disciplinary projects.

In recognition of her outstanding contributions in shaping India's science and technology landscape, particularly in the field of Atmospheric Sciences, the IMS is privileged to confer upon Dr. Parvinder Maini the Fellowship of the Indian Meteorological Society on this day, the 10th December, 2024.

Rourkela India
10th December, 2024

(Anand Kumar Sharma)
President, IMS

Dr. Kamaljit Ray
INDIAN METEOROLOGICAL SOCIETY
FELLOWSHIP

Dr. Kamaljit Ray (LM-870), born in 1966, is currently serving as Adviser with the Ministry of Earth Sciences, heading the Atmospheric Processes and Modelling program. She is responsible for the successful implementation of the Atmospheric Science programs of the Ministry from the planning to delivery stage. She is Chair of the Global Space-based Inter-Calibration System-data working group of WMO and Vice Chair of the Subsidiary Working group (Services) for WMO Regional Association II (Asia). Her research interests include extreme weather events, Agro-advisory Services and Climate Change. She was the Director of Meteorological Centre of the India Meteorological Department (IMD) at Ahmedabad during 2008-2012 and was Nowcast Head at IMD, New Delhi during 2012-2016, before she joined the Ministry of Earth Sciences as Advisor in 2017. She has served as a member of many expert committees related to Aviation Services and Thunderstorm Prediction. Most of her work focusses on extreme weather events and climate variability. She has around 500 citations to her publications.

As a Program Head for Plan Schemes of India Meteorological Department under Atmosphere, Climate Research Modelling, Observing Systems & Services (ACROSS), upgradation and sustenance of weather forecasting capabilities to an optimum level was the major task taken up by her. As Program Head for IITM and NCMRWF, she is also coordinating the activities of these two reputed Institutes for developing outstanding research talent capable of understanding and exploring atmospheric sciences, to further the advancement of research and to collaborate with other similar research institutions, in the development and application of climate research.

As Executive Editor of Vayu Mandal, the flagship publication of the IMS, during the period 2015-2022, she contributed to enhance the quality of Vayu Mandal by improved reviewing and regularity of publication.

In recognition of her outstanding contributions to improve the meteorological services and the associated infrastructure development in the country as well as her leadership support to international activities through the WMO, the IMS is privileged to confer upon Dr. Kamaljit Ray the Fellowship of the Indian Meteorological Society on this day, the 10th December, 2024.

Rourkela India
10th December, 2024

(Anand Kumar Sharma)
President, IMS

Dr. Vijay Tallapragada
INDIAN METEOROLOGICAL SOCIETY
FELLOWSHIP

Dr. Vijay Tallapragada is currently serving as the Chief Scientist at the Environmental Modeling Center (EMC) of the United States (US) National Oceanic and Atmospheric Administration (NOAA) where he has driven innovations to keep the research at the forefront of operational weather predictions across the globe. Born in 1971, he acquired his Doctoral Degree in Meteorology from Andhra University, India and was trained in Numerical Weather Prediction (NWP) from the Indian Institute of Tropical Meteorology (IITM), Pune. In 1999, he was invited as a post-doctoral scientist at Florida State University (FSU) in USA where he was mentored by the world-renowned tropical meteorologist Prof. T.N. Krishnamurti and made significant contributions in the field of numerical modeling and superensemble techniques for accurate prediction of tropical cyclones and monsoons.

Dr. Tallapragada joined NOAA in 2006 and is known for his extensive expertise in developing atmosphere-ocean-wave coupled high-resolution modeling systems for predicting tropical cyclones across the globe, providing critical and highly skillful forecast guidance, helping make decisions for saving lives and property. As a development manager for the NOAA's Hurricane Forecast Improvement Project (HFIP), he led the tropical cyclone modeling community to make significant advancements in operations and research. He is currently overseeing the development of the next generation fully coupled earth system modeling in the Unified Forecast System (UFS) framework for global to local scale predictions from hours to seasons in advance.

Dr. Tallapragada has excellent scientific and technical abilities with strong emphasis on research relevant for operational applications. He established various international collaborations throughout his career and kept his association with various operational and research institutes in India with the support from Indian Ministry of Earth Sciences (MoES). Being an alumnus of Andhra University, a life member of IMS, a member of the Editorial Board of Vayumandal and Mausam, a fellow of the American Meteorological Society (AMS), winner of multiple awards from NOAA and the US Government, and a strong advocate for community modeling, Dr. Tallapragada has made lasting impacts in the field of operational NWP.

In recognition of his outstanding contributions in advancing the numerical modeling for operations and research, especially for accurate tropical cyclone forecasts across the globe, the IMS is privileged to confer upon Dr. Vijay Tallapragada the Fellowship of the Indian Meteorological Society on this day, the 10th December, 2024.

Rourkela India
10th December, 2024

(Anand Kumar Sharma)
President, IMS

Dr. Thara Prabhakaran
INDIAN METEOROLOGICAL SOCIETY
FELLOWSHIP

Dr. Thara Prabhakaran, born in March 1968, has a doctorate in Meteorology and is currently serving as Scientist G and the Project Director of the Cloud Aerosol Interaction and Precipitation Enhancement Experiment (CAIPEEX) at the Indian Institute of Tropical Meteorology (IITM), under the Ministry of Earth Sciences, the Government of India. CAIPEEX is the unique airborne observational program of IITM. Her contributions are in atmospheric boundary layer studies, cloud physics and on major field campaigns on aerosol-cloud-precipitation interactions. Since joining IITM, she has been involved in CAIPEEX and has been the Project Director of the program since 2013. She led the CAIPEEX Team for field experiments with aircraft and established a ground-based facility for aerosol-cloud interaction studies. The efficacy of cloud seeding in the arid regions of India for water resources development was evaluated through the scientific investigation and a randomized cloud seeding experiment. She has led a successful research program on cloud physics, helped and developed in training manpower and resources and facilitated national and international collaborations in the field. She is leading the Centre of Excellence of cloud physics and weather modification strategic research at IITM.

She has been the chairperson for developing the detailed project report of the mega initiative of the MoES; the Mission Mausam and is serving as the Project Director for its implementation at IITM. Her commitments are also to develop better urban meteorological testbed observations so that advanced research and state of the art services can be provided through high impact weather prediction. She has made efforts in bringing the cloud physics community to India through the conferences of the International Commission of Clouds and Precipitation (ICCP) / IAMAS and of WMO. She is a steering group member of the two major projects of WWRP and the Expert Team of Weather Modification and has given key inputs to the meteorological community through her knowledge and leadership in the field.

Dr. Prabhakaran’s leadership role in the basic research to applied fields and efforts in outstanding problems of tomorrow, such as to address the water scarcity, and weather modification prospects.

In recognition of her outstanding contributions in shaping India's science and technology landscape, particularly in the field of Atmospheric Sciences, the IMS is privileged to confer upon Dr. Thara Prabhakaran the Fellowship of the Indian Meteorological Society on this day, the 10th December, 2024.

Rourkela India
10th December, 2024

(Anand Kumar Sharma)
President, IMS

Prof. C. V. Naidu
INDIAN METEOROLOGICAL SOCIETY
FELLOWSHIP

Prof. Chennu Venkateswara Naidu, born to Shri CLN Murthy (late) and Smt. Damayanthi (late) in 1964, has M.Sc.(Meteorology), doctorate in Meteorology and Oceanography obtained under the guidance of Prof. I. Subbaramayya and PG Diploma in Applied Statistics and is currently serving as a Professor and Chairman, PG Board of Studies in the Dept. of Meteorology and Oceanography, Head (Incharge) of the Dept. of Geophysics, College of Science and Technology and Associate Director, AU Directorate of Admissions, Andhra University. He has held various pivotal roles including Head, Core-member, Convener for a course on Disaster Management for defense personnel, warden and Research Associate (DST) and member in AU Board of studies for the courses, Geophysics, Environmental Science, Geo-engineering and Geography. Prof. Naidu's research is focused mainly on the variability of the Indian monsoon system, extreme weather events, and climate change impacts on India. He has guided 29 Ph.D. scholars, five of whom received best Ph.D. awards, and 21 M.Phil/M.Tech. students. He has authored 80 publications in national and international journals. He was awarded with a certificate of merit by CSIR for his outstanding performance in CSIR-UGC JRF examination in earth, atmospheric and ocean sciences in 1989 and Sri M. Phillip Memorial medal, Dr. B. N. Desai medal and IMS prize for 1st rank in M.Sc.

His contributions extend beyond academia into practical applications such as establishing the rip currents monitoring system for Rushikonda beach, Visakhapatnam in collaboration with SAC (ISRO) and NCESS (MoES). He has successfully managed numerous research projects funded by prestigious bodies including UGC, MOES, DST, and SAC. He also served as Principal Investigator for DST FIST Program.

His excellence in teaching and research has been recognized with several awards, including the Andhra Pradesh State Best Teacher Award in 2023. He has organized multiple national and international seminars and webinars, enhancing knowledge dissemination in meteorology and oceanography. He holds memberships and executive positions in various professional bodies, reflecting his commitment to the scientific community. His dedication to education, research, and service makes him a highly respected figure in the field of meteorology and oceanography.
In recognition of his outstanding contributions in education and research particularly in the field of meteorology and oceanography, the IMS is privileged to confer upon Prof. C.V. Naidu the Fellowship of the Indian Meteorological Society on this day, the 10th December, 2024.

Rourkela, India
10th December, 2024

(Anand Kumar Sharma)
President, IMS

Prof. Pradhan Parth Sarthi
INDIAN METEOROLOGICAL SOCIETY
FELLOWSHIP

Prof. Pradhan Parth Sarthi, has a doctorate in Geophysics (Meteorology) in 2000, from Department of Geophysics, Banaras Hindu University, Varanasi. After completing Ph. D., He has been worked on modeling study of Indian Summer Monsoon research projects at Centre for Atmospheric Science, IIT Delhi. To work on Climate Change, Prof. Parth Sarthi joined TERI, New Delhi and contributed on national/international levels on different aspects of climate modeling. In 2010, Dr. Parth Sarthi joined Central University of South Bihar, Gaya as a founder member. Currently, Prof. Parth Sarthi is serving as Dean, School of Earth, Biological and Environmental Sciences and Head, Department of Environmental Science, Central University of South Bihar (CUSB), Gaya and contributed on disseminating the knowledge of science in the various capacities in the university. Under his leadership, a permanent Centre for Climate Change and LiFE is established recently at CUSB, Gaya. He is also coordinating Location Lightning Network Program of MoES at CUSB. He has been carried out different research projects, guided national and international Ph.D. students, published a good number of research papers especially on climate science and members of various societies on national and international status.

His research contributions focus on Climate Model Intercomparison Project (CMIP), Monsoon variability, Drought, Cyclone, Urban Climate, Climate Change and Health, Aerosol and Cloud, Indian and African Monsoon and others. A significant contribution is done by him in drafting and implementing Bihar State Action Plan on Climate Change, Government of Bihar. He has also been contributed in preparing the National Action Plan on Climate Change, through MoEF, Government of India.

Recently, Prof. Parth Sarthi is nominated by Government of India for IPCC AR7 WG1. He is also serving as expert members in nation committees on climate change. He started IMS Patna chapter, served as secretary and president and contributed a lot for dissemination of knowledge of Weather and Climate at school, college and university levels through seminars, workshops, and conferences in Bihar.

In recognition of her outstanding contributions in shaping India's science and technology landscape, particularly in the field of Climate Science, the IMS is privileged to confer upon Prof. Pradhan Parth Sarthi, the Fellowship of the Indian Meteorological Society on this day, the 10th December, 2024.

Rourkela India
10th December, 2024

(Anand Kumar Sharma)
President, IMS

Prof. Rajeev Bhatla
INDIAN METEOROLOGICAL SOCIETY
FELLOWSHIP

Prof. Rajeev Bhatla, born in 1963, obtained his Ph.D. in Geophysics (Meteorology) from the Department of Geophysics, Banaras Hindu University (BHU), Varanasi, India in 1994. Earlier, he held the position of Head of the Department of Geophysics, BHU, Varanasi. His main areas of research are Monsoon Dynamics, Energetic, Variability and Forecasting, Regional Climate Modeling, Climate Change etc. Prof. Bhatla demonstrates the epitome of excellence in the field of meteorology and climate sciences, with a career spanning over three decades dedicated to unfolding the depths of Earth's atmosphere and climate systems. He has made outstanding contributions in monsoon dynamics and climate variability.

Prof. Bhatla has published more than 140 scientific research papers in various national and international journals. He has guided 85 Master and 15 Ph.D. students for their thesis work. He is the recipient of many National and International awards such as Most Productive Research award from the Institute of Science, BHU, Varanasi, CAS-TWAS Visiting Scholar Fellowship award from the Chinese Academy of Sciences, Regular Associate award from ICTP, Italy etc. He is the member of various academic and administrative committees in India. Prof. Bhatla has also handled various research projects, being as a PI and Co-PI, funded by the prestigious funding agencies such as Institute of Eminence (IoE), BHU; Department of Science and Technology (DST), Science and Engineering Research Board (SERB), Ministry of Earth Sciences (MoES), Government of India, Uttar Pradesh Council for Science and Technology (UPCST) etc.

In recognition of his outstanding contributions in Atmospheric Science, the IMS is privileged to confer upon Prof. Rajeev Bhatla the Fellowship of the Indian Meteorological Society on this day, the 10th December, 2024.

Rourkela India
10th December, 2024

(Anand Kumar Sharma)
President, IMS

Dr. Sunil Kumar Peshin
INDIAN METEOROLOGICAL SOCIETY
FELLOWSHIP

Dr. Sunil Kumar Peshin (Ph.D, Atmospheric Physics) has more than 32 years of experience in Management, Monitoring and Research of Meteorological instruments and observations. He has established Ozone Network in India and Antarctica, modernized Environment Monitoring Network in India, Air Quality Monitoring Network in Delhi under SAFAR Programme since its inception. He has headed National Ozone Centre (1992-2016), Environmental Research Centre (2011-2016), National Centre for Seismology (2014-2016) and Satellite Communication Division (2016-2018). He was the Project Director INDOEX project on ozone (1997-2004) and Chief Scientist SAFAR (Delhi) (2011-2016). He was the Chairman/Member Technical committees of IMD, MoES, MoEF, DST, NPL, MHFW, CPCB, IITM and also Member of Environmental Appraisal Committees (Mining and Industries) of the Ministry of Environment, Forests and Climate Change, Govt of India (2009-2016). He has reviewed manuscripts on Ozone for various International & National journals and evaluated projects of DST, MoES, MoEF, Govt. of India etc. He has been the Project Director of Indo-Russia project on ozone (1997-2016), also having worked as a Rapporteur on Atmospheric Ozone for the region RA-II of WMO during 2000-2004. He has reviewed a Chapter (Global ozone-past and future) “Assessment of ozone depletion-2002” (WMO). He has been the member of the selection Committee of MoES,GOI for various scientific posts .

He has participated in International Intercomparison of Dobson Ozone Spectrophotometer in Japan in 1996 and 2006. He has presented various research papers on ozone in Greece, Manchester (Antarctica Ozone), Jakarta (Air Quality), Geneva (Indian Ozone Programme) & South Korea (Indian Satellite Programme). He has evaluated nine Ph.D. thesis submitted to JNU, Delhi University, Pune University, Mohan Lal Sukhadia University, Udaipur.

He has peer-reviewed publications: 62 (National: 37, International: 25) & Proceedings of Conferences: 23. He is the recipient of many awards including Rajbhasha Gaurav Puraskar for outstanding article (Antarctic Ozone ,2015-16) by Hon’ble President of India, Shri Pranab Mukerjee in Rashtrapati Bhavan (14th September 2016).

He retired from India Meteorological Department as Additional Director General /Scientist-G (Satellite and Communication) in 2018.

In recognition of his outstanding contribution in the field of Ozone and Air Quality monitoring and research, the IMS is privileged to confer upon Dr. Sunil Kumar Peshin the Fellowship of the India Meteorological Society on the day, the 10th December,2024.

Rourkela India
10th December, 2024

(Anand Kumar Sharma)
President, IMS

Dr. Gufran Beig
INDIAN METEOROLOGICAL SOCIETY
FELLOWSHIP

Dr. Gufran Beig, born in 1961, has a doctorate in Physics (Atmospheric Sciences) from Physical Research Laboratory, Ahmedabad and is currently serving as the Sir Ashutosh Mukherjee Chair Professor, National Institute of Advanced Studies, Indian Institute of Science (IISc) Campus, BANGALORE-560012, where he established an air quality and climate change group. Beig's research and development work includes two aspects of science- (a) fundamental contributions in the field of Atmospheric and Environment Sciences, understanding the role of meteorology in atmospheric chemistry processes. His focus is on air pollution, ozone along with short-lived climate forcing parameters, and (b) designing and developing air quality forecasting framework with impact assessment for practical applications to the society. Current research focus is on two critical aspects- (1) develop National Air Quality Resource Framework transforming Energy, Weather and Health under the changing climate by adopting integrated multi-sectoral science and technology approach. Broader aim is to promote evidence-based decision-making and drive knowledge products to integrate into a common platform; (2) Effort is underway to establish a Science and Policy Consortium of Greenhouse Gases and Ozone-depleting substances for the country. Candidate is actively involved in India's National Communications on the status of Greenhouse gases emissions to United Nations Framework Convention on Climate Change. Present efforts include development of emission inventory using drone-based Artificial Intelligence (AI) and satellite downscaling techniques.

Dr. Beig pioneered air quality forecasting in the country. He has developed India’s first metro air quality forecasting framework popularly known as SAFAR (System of Air Quality and Weather Forecasting and Research). Developed high-resolution gridded emission inventories of major chemical species and greenhouse gases that fulfilled the critical input for forecasting models and planning mitigation strategies. Explained processes leading to extreme pollution events due to stubble burning, dust storms and severe weather. His earlier pioneering work was related to assessing the climate change signals of cooling in the upper atmosphere. This finding strongly affects navigation systems, radio communication, and satellite movement.

In recognition of his outstanding contributions in shaping India's science and technology landscape, particularly in the field of Atmospheric Sciences, the IMS is privileged to confer upon Dr. Gufran Beig the Fellowship of the Indian Meteorological Society on this day, the 10th December, 2024.

Rourkela India
10th December, 2024

(Anand Kumar Sharma)
President, IMS

Dr. Susmitha Joseph
INDIAN METEOROLOGICAL SOCIETY
ASSOCIATE FELLOWSHIP

Dr. Susmitha Joseph, born in 1980, obtained her Ph.D. in Atmospheric and Space Sciences from the Savitribai Phule Pune University, Pune, India in 2011. Currently, she is working as Scientist-F at Indian Institute of Tropical Meteorology, Pune. Additionally, she is also holding various prestigious positions such as Deputy Project Director, Extended Range Prediction Group, Monsoon Mission, IITM-MoES; Officer-In-Charge, International Monsoon Project Office (IMPO); Member, MoES NWP Working Group; Regional Activity Leader, WWRP/WCRP S2S Project; Editorial Board Member, Vayumandal etc.

Dr. Joseph has contributed significantly in improving the understanding of monsoon variability and its predictability. She has made outstanding contributions in improving the extended range prediction of onset and active/break spells of Indian summer monsoon and extreme weather events such as heat waves, cold waves, cyclogenesis, heavy rainfall events and generating sector specific products from these forecasts.

Dr. Joseph has published more than 50 scientific research papers in various national and international journals. She has guided several Master and Ph.D. students for their thesis work. She is the recipient of many awards such as 30th Biennial MAUSAM Award, Best Paper Award from IITM etc.

In recognition of her outstanding contributions in Atmospheric Science, the IMS is privileged to confer upon Dr. Susmitha Joseph the Associate Fellowship of the Indian Meteorological Society on this day, the 10th December, 2024.

Rourkela India
10th December, 2024

(Anand Kumar Sharma)
President, IMS

Dr. Bhupendra Bahadur Singh
INDIAN METEOROLOGICAL SOCIETY
ASSOCIATE FELLOWSHIP

Dr. Bhupendra Bahadur Singh, born in 1990, holds a doctorate in Geophysics/Meteorology and currently serves as Scientist-E at the Indian Institute of Tropical Meteorology (IITM). Dr. Singh has made significant contributions to the field of meteorology, particularly in the areas of climate extremes and atmospheric dynamics through his extensive research on atmosphere and land moisture variability and has contributed alike in academics, and science outreach activities while leading and promoting both national and international collaborations.

During his early years as a scientist at IITM, Dr Singh was instrumental in the data curation and dissemination under the Coordinated Regional Climate Downscaling Experiment (CORDEX) activity for the South Asia region, a program coordinated by the World Climate Research Programme (WCRP). The data so generated has been an invaluable resource for a wide range of stakeholders, providing critical insights into projected climate patterns, trends, and extremes empowering communities, governments, and industries. In 2016, he successfully coordinated the StratoClim campaign for measurements of water vapor, aerosol backscatter, ozone and other meteorological parameters as a part of Indo-German collaborative project titled “Effects of Asian Summer Monsoon (ASM) on the upper troposphere lower stratosphere (UTLS): Feedback on monsoon circulation”. Dr. Singh has authored several high-impact publications and also contributed to the first comprehensive climate change assessment report of India, brought up by the Ministry of Earth Sciences (MoES), Government of India. He has been a faculty for research fellows/students/trainees at various programs of IITM; MoES Research Fellow Program (MRFP); India Meteorological Department (IMD); Savitribai Phule Pune University (SPPU) etc. He has also been associated as a part of faculty pool for the World Meteorological Organization (WMO) Training Center of IMD, Pune. Dr. Singh has been twice awarded with the prestigious Research Fellowship jointly offered by Indian Academy of Sciences (IASc), Indian National Science Academy (INSA), and National Academy of Sciences (NASI). Dr. Singh is one of the youngest members of the editorial boards of Geophysical Research Letters (GRL), a prestigious journal of the American Geophysical Union (AGU), and Meteorology and Atmospheric Physics (MAAP), a journal published by the Springer Nature Group. Dr. Singh currently leads the IITM-COSMOS (Cosmic-ray Soil Moisture Observing System) group, driving key research and data generation in hydrometeorology and climate.

In recognition of his commitment and outstanding contributions to earth sciences and meteorology through research and development, mentorship, and outreach initiatives, the IMS is privileged to confer upon Dr. Bhupendra Bahadur Singh the Associate Fellowship of the Indian Meteorological Society on this day, the 10th December, 2024.

Rourkela India
10th December, 2024

(Anand Kumar Sharma)
President, IMS

Prof. Jagabandhu Panda
INDIAN METEOROLOGICAL SOCIETY
ASSOCIATE FELLOWSHIP

Dr. Jagabandhu Panda, born in 1979, has a doctorate in Atmospheric Science, and is currently serving as a professor at the Department of Earth and Atmospheric Sciences, National Institute of Technology (NIT) Rourkela, Odisha, India, where his contributions spanned both domestic R&D initiatives and international collaborations, addressing various contemporary S&T challenges. His initiatives in generating quality manpower through teaching and research has been substantial, where he could create many budding researchers. From expanding the research ecosystem to forging partnerships between academia, research organizations, and government, his focus has been on citizen-centric solutions. He has contributed substantially to several national level research initiatives including Ministry of Earth Sciences' Thunderstorm and Meso-scale Processes Prediction, and ISRO's Scatterometer Utilization Program and Mars Orbiter Mission. His direct and indirect associations with India Meteorological Department (IMD) and National Centre for Medium Range Weather Forecasting (NCMRWF) has been fostering Government of India's collaborative initiations.

During his early years as a researcher at Indian Institute of Technology Delhi, IMD, NCMRWF, Nanyang Technological University (in Singapore), and Academia Sinica (in Taiwan), he worked extensively on numerical modelling. As a faculty member at NIT Rourkela, his research works are further diversified through a multi-dimensional approach. Therefore, he is one of the researchers who has a unique capability of addressing the scientific problems in a multifaceted manner. However, his significant contributions have been in the areas of urban climate and extreme weather. Dr. Panda's strategic leadership role contributed significantly to the faster growth of the Department of Earth and Atmospheric Sciences at NIT Rourkela. It led to the opening of new courses, bilateral and multilateral collaborations encouraging interdisciplinary and transdisciplinary research, and contributed to strengthening of the department and the institute.

In recognition of his outstanding contributions in shaping India's science and technology landscape, particularly in the field of Atmospheric Sciences, the IMS is privileged to confer upon Dr. Jagabandhu Panda the Associate Fellowship of the Indian Meteorological Society on this day, the 10th December, 2024.

Rourkela India
10th December, 2024

(Anand Kumar Sharma)
President, IMS

Dr. Lakshmi Kumar T V
INDIAN METEOROLOGICAL SOCIETY
ASSOCIATE FELLOWSHIP

Dr. Lakshmi Kumar T V has a doctorate in Meteorology and is currently serving as the Associate Professor in School of Environmental Sciences, Jawaharlal Nehru University, New Delhi where he is involved in teaching and research in Atmospheric Sciences. Dr. Kumar teaches Atmospheric Radiation & Applications to the Master students and Atmospheric Instrumentation & Measurements to the Ph.D students. Dr. Kumar's research interests are climate change, land-atmospheric interactions. Dr. Kumar guided six (6) candidates for Ph.D and around 12 for UG / PG projects so far. Dr. Kumar has around 50 research publications in reputed journals and 06 book chapters. Dr. Kumar has completed several projects funded by DST, ISRO and MoES, Govt of India. Dr. Kumar is currently the Editorial Board Member of the journals Vayumandal and PLOS Climate.

During his career at his previous working institute SRM Institute of Science and Technology, Dr. Kumar played a key role in developing the M.Sc Atmospheric Science program and introducing various atmospheric science electives at Bachelor's level. Dr. Kumar has conducted programs in Muthucharam Community Radio at Kattankumathur on climate change and current weather by involving the students in the regional language Tamil. Dr. Kumar organized the Climate Cartoon Contest (Online) during the year 2020 where the kids (6 to 15 years) from 16 countries have participated and an interaction program of kids has been held with the stalwarts of the meteorology.

Dr. Kumar served as the Chairman, Indian Meteorological Society Chennai chapter during May 2022 to May 2024. During his tenure, Dr. Kumar organized several seminars on Meteorology with the support from the local council. Dr. Kumar is also a founding member of South Asian Meteorological Association (SAMA) and currently the Joint Secretary of India Unit.

In recognition of his highly impressive contributions in shaping India's science and technology landscape, particularly in the field of Atmospheric Sciences, the IMS is privileged to confer upon Dr. Lakshmi Kumar T V the Associate Fellowship of the Indian Meteorological Society on this day, the 10th December, 2024.

Rourkela India
10th December, 2024

(Anand Kumar Sharma)
President, IMS

8.3 *IMS National Biennial and Annual Awards*

The IMS had instituted three biennial research awards from the endowment gifted by the sponsors viz., Dr. B.N. Desai Award, V. Bhavnanayana Award, J. Das Gupta Award, Dr. P. Krishna Rao and Prof. A.D. Vernekar awards. In 2011 IMS re-designed these awards by increasing the prize money by contributing from IMS along with the endowment gifted earlier by the sponsors. These awards are as per the details given below.

(i) IMS Award for Best Paper Published on Monsoon Research (Formerly B.N. Desai Award): A Citation and cash prize of Rs.15,000/-.

(ii) IMS Biennial award for best paper published on Atmospheric Observations & Technologies (Formerly J. Das Gupta Award): A Citation and cash prize of Rs.15,000/-.

(iii) IMS Biennial award for best paper published on Weather and Climate Services (Formerly Bhavanarayana Award): A Citation and cash prize of Rs. 15,000/-

(iv) IMS Biennial award for best paper published on Application of Satellite data and Remote Sensing in Meteorology (Formerly P. Krishna Rao Award) : A Citation and cash prize of Rs. 25,000/-

(v) IMS Biennial award for best paper published on Modelling study on Atmospheric and Oceanic Sciences (Formerly A. D. Vernekar Award) : A Citation and cash prize of Rs. 25,000/-

(vi) IMS Biennial award for best paper published on Climate Science and Climate Change (**Prof. D. V. Bhaskar Rao Award**: Citation and ₹25,000/-).

(vii) In addition to above five awards, IMS has also introduced another biennial award viz., "**VayuMandal Award**" from (2017-2018) for the best paper published in IMS journal – VayuMandal (Citation & Rs. 15,000/-).

(viii) IMS Young Scientist Award

During 2012 IMS has also instituted a young Scientist award (Below 45 years) to be given annually for the Best Paper Published in Tropical Meteorology with a Citation and award money of Rs. 50,000/-.

Winner of IMS Biennial Awards (2022-2023)

IMS has announced the winner of above mentioned three Biennial awards for the year 2022-2023. They will be awarded the same during the inaugural function of annual National symposium TROPMET-2024 on 10 December, 2024.

S. No	Name of the Award	First Author	Full Paper
1.	Best paper published on Climate Science and Climate Change	**Arulalan T**	Arulalan T, Krishna Achuta Rao & Ambuj D Sagar (2023): Climate science to inform adaptation policy: Heat waves over India in the 1.5°C and 2°C warmer worlds, Climatic Change, Vol. No. 176, Page No. 64.
2.	Best Paper published on Monsoon Research	**Mercy Varghese**	Mercy Varghese, N. Malap, M. Konwar, S. Bera, J. Jose, S. P. Bankar, P. Murugavel & T. V. Prabhakaran (2023): Impact of monsoon on below cloud base aerosol hygroscopicity over a rain shadow region of India, Atmospheric Research, Vol. No 285, Page No. 106630.
3.	Best Paper published on Weather and Climate Services	**Avinash N. Parde**	Avinash N. Parde, Ghude, S. D., Sharma, A., Dhangar, N. G., Govardhan, G., Wagh, S., Jenamani, R. K., Pithani, P., Chen, F., Rajeevan, M. & Dev Niyogi (2022): Improving simulation of the fog life cycle with high-resolution land data assimilation: A case study from WiFEX, Atmospheric Research, Vol. No 278, Page No. 106331.

8.4 IMS National Annual Award [IMS Young Scientist Awards (Annual)]

IMS young scientist award for best paper published on Tropical Meteorology. **(Citation & Rs. 50,000/-; At least the 1st author should be below 45 years of age)**

Winner of IMS Young Scientist Award for 2023

IMS has also announced the winner of young scientist awards for the year 2023. She will be awarded the same during the inaugural function of annual National symposium TROPMET-2024 on 10 December, 2024.

S. No	Name of the Award	First Author	Full Paper
1	Best Paper Published in Tropical Meteorology (2023)	**Shinto Roose**	Shinto Roose, R. S. Ajayamohan, Pallav Ray, Shang-Ping Xie, C. T. Sabeerali, M. Mohapatra, S. Taraphdar, K. Mohanakumar & M. Rajeevan (2023) : Pacific decadal oscillation causes fewer near-equatorial cyclones in the North Indian Ocean, Nature Communications, Vol. No 14-5099, Page No. 1-9.

List of "IMS Young Scientist Awardees" so far since its inception in 2012 are:

S. No.	Name	Year
1	Dr. Hemant Chaudhary, IITM, Pune	2012
2	Dr. Randhir Singh, SAC, Ahmedabad	2013
3	Dr. D. R. Pattanaik, IMD, New Delhi	2014
4	Dr. Roxy Mathew, IITM, Pune	2015
5	Dr. (Ms.) P Rohini, IITM, Pune	2016
6	Dr. (Ms) Gayatri Kulkarni, IITM, Pune	2017
7	Dr. Siddarth S Das, VSSC, Trivandrum	2018
8	Shri Raju Mandal, IITM, Pune	2019
9	Dr. Vimal Mishra, IIT Gandhinagar	2020
10	Dr. S. Indira Rani, NCMRWF, Noida	2021
11	Ms. Chandrima Mallick, IITM, Pune	2022
12	Dr. Shinto Roose	2023

Dr. Hemantkumar Chaudhari

Dr. Randhir Singh Hooda

Dr. D. R. Pattanaik

Dr. Roxy Mathew Koll

Dr. (Ms) P. Rohini

Dr. (Ms) Gayatri Kulkarni

Dr. Siddarth S Das

Dr. Raju Mandal

Dr. Vimal Mishra

Dr. S. Indira Rani

Ms. Chandrima Mallick

Dr. Shinto Roose

INDIAN METEOROLOGICAL SOCIETY
YOUNG SCIENTIST AWARD FOR BEST PAPER PUBLISHED ON TROPICAL METEOROLOGY

The Indian Meteorological Society (IMS) has a tradition of promoting excellence in the field of Meteorology and Allied disciplines through the institution of various awards. Accordingly, different annual and biennial awards are regularly conferred upon members of the society in recognition of their research accomplishments.

The IMS Young Scientist Award on Tropical Meteorology is given annually to the best research paper published by a Young Scientist of IMS. Keeping with the tradition of IMS, the research paper **entitled "Pacific decadal oscillation causes fewer near-equatorial cyclones in the North Indian Ocean" by Shinto Roose, R. S. Ajayamohan, Pallav Ray, Shang-Ping Xie, C. T. Sabeerali, M. Mohapatra, S. Taraphdar, K. Mohanakumar & M. Rajeevan published in Nature Communications, Vol. No 14-5099, Page No. 1-9** is adjudged as the Best Paper on Tropical Meteorology among other publications considered for 2023. This study identifies a 43% decline in near-equatorial tropical cyclones over the north Indian Ocean during the post-monsoon season in recent decades (1981–2010) compared to earlier periods (1951–1980). This decline is attributed to weakened low-level vorticity and increased vertical wind shear, driven by the Pacific Decadal Oscillation. However, with low-latitude warming and a favorable PDO phase, both the frequency and intensity of such cyclones are projected to rise, underscoring the need for adaptive planning and mitigation strategies.

In recognition of the above research accomplishment, the IMS Young Scientist Award on Tropical Meteorology for the year 2023 is conferred upon **Shinto Roose** on this day of 10th December, 2024.

Rourkela India
10th December, 2024

(Anand Kumar Sharma)
President, IMS

INDIAN METEOROLOGICAL SOCIETY AWARD FOR BEST PAPER PUBLISHED ON CLIMATE SCIENCE AND CLIMATE CHANGE (PROF. D. V. BHASKAR RAO AWARD)

The Indian Meteorological Society (IMS) has a tradition of promoting excellence in the field of Meteorology and Allied disciplines through the institution of various awards. Accordingly, different annual and biennial awards are regularly conferred upon members of the society in recognition of their research accomplishments.

The IMS award on Climate Science and Climate Change (Prof. D. V. Bhaskar Rao Award) is given biennially to the best research paper published by an IMS member. Keeping with the tradition of IMS, the research paper **entitled "Climate science to inform adaptation policy: Heat waves over India in the 1.5°C and 2°C warmer worlds" by Arulalan T, Krishna Achuta Rao & Ambuj D Sagar published in Climatic Change, Vol. No. 176, Page No. 64, 2023** is adjudged as the Best Paper on Climate Science and Climate Change (Prof. D. V. Bhaskar Rao Award) among other publications considered for 2022-2023. This study examines future changes in extreme heat events in India under +1.5°C and +2.0°C warming scenarios using data from 5 Global Climate Models and 1500 ensemble members from the HAPPI Project. It projects a shift from "hot day only" conditions to more frequent and prolonged heatwaves, with new regions becoming heatwave-prone and a higher likelihood of severe heat events in June and July, coinciding with the summer monsoon and resulting in elevated heat indices. The findings underscore the urgent need for a heat index that incorporates humidity to strengthen preparedness and inform heatwave management strategies, critical for enhancing India's climate resilience.

In recognition of the above research accomplishment, the IMS Biennial Award on Climate Science and Climate Change (Prof. D. V. Bhaskar Rao Award) for the year 2022-2023 is jointly conferred upon **Arulalan T, Krishna Achuta Rao & Ambuj D Sagar** on this day of 10th December, 2024.

Rourkela India
10th December, 2024

(Anand Kumar Sharma)
President, IMS

INDIAN METEOROLOGICAL SOCIETY AWARD FOR BEST PAPER PUBLISHED ON MONSOON RESEARCH (FORMERLY B. N. DESAI AWARD)

The Indian Meteorological Society (IMS) has a tradition of promoting excellence in the field of Meteorology and Allied disciplines through the institution of various awards. Accordingly, different annual and biennial awards are regularly conferred upon members of the society in recognition of their research accomplishments.

The IMS award on Monsoon Research (Formerly B. N. Desai Award) is given biennially to the best research paper published by an IMS member. Keeping with the tradition of IMS, the research paper **entitled "Impact of monsoon on below cloud base aerosol hygroscopicity over a rain shadow region of India" by Mercy Varghese, N. Malap, M. Konwar, S. Bera, J. Jose, S. P. Bankar, P. Murugavel & T. V. Prabhakaran published in Atmospheric Research, Vol. No 285, Page No. 106630, 2023** is adjudged as the Best Paper on Monsoon Research (Formerly B. N. Desai Award) among other publications considered for 2022-2023. This study finds that airborne aerosol hygroscopicity varies with aerosol loading, being highest during high aerosol loading days in 2018 and lowest during low loading days in 2019, with Aitken mode aerosols dominating bulk hygroscopicity at high supersaturation. Refractory black carbon (rBC) aerosols accounted for nearly 10% of the total aerosol number concentration during the monsoon, with smaller rBC cores exhibiting thicker coatings. These first in situ observations from India establish CCN closure at the cloud base, providing valuable insights into aerosol-cloud interactions and aiding model constraints.

In recognition of the above research accomplishment, the IMS Biennial Award on Monsoon Research (Formerly B. N. Desai Award) for the year 2022-2023 is jointly conferred upon **Mercy Varghese, N. Malap, M. Konwar, S. Bera, J. Jose, S. P. Bankar, P. Murugavel & T. V. Prabhakaran** on this day of 10th December, 2024.

Rourkela India
10th December, 2024

(Anand Kumar Sharma)
President, IMS

INDIAN METEOROLOGICAL SOCIETY AWARD FOR BEST PAPER PUBLISHED ON WEATHER AND CLIMATE SERVICES (FORMERLY BHAVANARAYANA AWARD)

The Indian Meteorological Society (IMS) has a tradition of promoting excellence in the field of Meteorology and Allied disciplines through the institution of various awards. Accordingly, different annual and biennial awards are regularly conferred upon members of the society in recognition of their research accomplishments.

The IMS award on Weather and Climate Services (Formerly Bhavanarayana Award) is given biennially to the best research paper published by an IMS member. Keeping with the tradition of IMS, the research paper **entitled "Improving simulation of the fog life cycle with high-resolution land data assimilation: A case study from WiFEX" by Avinash N. Parde, Ghude, S. D., Sharma, A., Dhangar, N. G., Govardhan, G., Wagh, S., Jenamani, R. K., Pithani, P., Chen, F., Rajeevan, M. & Dev Niyogi published in Atmospheric Research, Vol. No 278, Page No. 106331, 2022** is adjudged as the Best Paper on Weather and Climate Services (Formerly Bhavanarayana Award) among other publications considered for 2022-2023. The study demonstrates that integrating high-resolution land data assimilation into the WRF model coupled with HRLDAS improves radiation fog prediction and near-surface meteorological variables, reducing soil moisture bias by 56%. The Pleim-Xiu parameterization enhances accuracy in key variables and reduces fog onset error to two hours, effectively capturing the vertical fog structure.

In recognition of the above research accomplishment, the IMS Biennial Award on Weather and Climate Services (Formerly Bhavanarayana Award) for the year 2022-2023 is jointly conferred upon **Avinash N. Parde, Ghude, S. D., Sharma, A., Dhangar, N. G., Govardhan, G., Wagh, S., Jenamani, R. K., Pithani, P., Chen, F., Rajeevan, M. & Dev Niyogi** on this day of 10th December, 2024.

Rourkela India
10th December, 2024

(Anand Kumar Sharma)
President, IMS

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With more than 20 years of experience, Netweb has helped thousands of organisations globally by following a customer-centric approach. We are a leading provider of servers, storage, backup, and HPC solutions that customize the right technology blocks customized to your business requirements. Netweb is one of India's leading Indian origin owned and controlled OEM for HCS with integrated design and manufacturing capabilities. We have offices across 15 locations in India. We are one of the few players in India who can offer a full stack of product and solution suite with comprehensive capabilities in designing, developing, implementing and integrating high performance computing solutions. We are also an Indian origin OEM to build Supercomputing systems, private cloud and HCI, data centre servers, AI systems and enterprise workstations, and HPS solutions under the 'Make in India' initiative of the Government of India. Netweb is one of India's leading high-end computing solutions (HCS) provider, with fully integrated design and manufacturing capabilities. Our HCS offering comprises HPC, Private cloud and (HCI), AI systems and enterprise workstations, High performance storage (HPS) and Data Centre Servers with Netweb HPC Solutions, accelerate time to result and solve your most complex computing challenges at high speeds. A Turnkey HPC solution that takes the customer through all levels of HPC. Netweb has over 300 HPC installations deployed under our belt, our experienced team of experts can recommend the right hardware, design your HPC architecture with application-level support and post-cluster installation services. Our "Tyrone Cluster Management System" features the below mentioned salient points • Enterprise-class software to manage all clustered IT infrastructure • Easily turn a pile of hardware into a fully functional cluster in under an hour • Total lifecycle management • Deep health checking capabilities • Insightful metrics • Deploy and manage HPC clusters • Easily move individual resources between components as requirements change A fault-tolerant and redundant production cloud suite that offers one of the lowest turnaround time in the industry, implementable on-site with Netweb's service engineering experts. Engineered to deliver premium cloud services with exceptional security, performance, and scalability. Helping organizations meet the modern-day challenges and needs of a data center with our tailored-to-build approach. Netweb designs from the ground up for data-intensive applications with High-performance computing, analytics and AI. We have purpose-built servers and workstations that are adapted to be faster, simpler and scalable to give cutting-edge performance. Along with Unified Storage Solution delivering one of the best-in-class scalability, redundancy, performance and availability.

Contact:

Vivek Lodha
Director

+91-9900065298
vivek@netwebindia.com

www.netwebindia.com
#36, 1st Floor, Neela Nivas,
Plain Street, Shivaji Nagar,
Bangalore, - 560001

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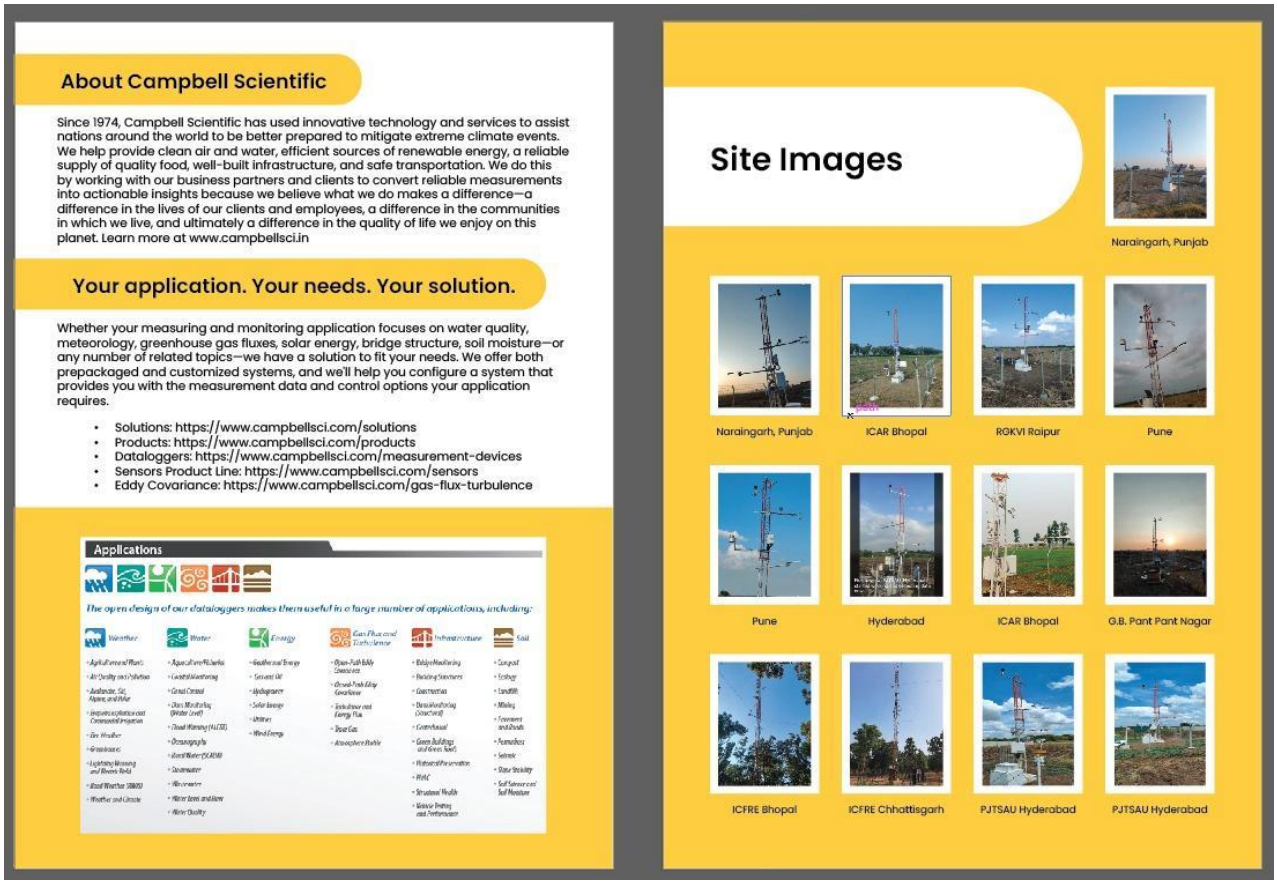

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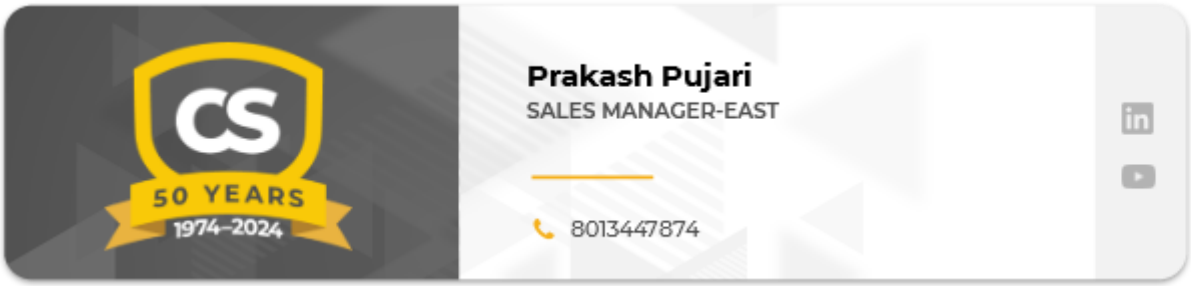

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Shiva Cement is a well-positioned player in the cement value chain and is presently a part of the prestigious JSW Group. Having started our operations in Odisha in 1985, we are today expanding our capacities to cater to the emerging opportunities in the eastern India markets. We are enabled by robust raw material reserves, proximity to the market, and a strong focus on sustainable growth.

We have enhanced our production capacity to 4,000 TPD this year. Our objectives and strategies for the future are aligned with our goal of being the market leader in India's eastern area.

We have looked at expanding our operations further, using the experience of our parent firm, JSW Cement. Our manufacturing facility is strategically located at the geographical border of three eastern states of India, namely Odisha, Chhattisgarh, and Jharkhand, having proximity to the raw materials that we require for our operations, including limestone, clay, laterite, iron fines, slag, gypsum, and fly ash. It is also well-connected to our key markets by road and railways. We believe that this shall enable our manufacturing facility to act as a feeder to the eastern plants of JSW Cement, providing us with a competitive advantage.

Our journey:
1985: Shiva Cement comes into existence
1986: Commercial manufacturing commences
1998: Reach 300 TPD clinker production capacity
2017: Acquired by JSW Cement
2017 to till date: Enriching the lives of nearby communities by enhancing: Education, Health, Sustainable Livelihoods & Rural development
2020: Commenced work for building the new Clinkerization plant
2023: Inauguration of Clinkerization plant

Shiva Cement Plant at Telighana, PO: Birangatoli, Tehsil- Kutra, District-Sundargarh, Odisha

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GCRS is an accredited company by Central Ground Water Authority to carry out Hydrogeological Reporting, Groundwater Modelling, Groundwater Impact Analysis for Industries, Infrastructure, Mining Sector, and Institutions.

GAIL (India) Ltd., a major Government of India Public Sector company in hydrocarbons, has invested in our company by holding a 10% stake and also enlisted us in carrying out Geo-Hazard Assessment & Management along Hydrocarbon Pipelines. We have an association with IIT Kanpur for R & D and product development. We do have an MOU with Mekorot, National Water Company of Israel.

GCRS derives its strength from a pool of highly experienced human resources with in depth knowledge on issues related to environmental risks, management of natural resources, sustainability safeguards, policy framework, socio-economic analysis and capacity building.

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Email: business@gcrs.co.in, info@gcrs.co.in
Find Us: Innovation Valley, Hill-3, IT SEZ, Madhurawada, Visakhapatnam - 530048

National Institute of Technology Rourkela
Rourkela 769008, Odisha

CONTACT IMS

Room No. 605, VI Floor, Satellite Meteorological Building
Mausam Bhavan Complex, Lodi Road, New Delhi-110 003
Ph No: 011-49967783
Email ID: imetsociety@gmail.com : web : http://imetsociety.org/