



## Obituary

### **Prof. Roddam Narasimha (20 July 1933 – 14 December 2020)**

Eminent aerospace scientist, fluid dynamicist, great visionary and Padma Vibhushan awardee Prof. Roddam Narasimha left to heavenly abode on 14<sup>th</sup> December 2020

He was a Professor of Aerospace Engineering at Indian Institute of science (IISc) Bengaluru (1962-1999), Founder of the Centre for Atmospheric Sciences (now Centre for Atmospheric and Oceanic Sciences) in 1982 at IISc, Director of the National Aerospace Laboratories (NAL) (1984-1993), Director of the NIAS (1997-2004) and the Chairman of the Engineering Mechanics Unit at Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bengaluru (2000-2014) India. He was the DST Year-of-Science Chair Professor at JNCASR and concurrently held the Pratt & Whitney Chair in Science and Engineering at the University of Hyderabad. He was first student of Prof. Satish Dhawan. He was honoured with the Padma Bhushan (1987) and the Padma Vibhushan (2013).

Prof. Narasimha played a pivotal role in formation of Ministry of Earth Sciences & Earth Commission in 2006. IITM is grateful for his consistent guidance, inspiration and close association for many activities related to Meteorology.



### **Dr. Govind Ballabh Pant, Former Director, IITM (15 November 1945-18 November 2020)**

Dr. G.B. Pant, Former Director of IITM (from 29 October 1997 to 30 November 2005) left to heavenly abode on 18 December 2020.

Dr. Pant first joined IITM in 1968 as a Junior Scientific

Officer and left to the USA in 1972 to pursue his doctoral study. He joined IITM again in 1977 and continued to serve in IITM at various capacities for three decades including in the position of its Director from 1997 to 2005, until his superannuation in 2007.

The areas of Dr. Pant's research contributions include atmospheric energetics, monsoon dynamics, ENSO-monsoon relationship, seasonal prediction, climate and climate change, especially paleoclimatology. His contributions as member of scientific committees for International Geosphere Biosphere Program (IGBP), Past Global Changes (PAGES), World Climate Research Programme (WCRP) and the Intergovernmental Panel on Climate Change (IPCC) are highly acclaimed.

He has been the review editor of a chapter on climate models of IPCC 2007 Working Group-1 report that was awarded the Nobel Peace Prize in 2007. He had published numerous research papers in national and international scientific journals, as well as several books.

### **IITM conducted online Webinars to pay tribute to Dr. Govind Ballabh Pant, Former Director, IITM and Prof. Roddam Narasimha.**



An online memorial meeting was organised by IITM in the memory of Late Prof. Roddam Narasimha on 23 December 2020, 4:30 PM to 6:00PM. Dr. M. Rajeevan, Secretary, MoES, Prof. V. K. Gaur, Prof. Harsh Gupta, Prof. Sulochana Gadgil, Dr P. S. Goel, Prof J. Srinivasan, Dr. Shailesh Nayak, Prof U. C. Mohanty, Dr. M. Mohapatra, Prof. G. S. Bhat, Prof. Ravi S. Nanjundiah, and Dr. Ashish K. Mitra presented their homage to Prof. Narasimha.

**Watch:** [https://youtu.be/M\\_WsoHeCfJc](https://youtu.be/M_WsoHeCfJc)



Online condolence meeting to pay tribute to Late Dr. G. B. Pant, former Director of the Institute on 27<sup>th</sup> Nov 2020 from 11.30 AM onwards. **Watch:** <https://youtu.be/zQ2U8qEkojU>

### **ACHIEVEMENTS:**

- Atmospheric Data Centre has been established in IITM Pune. X-band radar data of 4 years (2014-2017) of HACPL has been converted into net-cdf format and uploaded to Atmospheric Data Centre.
- **Report for Office of the Principal Scientific Adviser-Innovation Excellence Indicators Framework:** IITM has submitted its Report for Office of the Principal Scientific Adviser- Innovation Excellence Indicators Framework via CII developed web-portal on dated 31<sup>st</sup> October 2020 under the Basic R&D Lab category.

### **PREDICTIONS:**

#### • **Seasonal Prediction**

The operational seasonal forecast runs (using Monsoon Mission Climate Forecast System) are being carried out at IMD. The latest seasonal forecasts are made available at: [http://www.imdpune.gov.in/Clim\\_Pred\\_LRF\\_New/Models.html](http://www.imdpune.gov.in/Clim_Pred_LRF_New/Models.html).

IITM scientists of Seasonal Prediction Group provided necessary help and support to scientists at IMD on this front.

#### • **Extended Range Prediction**

The extended range prediction products for research/scientific use based on 5 days initial

condition have been made available at <http://www.tropmet.res.in/erpas/>. These forecast products are based on the real-time weekly operational forecast generated by IMD using the Multi Model Extended Range Prediction System developed at IITM. Rainfall, Maximum & Minimum temperatures, MJO forecasts, soil moisture (0-10 cm), Relative humidity, and Cyclogenesis predictions are also made available at the same link. The MME forecasts are prepared using CFS (T126 & T382) and GFS (T126 & T382). Each resolution of CFS and GFS is having 4 ensemble members. The IMD operational products are made available at [http://nwp.imd.gov.in/erf\\_outlook.php](http://nwp.imd.gov.in/erf_outlook.php).

#### • **Global Forecast System for Short Range Forecast**

The forecast based on Global Ensemble Forecast System (GEFS) T1534 and Global Forecast System (GFS) T1534 are being continued by IMD, operationally. Global highest resolution (12km) Ensemble Prediction System (EPS) with 21 ensemble members for short range forecast system based on GEFS (T1534) has been made available to IMD for operational implementation.

The high resolution short range EPS has been operationalized at IITM. The latest version 14 of GEFS has been implemented for operational forecast in IMD. GEFS probabilistic forecast based on 1200UTC initial condition has been initiated.

The GEFS based cyclone tracker has successfully predicted the ensemble track, landfall and strike probability for the Low Pressure Area formed over Bay of Bengal and crossed Indian peninsula to appear in Arabian sea. The track, intensity and rainfall forecast of the DD during 11-14 October 2020 was provided to IMD. The heavy rain over Hyderabad, Pune and Mumbai were predicted with better skill and with longer lead (~3 to 5 days).

The probabilistic forecast for all the river basins of India, have been developed and shared with the IMD, New Delhi. It is being utilized by IMD's Flood Monitoring Office (FMOs) at different places.

The GEFS ensemble forecast of 21 members for 10 days have been made available to TIGGE global archive.

The forecast ensemble tracks based on GEFS have been sent to IMD for 0000 and 1200 UTC initial condition.

- **Lightning forecast** is being daily updated on the STORM website under the title "Dynamic Prediction of Lightning Flash Count" : [https://srf.tropmet.res.in/srf/ts\\_prediction\\_system/index.php](https://srf.tropmet.res.in/srf/ts_prediction_system/index.php)
- **SAFAR-India Air Quality Forecast** on daily basis is being issued for Delhi, Pune, Mumbai, Ahmedabad cities vide SAFAR-online website: <http://sifar.tropmet.res.in/>
- **Air Quality Early Warning System** for Delhi NCR region is being issued on daily basis and made available vide EWS website: <https://ews.tropmet.res.in/index.php>.
- **Fog Forecast (WIFEX)** for Delhi NCR & IGIA, Delhi is being issued on daily basis and made available vide WIFEX website: [https://ews.tropmet.res.in/fog\\_forecast.php](https://ews.tropmet.res.in/fog_forecast.php)

### RESEARCH HIGHLIGHTS:

- **Exploring the long-term changes in the Madden Julian Oscillation using machine learning:**

The Madden Julian Oscillation (MJO), the dominant subseasonal variability in the tropics, is widely represented using the Real-time Multivariate MJO (RMM) index. The index is limited to the satellite era (post-1974) as its calculation relies on satellite-based observations. Oliver and Thompson (J Clim 25:1996–2019, 2012) extended the RMM index for the twentieth century, employing a multilinear regression on the sea level pressure (SLP) from the NOAA twentieth century reanalysis.

They obtained an 82.5% correspondence with the index in the satellite era. In this study, we show that the historical MJO index can be successfully reconstructed using machine learning techniques and improved upon. We obtain a significant improvement of up to 4%, using the support vector regressor (SVR) and convolutional neural network (CNN) methods on the same set of predictors used by Oliver and Thompson.

Based on the improved RMM indices, we explore the long-term changes in the intensity, phase occurrences, and frequency of the winter MJO events during 1905–2015. We show an increasing

trend in MJO intensity (22–27%) during this period. We also find a multidecadal change in MJO phase occurrence and periodicity corresponding to the Pacific Decadal Oscillation (PDO), while the role of anthropogenic warming cannot be ignored. (*Dasgupta P., Metya A., Naidu C.V., Singh M., Roxy M.K., Scientific Reports, 10: 18567, October 2020, DOI:10.1038/s41598-020-75508-5, 1-13*)

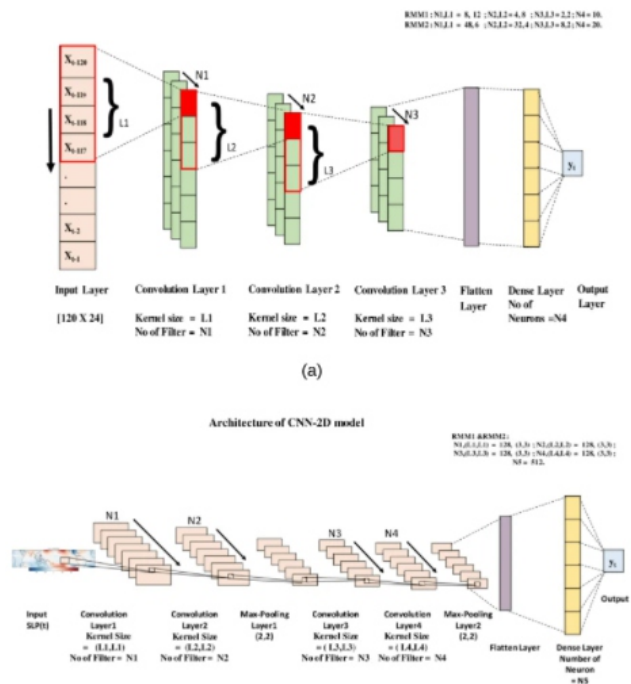
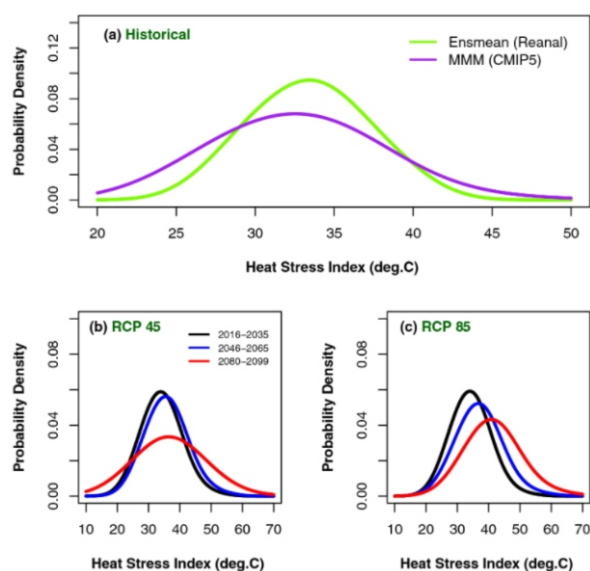


Fig. 1 a) Architecture of CNN-2D model, b) Architecture of CNN models used in the study

- **Projections of heat stress and associated work performance over India in response to global warming** : Summertime heat stress future projections from multi-model mean of 18 CMIP5 models show unprecedented increasing levels in the RCP 4.5 and RCP 8.5 emission scenarios over India. The estimated heat stress is found to have more impact on the coastal areas of India having exposure to more frequent days of extreme caution to danger category along with the increased probability of occurrence. The explicit amount of change in temperature, increase in the duration and intensity of warm days along with the modulation in large scale circulation in future are seemingly connected to the increasing levels of heat stress over India. A decline of 30 to 40% in the work performance is projected over India by the end of the century due to the elevated heat stress levels which pose great challenges to the country



policy makers to design the safety mechanisms and to protect people working under continuous extreme hot weather conditions. (**Koteswara Rao K., Lakshmi Kumar T.V., Kulkarni Ashwini, Ho C-H., Mahendranath B., Desamsetti S., Patwardhan S., Dandi A.R., Barbosa H., Sabade S., Scientific Reports, 10: 16675, October 2020, DOI:10.1038/s41598-020-73245-3, 1-14**)



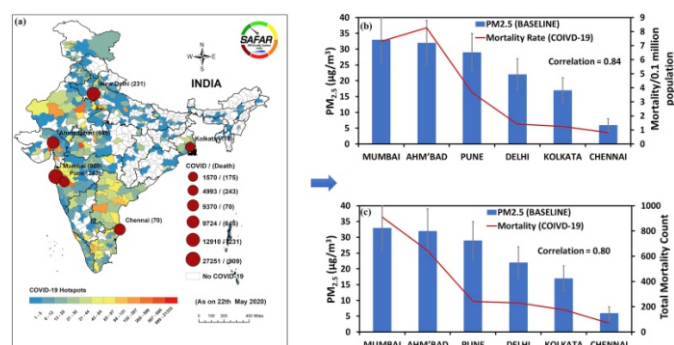
**Fig 2:** Probability densityfunction (PDF) of heat stress index for (a) CMIP5 historical simulations (purple) compared with reanalysis (green) and future three time-epochs under (b) RCP 4.5 and (c) RCP 8.5 for east coast region. This figure has been generated using RStudio 1.2.5019 <https://rstudio.com/products/rstudio>.

#### • COVID-19 and environmental -weather markers: Unfolding baseline levels and veracity of linkages in tropical India:

The COVID-19 pandemic, caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), is rapidly spreading across the globe due to its contagion nature.

We hereby report the baseline permanent levels of two most toxic air pollutants in top ranked mega cities of India. This could be made possible for the first time due to the unprecedented COVID-19 lockdown emission scenario. The study also unfolds the association of COVID-19 with different environmental and weather markers. Although there are numerous confounding factors for the pandemic, we find a strong association of COVID-19 mortality with baseline PM<sub>2.5</sub> levels (80% correlation) to which the population is chronically exposed and may be

considered as one of the critical factors. The COVID-19 morbidity is found to be moderately anti-correlated with maximum temperature during the pandemic period (– 56%). Findings although preliminary but provide a first line of information for epidemiologists and may be useful for the development of effective health risk management policies. (**Beig G.,Bano S., Sahu S.K., Anand V., Rathod A., Yadav R., Mangaraj P., Murthy B.S., Singh S., Latha R., Shinde R., Environmental Research, 191: 110121, December 2020, DOI:10.1016/j.envres.2020.110121**)



**Fig. 3.** (a) The geographical distribution of COVID-19 infectious counts in India as on 22nd May' 2020 (base map). The mortality counts in all six major Indian mega cities are represented by filled circles. The number in the bracket after the city name and after the infection counts in legend represents the total mortality count as on 22<sup>nd</sup> May 2020; (b) The PM<sub>2.5</sub> baseline level and mortality per 0.1 million population in each of 6 city where the correlation is found to be 0.84 with 95% confidence level; (c) The PM<sub>2.5</sub> baseline level and total mortality counts in each city. The correlation in these 2 parameters is found to be 0.80 with 90% confidence level.

#### • Persistence behaviour of heat and momentum fluxes in convective surface layer turbulence:

The characterization of heat and momentum fluxes in wall-bounded turbulence is of paramount importance for a plethora of applications ranging from engineering to Earth sciences. Nevertheless, how the turbulent structures associated with velocity and temperature fluctuations interact to produce the emergent flux signatures has not been evident until now. In this work, we investigate this fundamental issue by studying the switching patterns of intermittently occurring turbulent fluctuations from one state to another, a phenomenon called persistence. We discover that the persistence patterns for heat and momentum fluxes are widely different. Moreover, we uncover power-law scaling

and length scales of turbulent motions that cause this behavior. Furthermore, by separating the phases and amplitudes of flux events, we explain the origin and differences between heat and momentum transfer efficiencies in convective turbulence. Our findings provide a new understanding of the connection between flow organization and flux generation mechanisms, two cornerstones of turbulence research. (**Chowdhuri S., Prabhakaran Thara, Banerjee T., , Physics of Fluids, 32: 115107, November 2020, DOI:10.1063/5.0027168, 1-16**)

#### • Assessment of climate models in relation to the low-level clouds over the southern Indian Ocean:

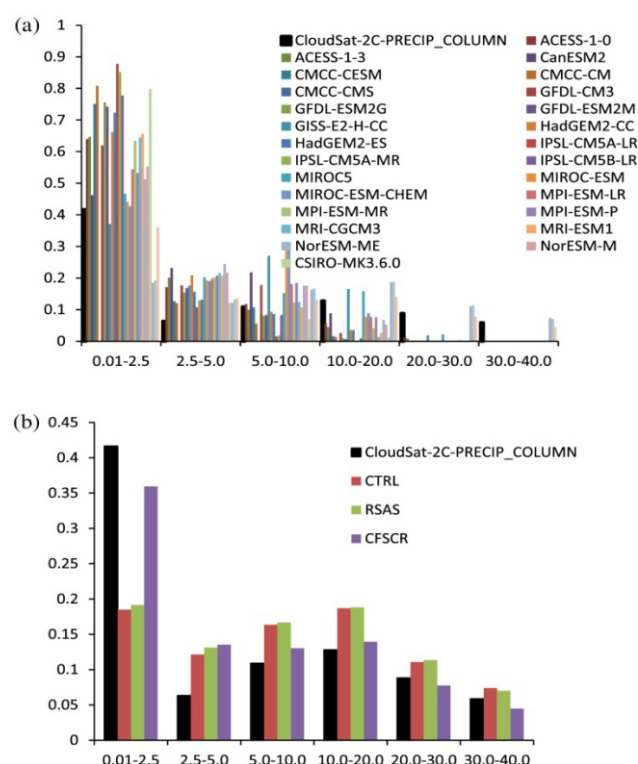
Against the backdrop of limited fidelity of climate models in capturing low-level cloud variability, the representation of the southern Indian Ocean (SIO) marine boundary layer (MBL) clouds and their transition from low to deep cloud have been investigated in this study.

A historical run of 26 models, that featured in the Coupled Model Intercomparison Project Phase 5 (CMIP5), and the National Centers for Environmental Prediction (NCEP)'s Climate Forecast System version 2.0 (CFSv2) models have been analysed along with different observational and reanalysis products. Observations clearly show the prominent occurrence of MBL low-level clouds over the SIO in a 30–10°S latitudinal and 80–100°E longitudinal belt. Furthermore, there is a gradual transition from low to deep cloud towards the north of the Equator.

The results reveal that the CMIP5 models were hardly able to capture the MBL low-level clouds due to inaccurate temperature inversion and lower-tropospheric stability (LTS) simulations. As compared to observations, the CMIP5 models show limited fidelity in capturing the transition from low to deep cloud at the north of the Equator. In this study, evaluation of one version of the CFS in which the convective parameterization is changed to the revised simplified Arakawa–Schubert (RSAS) scheme is carried out.

In another CFS version (CFSCR) with a more physically based cloud scheme (WRF Single-Moment 6-Class microphysics scheme; WSM6), comparisons are made with the default CFSv2 (CTRL) and RSAS. Only very few models, such as the MPI-ESM-LR, MRI, HadGEM, and NorESM models from among the 26 CMIP5 suites, and CFSCR from among the CFS suites, showed some fidelity in capturing the low-level

clouds over the SIO. This highlights that significant improvement is needed in climate models to improve the representation of the MBL over the SIO. (**Roy K., Mukhopadhyay P., Krishna R.P.M., Ganai M., Mahakur M., Rao T.N., Nair A.K.M., Ramakrishna S.S.V.S., Quarterly Journal of Royal Meteorological Society, 146, October 2020, Pt. A, DOI:10.1002/qj.3847, 3306-3325**)



**Fig 4:** Rainfall probability distribution function (PDF) averaged over 30–10°S and 80–100°E for CloudSat 2C-PRECIP-COLUMN and (a) 26 CMIP5 models and (b) three different versions of CFSv2 T126 (CTRL, RSAS and CFSCR). The rain-rate ranges are along the x-axis (in mm-day<sup>-1</sup>) and the rainfall PDF is along the y-axis (in fractions)

#### ONGOING DEVELOPMENTAL ACTIVITIES:

##### • Monsoon Mission:

A Detailed Project Report (DPR) for the Monsoon Mission Phase-III (2021-2026), along with inputs from other MoES institutes was prepared and has been submitted for approval.

##### • National Facility for Airborne Research (NFAR):

For the first time, two test flights were conducted successfully using a quad-copter at Police Grounds in Pune for testing the in-house designed ground equipment for operating a meteorological sensor on

UAV for temperature, relative humidity and wind measurements. The data is under scrutiny.

As a part of Bureau of Civil Aviation Security (BCAS) requirement "One Day Aviation Security (AvSec) Awareness Training" program organized by Airport Authority of India (AAI) at Pune Airport on 23 November, 2020 was completed successfully.

In-house built portable sensor 'Visible Sky Imager' for cloud detection is successfully tested and is being operated at IITM, Pune for continuous measurements of sky cover during day hours. For ground-based cloud fraction and cloud classification retrievals, a new technique called **Advanced Deep Convolutional Neural Network** is planned and the work is under progress.

Sun Photometer is being operated at IITM, Pune since December 2020 for continuous measurements of aerosol optical depth and water vapour.

Permissions from Maharashtra Airport Development Co Ltd. (MADC), Mumbai to utilize airports/airstrips in Maharashtra for UAV operations is under consideration.

### **High-Altitude Cloud Physics Laboratory, Mahabaleshwar:**

Critical Design Review Meeting was conducted on 14<sup>th</sup> and 19<sup>th</sup> October 2020 with the M/s. EEC Ltd, USA for the ordered X-band radar weathers for Mumbai Metropolitan Region in presence of Technical Evaluation Committee. Single Particle Soot Photometer (SP2) laser alignment and calibration work is being conducted. CCN counter is commissioned and put into operation at IMD Bhopal till infrastructure is ready at the Atmospheric Research Testbed site. Micro Rain Radar is commissioned at HACPL Mahabaleshwar.

### **Online monitoring of instrument performance, data acquisition & trouble shooting:**

The instruments such as Radiometers and Sky imagers being operated regularly at IITM, Pune and HACPL, Mahabaleshwar are regularly monitored online through team viewer and the issues noticed during this month were attempted through online procedures. Hence data continuity is maintained. The data is also being calibrated and processed regularly.

### **Validation of INSAT 3D cloud mask with ground based imagery:**

The INSAT 3D satellite provides Cloud Mask product for every half an hour. INSAT 3D cloud fraction data is

not yet available on their site. Hence, ground-based sky imagery data collected at every 5 mins interval at HACPL site will be used to compare and validate INSAT-3D cloud mask product and also attempt to derive cloud fraction. Data analysis/study is under progress.

IITM scientist visited the National Centre for Polar and Ocean Research for the debriefing of the Indian Southern Ocean Expedition on 15 October 2020.

On request from Mahabaleshwar Nagar parishad, air quality report for the month of October 2020 was issued to them. This was derived from particulate and gaseous measurements from HACPL Mahabaleshwar.

### **Retrieval of cloud base height and correction of existing Cloud Fraction retrieval algorithm:**

Corrections are being done to the algorithm to obtain the cloud base height from the IR imageries captured by Whole Sky Imager and more accurate CF at the station HACPL, Mahabaleshwar. Further changes and improvements are under progress which requires reprocessing of raw data for different seasons.

Twilight photometry observations are being carried out at IITM, Pune during evening twilight and occasionally during morning twilight for vertical aerosol distribution in the UTLS region.

The work on retrieval of cloud base height using whole sky imager is under progress.

### **Thunderstorm Dynamics:**

Sensors for Lightning Location network has been installed at remote locations Leh and Port Blair and integrated with central processor at IITM, Pune.

### **CAIPEEX Phase IV-Solapur and Tuljapur Sites:**

Ground based observations are continuing at Solapur and Tuljapur sites. Necessary SoPs are in place for the operation of both the laboratories in view of COVID-19. The Wind profilers are under testing for new software. The raingauge network is functional and has been collecting observations.

### **Fluid Dynamics Laboratory:**

Wall jet PIV experiments and hotwire spectral analysis of wall jets are in progress. High speed PIV experiments are being planned. Low-speed PIV data processing is going on.



**IMPORTANT EVENTS:****• 59<sup>th</sup> Foundation Day Celebration at IITM:**

IITM celebrated its 59<sup>th</sup> Foundation Day on 17 November 2020 through virtual mode in view of the prevailing Pandemic situation and austerity measures. On this occasion, Dr. Shailesh Nayak, Director, National Institute of Advanced Studies (NIAS), Bengaluru & Former Secretary, Ministry of Earth Sciences was the Chief Guest. On this occasion, various IITM awards for the year 2019 were presented viz. Golden Jubilee Award, Silver Jubilee Award for the best research paper published in peer reviewed journal, Dr. Ananthakrishnan Award for the Best Ph.D. thesis, Best Student Research Paper Award, and the Excellent Performance Awards were presented to the Scientists, Research students, Scientific, Technical, Administrative support and MTS staff of the Institute. The function also included special lectures by the award winners. [Watch complete program: https://www.youtube.com/watch?v=fKofEf8dd5I](https://www.youtube.com/watch?v=fKofEf8dd5I)



*Prof. Ravi S. Nanjundiah, Director, IITM briefed about the Institutes' achievements and activities during the year 2020.*



*Dr. Shailesh Nayak delivered the Foundation Day lecture on "Remote Sensing for National Development: The legacy of Dr. Vikram Sarabhai".*



*Dr Suryachandra Rao presented the Vote of Thanks.*

**• National Pollution Control Day -2020:**

IITM-ENVIS observed "National Pollution Control Day 2020" on 2 December 2020 to commemorate the people who lost their lives in the unfortunate incident of Bhopal Gas Tragedy that occurred on this day in 1984. On this occasion, national level online essay and photography competitions were announced at ENVIS website & social media sites, IITM website and social media sites. These competitions has observed anoverwhelming response from across the country.

An open online webinar was also arranged on the topic "Bhopal Gas Tragedy: An Eye Opener for Chemical Pollution" by **Dr. Rajnarayan R Tiwari**, Director, ICMR-National Institute for Research in Environmental Health, Bhopal. <https://youtu.be/2rsH9eQMPv4>

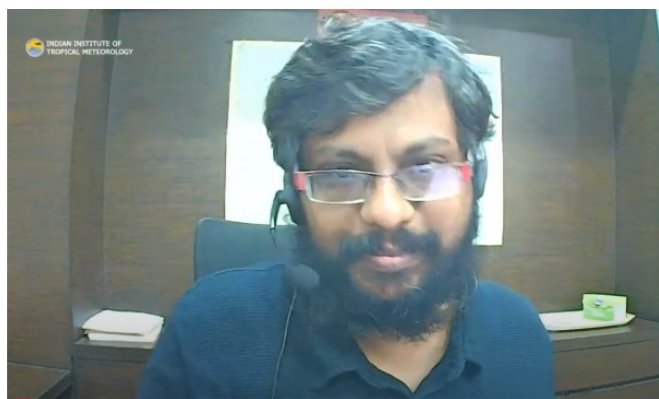


The results of online competitions were declared during the webinar. An awareness campaign was initiated on "Climate Change and Atmospheric Pollution", and as part of it, an "E-Pledge for Climate Change Warrior", which could be taken any time

throughout the year, is made available on the IITM-ENVIS website.

### **Prof. R. Ananthkrishnan Seminar Series:**

- 37<sup>th</sup>, “The IOD Impacts on the Indian Ocean Carbon Cycle”, Dr.VinuValsala, 14 October 2020.



Watch: <https://youtu.be/F1xp31volbQ>

- 38<sup>th</sup>, “A baseline for global weather and climate simulations at 1 km resolution”, Dr. Nils P. Wedi, Principal Scientist and Head of Earth System Modelling at ECMWF, Reading UK, 11 November 2020.



Watch: <https://youtu.be/BoErPNvpsTQ>

**International Virtual Conference on “Earth's Changing Climate: Past, Present & Future”**, was organized by The Society of Earth Scientists during 15-17 October 2020.

**Surface Ocean - Lower Atmosphere Study (SOLAS) Indian Ocean Meeting** was held on 30<sup>th</sup> September 2020. The aim of the meeting was to present and discuss current, ongoing, and planned SOLAS research and initiatives taking place in the Indian Ocean and help forge collaborations. In addition to this meeting about SOLAS science in the Indian Ocean, there was also a meeting about the SOLAS community in India. This E-meeting was conducted

via in-house developed website

<https://solas.tropmet.res.in/> and IITM YouTube link: <https://youtu.be/u708x-rWvCA>. Online registration was done through aforesaid website. The event observed overwhelming response from ~ 360 researchers / participants.



- **DESK conducted a Training Program for Farm-Bridge Foundation** for their staff members for Future Climate Projections for the Watershed under climate change scenario during 7-11 December 2020.

### **IITM Outreach Programme:**

- **MoES Webinar Series:** DESK with the help of Computer Division and Library, Information and Publication Division has organised a series of Live Talks on "Earth Sciences Popular Lectures", in coordination with MoES & its Institution. Following talk was delivered:

37<sup>th</sup>, **Dr. John P. George, Dr. V. S. Prasad and Mr. T. Arulalan** [Scientists at NCMRWF, Ministry of Earth Sciences (Government of India)]

- IMDAA Regional Reanalysis, NGFS Global Reanalysis and Reanalysis Data Services at NCMRWF, 15 October 2020, <https://youtu.be/yWWrgyMwguY>

38<sup>th</sup>, **Dr. Jothiram Vivekanandan**, Senior Scientist, Earth Observing Laboratory NCAR, Boulder, CO, USA

- A Technique for Estimating Liquid Droplet Diameter & Liquid Water Content in Stratocumulus Clouds Using Radar & Lidar Measurements, 24 November 2020, <https://youtu.be/UrYRS3ATojk>

- IITM participated in the Virtual **Symposium on Tropical Meteorology (TROPMET-2020)**, organized by North Eastern Space Applications Centre (NESAC), Shillong during 14–17 December 2020.



• **Vaishvik Bhartiya Vaigyanik (VAIBHAV) Summit:** VAIBHAV Summit, a global virtual summit of Overseas Indian Researchers and Academicians, was organized from 2<sup>nd</sup> October to 31<sup>st</sup> October 2020. The summit was digitally inaugurated by Hon'ble Prime Minister on 2nd October'2020 in the virtual presence of academia and researchers of Indian origin from across the world via <https://pmindiawebcast.nic.in> and <https://pmevents.ncog.gov.in>. This was followed by online deliberation sessions starting from 3rd October to 25<sup>th</sup> October 2020. The initiative involved multiple levels of interactions among the overseas experts and Indian counterparts over a month-long series of webinars, video conferences etc. Over 1500 panelists from 40 countries and a large number of participants of Indian origin, 200 leading Indian R&D and academic institutions virtually deliberated in 18 different areas and 80 sub-areas in more than 200 deliberation sessions. The session was concluded on 31<sup>st</sup> October 2020.

DESK at IITM coordinated the Earth Science Verticals. Following are the details of IITM contribution for VAIBHAV Summit: Director IITM and Project Director DESK were involved from the very beginning for organizing the Earth Science Verticals along with MoES&MoES Institutes.

**Under the Earth Sciences Vertical of VAIBHAV Summit,** IITM coordinated following sessions:

- Atmospheric Sciences session AS-01, "Monsoon Variability, Prediction and its Applications" on 14.10.2020, as Indian Panelists, Dr.Suryachandra Rao, Sc-G, Dr.VinuValsala, Sc-F (host) and Ms Shikha Singh, Sc-C (Rapporteur) coordinated the event.

- Atmospheric Sciences session AS-02, "Atmospheric Observations" on 15.10.2020, as Indian Panelists, Dr. G. Pandithurai, Sc-F, Dr Thara Prabhakaran, Sc-F and Mr. Subrato Mukherjee, Sc-C (Rapporteur) coordinated the event.

- Atmospheric Sciences session AS-03, on "Climate Variability and Change (V13H1S3)" on 19.10.2020, as Indian Panelists, Dr. R. Krishnan, Sc-G, IITM Coordinated this event.

- For Atmospheric Sciences session AS-04, "Atmospheric Chemistry and Modeling (V13H1S4)" on 20.10.2020, as Indian Panelists, Dr. Sachin Ghude Sc-E, Coordinated the event.

- For V11–Environmental Sciences; H4: Resource Conservation; S2: Biological carbon sequestration & ecological modelling, on 12.10.2020, as Indian Panelist, Dr. Yogesh K. Tiwari, Sc-E, Mr. Pramit K. Debburman, Sc-C participated the event.

Prof. Ravi Nanjundiah, Director IITM had a meeting with Vaibhav Summit Coordinators, Moderators and Nodal Officer for the Atmospheric Science and Technology horizontal on 29.10.2020.

Director IITM presented the outcome of Vaibhav Summit for the Earth Science Vertical before the review committee during the Advisory Council meeting of VAIBHAV (30-31 October 2020).

**India International Science Festival (IISF) 2020** is an annual event organized jointly by science & technology-related Ministries and Departments of the Government of India and Vijnana Bharati (VIBHA). This year, due to the restrictions on public gatherings because of the on-going pandemic, the IISF 2020 was organized on virtual platform during 22-25 December, 2020. This is the sixth edition since its inception in 2015. The theme for the IISF 2020 is Science for **Aatmanirbhar Bharat and Global Welfare**. This Mega Science Festival expects to cater a gathering of large number of scientist and institutions from India and abroad as well as young students, scientists and technocrats from across the India for exchange of knowledge and ideas to make innovations for the betterment of society. Nearly forty events are organized on various themes before and during IISF 2020.

As a part of the IISF-2020, an event was organized, entitled '**Clean Air**' by MoES. This event aims to make aware the citizens of India about the emerging air pollution issues and its plausible implications and provide a suitable platform for interactions amongst non-government organizations (NGOs), civil society citizens, academic and R&D institutions together to discuss the opportunity & challenges, technical interventions and various strategies for mitigating air pollution problems. It also aims to provide a platform to new idea to start their journey and also give chance to some top start-up of India to exhibit their well-established start-ups.

As part of IISF-2020, IITM organised a virtual Curtain Raiser Ceremony for **High-Altitude Cloud Physics Laboratory, Mahabaleshwar** and **Clean Air Event** on 18 December 2020. Hon'ble Minister, **Dr. Harsh**

**Vardhan**, Union Minister for Health and Family Welfare, Science and Technology, and Earth Sciences digitally inaugurated the Ceremony. In the series of activities, IITM in association with Vijnana Bharati, Pune unit showcased scientific activities through webinars, panel discussions, and film shows under the online IISF Mega Science Expo. The event was given wide publicity through various digital modes. Library, Information and Publication Division provided necessary support for IISF 2020 flyers and digital presence through website, YouTube channel and social media

- IITM Pune conducted series of webinars, panel discussions, Clean Air Event, film shows, IISF Mega Science Expo, online competitions, etc. during 27 November to 25 December 2020.

- As a part of India International Science Festival (IISF) 2020 curtain raiser event, IITM Pune organized a webinar on 'Clean Air Management for Public Welfare' on 27 November 2020 by **Dr. K.J. Ramesh**, Former DG, IMD. <https://youtu.be/y/OhnmntFu4>

पृथ्वी विज्ञान मंत्रालय के तत्वावधान में आयोजित होने वाली 'जन-जन के लिए विज्ञान' वेबिनार श्रृंखला के अंतर्गत आयोजित वार्ता:

- तृतीय, डॉ. ओमप्रकाश मिश्र, वैज्ञानिक 'जी'/सलाहकार (भारत सरकार) राष्ट्रीय भूकम्प विज्ञान केन्द्र, पृथ्वी विज्ञान मंत्रालय देशमें भू-भौतिकी यंत्रों के क्षेत्र में पृथ्वी विज्ञान मंत्रालय की भूमिका, ६ नवम्बर २०२०  
<https://youtu.be/QColqAzoXo8>,
- चौथी, डॉ. आर.एस. कांकरा, वैज्ञानिक- 'जी' तथा ग्रुप हैड-सीपीएसएम, राष्ट्रीय तटीय अनुसंधान केंद्र, चेन्नई, तटीयक्षरण एवं प्रबंधन, २० नवम्बर २०२०,  
<https://youtu.be/UPZv6avJfzs>
- पांचवीं, डॉ. सुमीतजैरथ, सचिव, राजभाषाविभाग, गृहमंत्रालय, भाषा विज्ञान बनाम राजभाषा: दशा और दिशा, २४ नवम्बर २०२०, [https://youtu.be/fAN\\_NTlzPZg](https://youtu.be/fAN_NTlzPZg)
- छठी, डॉ. अतुल कुमार सहाय, वैज्ञानिक जी, आई.आई.टी.एम. पुणे, बाढ़ और सूखा: बुनियादी विज्ञान और प्रबंधन में पृथ्वी विज्ञान मंत्रालय की भूमिका, दिसंबर २०२०,  
<https://youtu.be/OwquSZmGnmE>

### **IITM Participation in Important Meetings:**

- **EFC/ SFC review meeting with MoES:** There was a virtual meeting presided over by Dr. R. Rajeevan, Hon'ble Secretary, MoES. Prof. Ravi S. Nanjundiah, Director, IITM, presented the detailed report of the IITM's projected funding requirements for the coming 5 years.
- Vaibhav Summit 2-31 October 2020.
- MoES Review Meeting on "Monsoon 2020" on 7

October 2020.

- IITM participation as resource persons in a training workshop on "Regional climate change projections: Climate change analysis using CORDEX regional climate models over South Asia" organised online by ICIMOD and UK Met Office as a key activity of the institutional capacity building programme of the CARISSA-ARRCC project during 12-14 October, and 19-21 October 2020.
- NPDF-Earth & Atmospheric Sciences fresh proposals meeting of the Department of Science and Technology, Govt. of India, 15-16 October 2020.
- MoES Data Portal meeting on 19 October 2020. Director IITM chaired this meeting which was attended by IITM Project Director, and representatives from INCOIS and NCPOR.
- Orientation Program by Office of Principal Scientific Advisor was attended by IITM Nodal Officer on 20 October 2020.
- International Commission on Clouds and Precipitation (ICCP) committee virtual meeting on 26 October 2020 to discuss the ICCP 2021 conference.
- 47<sup>th</sup> Scientific Advisory Committee (SAC) meeting of ICMR-NIOH (National Institute of Occupational Health), Ahmedabad (virtually) on 27-28 October 2020.
- 10<sup>th</sup> SAC (Scientific Advisory Committee) meeting of ICMR-NIREH (National Institute for Research in Environmental health), Bhopal, 2-3 November 2020.
- Quarterly meeting of the CLIVAR/IOC/GOOS Indian Ocean Region Panel, 2 November 2020.
- SAARC webinar meeting on "Enhancing Preparedness for Responding to COVID19 and Extreme Weather Events", organized by the SAARC Disaster Management Centre (SDMC), Ahmedabad, on 4 November 2020.
- 73<sup>rd</sup> Annual Meeting of the APS Division of Fluid Dynamics (Virtual), Chicago, IL, 22-24 November 2020.
- JESS Editorial Board Meeting 2020' organized by Indian Academy of Sciences on 24 November 2020.
- 86th Annual Meeting of the Indian Academy of Science, Bengaluru.
- 28th Meeting of the Governing Council of NARL, Tirupati.
- AGU Fall Meeting held on a virtual platform during 1-17 December 2020.

- First meeting of the Scientific Programme Committee (SPC) of “Annual Monsoon Workshop 2019-2020”, online on 4 December 2020.
- Soil Moisture India Site Operators Meeting (COSMOS) held virtually on 7 December 2020.
- TROPMET-2020: IITM Scientists participated in Virtual Symposium on Tropical Meteorology (TROPMET-2020), held by North Eastern Space Applications Centre (NESAC), Shillong during 14–17 December 2020 and presented several papers, posters, oral/invited talk.
- CLIVAR/GEWEX Monsoons Panel Teleconference, 18 December 2020.
- 23<sup>rd</sup> session of Working Group on Coupled Modeling (WGCM), WCRP during 19–23 December 2020.
- Young Scientists Conference at the India International Science Fest 2020, on virtual platform, 23 December 2020.

### ACADEMIC ACTIVITIES:

**DESK:** Annual Progress Review Meeting for 16 MoES Research Fellow Program (MRFP) Fellows from INCOIS, NCPOR, NCMRWF, NCESS, CMLRE and NIOT was conducted during 2-5 November 2020 with MoES Institutes.

PhD synopsis and PhD proposal seminar were conducted for IITM research scholars and scientists pursuing PhD degrees from Universities:

#### Ms. Anila Sebastian (SPPU)

- Subtropical Indian Ocean Sea Surface Temperature variability and its association with the Tropical Indian Ocean and Indian Summer Monsoon, 7 October 2020, Guide: Dr. C. Gnanaseelan, <https://youtu.be/dpY1u9DS1kk>

#### Mr. Pramit Kumar Deb Burman (SPPU)

- Carbon sequestration studies in forest ecosystems using tower-based observations and GPP-NEE modelling, 9 October 2020, , Guide: Dr.SupriyoChakraborty, Co-Guide: Prof. Anand Kumar Karipot, DASS, SPPU (External), <https://youtu.be/hoAlg1WdbXk>,

#### Ms. Pratibha Gautam (SPPU)

- Understanding the role of Land Surface Processes in the Prediction of Monsoon Low-Frequency Variability, 14 October 2020 Guide: Dr.Rajib Chatteropadhyay Co-Guide(s): Dr. A.K. Sahai and Dr.Susmitha Joseph, <https://youtu.be/EIUfo8C2zeU>

#### Mr. Rahul U. Pai (SPPU),

- Understanding the variability in the Shallow

Meridional Overturning Circulation and its impact on the Indian Ocean <https://youtu.be/mCGLjeBIEg>, Guide: Dr. Anant B. Parekh; Co-Guide:

Dr. C. Gnanaseelan, 16 October 2020

#### Mr. Prashant L. Chavan (SPPU)

- Variability of aerosols in the upper troposphere and stratosphere over the Asian summer monsoon region, 21 October 2020, Guide: Dr. Suvarna Fadnavis, <https://youtu.be/Sv-SpQN0bHo>,

#### Mr. Gokul T. (SPPU)

- Low-level clouds in the Mascarene High environment and links to the Indian monsoon under changing climate, 23 October 2020, Guide: Dr. Ramesh K Vellore Co-Guide: Dr.Ayantika Dey Choudhury, <https://youtu.be/nAXDV7Ou4fE>,

#### Mr. Avishek Ray (SPPU)

- Investigation of aerosol hygroscopicity and its role on CCN activity based on measurements and modelling, 28 October 2020, Guide: Dr. G. Pandithurai Co-guide: Dr. Anupam Hazra, <https://youtu.be/HieXkJbi2zq>

#### Ms. Mercy Varghese (SPPU)

- Study of cloud base aerosol activation during monsoon using observations and numerical modeling experiments, 4 November 2020 Guide: Dr.Thara V. Prabhakaran Co-Guide: Dr.Medha Deshpande, [https://youtu.be/9u\\_ReqvyaPg](https://youtu.be/9u_ReqvyaPg)

#### Ms. Rituparna Sarkar (SPPU)

- Development of lightning prediction system using Global Forecast System and machine learning model over India <https://youtu.be/x7grr5nYEcl>, Guide: Dr.Parthasarathi Mukhopadhyay Co-Guide: Dr. Sunil D. Pawar & Dr.Kaustav Chakravarty, 6 November 2020.

#### Mr. Subrata Mukherjee (SPPU)

- Study of Volatile Organic Compounds (VOCs) and its implications to Secondary Organic Aerosol (SOA) formation over a high-altitude site in Western Ghats [https://youtu.be/9\\_o5E5LLzqY](https://youtu.be/9_o5E5LLzqY), Guide: Dr. G. Pandithurai Co-Guide: Dr. Anoop S. Mahajan 11 November 2020

#### Mr. Avinash N. Parde (SPPU)

- Impact of Data Assimilation Technique in Fog Forecast Over Indo-Gangetic Plain Region [https://youtu.be/Yxt6\\_HPv2Sk](https://youtu.be/Yxt6_HPv2Sk), Guide: Dr. Sachin D. Ghude 18 December 2020

#### Ms. Supriya M. Ovhal (SPPU)

- Subsurface Oceanic impact on tropical Atmospheric convection [https://youtu.be/aiE\\_8r6jRs0](https://youtu.be/aiE_8r6jRs0), Guide: Dr. Sreenivas Pentakota 23 December 2020



**Mrs. Archana Rai (SPPU)**

- Investigating the Role of Vegetation Processes on the Indian Summer Monsoon Variability and Predictability, Guide: Dr. Subodh Kumar Saha, 30 December 2020

**Mr. Ashish Dhakate (SPPU)**

- Study on the seasonal extremes of Indian summer monsoon rainfall: Mechanism and Predictability <https://youtu.be/uAiVN580vM4>, Guide: Dr. Prasanth Pillai Co-Guide: Dr. A Suryachandra Rao, 30 December 2020

**Honours and Awards:**

**Swachhata Pakhwada Award – 2020:** As part of Swachh Bharat initiatives, MoES appreciated & awarded their autonomous & attached offices for their efforts and innovative initiatives towards cleanliness during Swachhata Pakhwada (1-15 July 2020). Among MOES institutes, **IITM bagged 2<sup>nd</sup> prize under Swachhata Pakhwada Award - 2020** coordinated by Ministry of Drinking Water and Sanitation, Government of India.

**Dr. R. Krishnan**

- Expert Member, Working Group on Climate Research (WG-CR).

**Dr.G. Beig**

- Panel Member, discussion on “Changes in Air Quality and Climate during COVID-19” organized by NRDC Resources Defense Council (NRDC), with Indian Institute of Public Health, Gandhinagar (IIPH-G).
- Member, Project Assessment and Monitoring Committee to participate in NPDF-Earth & Atmospheric Sciences fresh proposals meeting of DST, 15-16 October 2020.

**Dr. S.D. Pawar**

- Chaired, technical session on Lightning Physics and forecasting, TROPMET 2020, NESAC, Shillong.

**Dr. Ashwini Kulkarni**

- Chief Guest and Keynote Speaker, AICTE sponsored short term training program on Disaster Mitigation and Management, KPR Institute of Engineering and Technology, Coimbatore, Tamil Nadu. Online talk on "Climate Change and Natural Hazards", 12 October 2020.

**Dr. J. Sanjay, Mr. Sandip Ingle and Dr. R. Mahesh**

- Participated as resource persons in a training workshop on “Regional climate change projections: Climate change analysis using CORDEX regional climate models over South Asia” organised online by ICIMOD and UK Met Office as a

key activity of the institutional capacity building programme of the CARISSA-ARRCC project, 12-14 October, and 19-21 October 2020.

**Dr. Suvarna Fadnavis**

- Member, Scientific Steering Committee, Chemistry Climate modelling Initiative. The Chemistry Climate Modelling Initiative is jointly sponsored by Stratosphere-troposphere Processes and their Role in Climate (SPARC) and the International Global Atmospheric Chemistry (IGAC) programs.

**Mr. S. Mahapatra**

- First prize in the Pune City level online Hindi essay completion, on a topic related to COVID-19 pandemic from CSIR-NCL Pune (during Hindi Week Celebration by NCL).

- Expert, review and evaluate a large grant project under National Mission on Himalayan Studies (NMHS), Ministry of Environment, Forest & Climate Change (MoEF& CC), Government of India. He reviewed & evaluated its “Final Technical Report (FTR)” and prepared the “Project Performance Assessment (PPA) Report” of this large grant NMHS project and the report was submitted to the Nodal Officer, NMHS-PMU, National Mission on Himalayan Studies, GBPNIHESD HQs, Ministry of Environment, Forest & Climate Change (MoEF& CC), New Delhi, through e-mail communication.

- Resource Person, **inaugural ceremony of the one-day International e-Conference** on “Possibilities & Prospects of Climate Research & Studies in the Contemporary Era”, organized on 12 December 2020 by South Asian Institute for Advanced Research & Development (SAIARD) Centre for Climate Research and Studies (CCRAS).

**Dr. Anoop Mahajan**

- Chaired, Committee to highlight Indian science achievements through the Indian National Young Academy of Sciences (INAYAS).

**Dr. Milind Mujumdar**

- Member, Advisory Committee and presented a lead talk in International Conference on Meteorology and Climate Science-2020 (ICMCS-2020), 11-12 December 2020, Department of Meteorology, University of Dhaka, Bangladesh.

**Mrs. Shompa Das**

- Nodal Officer, IITM participation for Office of the Principal Scientific Adviser- Innovation Excellence Indicators Framework, PMO, GOI.

**Dr. M.C.R. Kalapureddy**

- Best Presentation Award, TROPMET- 2020 for the

research work titled "Radar monitored Cloud Vertical Structure measurements over a complex terrain" under the theme 1: Dynamics and Physics of orographic clouds and precipitation", 15 December 2020.

#### **Dr. Swapna Panickal**

- Member, SPARC Science Task Team, World Climate Research Program (WCRP), 2020-2025.
- Member, Drafting Group on Climate Research (WG-CR).

#### **Dr. Roxy Mathew Koll**

- Featured among the Top 2% Scientists of 2019, published by the Stanford University in the journal PLoS.
- Chaired, Quarterly meeting of the CLIVAR/IOC/GOOS Indian Ocean Region Panel, on 2 November 2020.

#### **Dr. Atul Kumar Srivastava**

- Panelist, Citizen's Forum India (CFI) for Discussion on "Curbing Air Pollution Amidst COVID-19" on 21 November 2020.
- Theme Coordinator, Young Scientist Conference (YSC) in India International Science Festival (IISF-2020) under the Theme: Frontier Areas of Sciences-Environment during 22-24 December 2020 and he conducted a Plenary and Oral Session on 23 December 2020.

#### **Mr. Pramit Kumar Deb Burman**

- Resource Person, (i) Student and Faculty Development Program on Earth System Science for Society organized by PES Institute of Technology and Management, Shivamogga, Karnataka during 30 November - 5 December 2020, and (ii) AICTE Sponsored Online Short-Term Training Program on Applications of GIS & Remote Sensing in Civil Engineering organized by Sri Siddhartha Institute of Technology, Tumakuru, Karnataka during 14-19 December 2020.

#### **Dr. Gayatri Kalita**

- Member, Editorial Board, International Journal of Atmospheric and Oceanic Sciences (<http://www.ijaos.org>), October 2020 to October 2022.

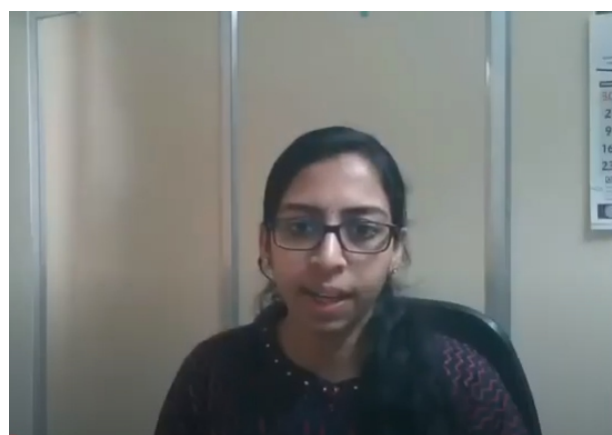
#### **Dr. Ila Agnihotri**

- Completed a "Four Weeks Online Certificate Course on Regional Climate Change Projection: Statistical Downscaling through R", 5-27 December 2020 organized by South Asian Institute for Advanced Research & Development (SAIARD).

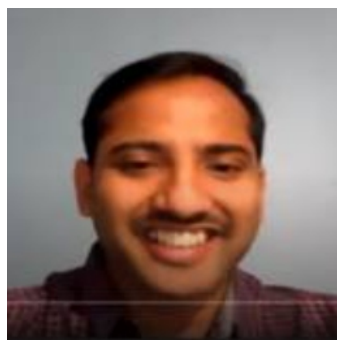
**IITM Awards** felicitated to IITM Scientists, Employees and Research Fellows during 59<sup>th</sup> Foundation Day Celebrations, 17<sup>th</sup> November 2020:



***IITM Golden Jubilee Award 2019 to Dr. Parthasarathi Mukhopadhyay.***



**IITM Annual Silver Jubilee Award** for the best research paper published in peer reviewed journal for the year 2019 to the paper entitled, "The Tropical Indian Ocean decadal sea level response to the Pacific Decadal Oscillation forcing", by **J.S. Deepa, C. Gnanaseelan, Sandeep Mohapatra, J. S. Chowdary, A. Karmakar, Rashmi Kakatkar and Anant Parekh**, Published in the journal '**Climate Dynamics**', 52, April 2019, DOI:10.1007/s00382-018-4431-9



*Dr G. Srinivas*



*Dr K. Sujith*

**Prof. Ananthakrishnan Award** for the Best Ph.D. thesis for the year 2019 to **Dr. Gangiredla Srinivas** for his thesis "Impact of Pacific and Atlantic Modes on Indian Summer Monsoon Variability and Indian

Ocean Climate” under the guidance of Dr. J.S. Chowdary (IITM) and Dr K.V.S.R. Prasad, Dr. C.V. Naidu (Andhra University, Vishakhapatnam)

• The **Best Student Research Paper Award for 2019** to **Dr. Sujith K.** for the paper “Effects of a multilayer snow scheme on the global teleconnections of the Indian summer monsoon”, published in Quarterly Journal of Royal Meteorological Society, 145, April 2019, DOI:10.1002/qj.3480, 1102-1117.

• IITM **Junior Research Fellow Best Student Award** was given to **Sumit Kumar Mukherjee** (1st position) and **Mr. Rakesh S.** (2nd position).

• IITM **Excellent Performance Award for the year 2019** for the Scientific Support Staff and Administrative Staff Categories to **Mrs S.R. Inamdar** and **Mrs M.V. Deshpande** respectively.

• **Hindi Rajbhasha Puraskar for 2020** is jointly shared by **Dr A.K. Sahai** and **Dr. Kaushar Ali**.

• **Outstanding Performance Award** for the year 2020 is jointly shared by **General Administration Section, Workshop Division** and **Computer Division**.

### OTHER ACTIVITIES:

**Observance of “Vigilance Awareness Week”:** IITM observed **Vigilance Awareness Week** during 27 October - 02 November 2020. On this occasion, IITM employees took the e-pledge on 27 October 2020. As a part of Vigilance Awareness Week, competitions like elocution and essay competition were held during the week on the theme “Satark Bharat, Samridh Bharat (Vigilant India, Prosperous India)” “सतर्क भारत, समृद्ध भारत” for IITM employees. Winners of the Essay and Slogan competition were felicitated with prizes on the concluding day.

Webinars were conducted to mark the week:



Dr. P.K. Dhakephalkar, Director, Agharkar research Institute was arranged on 29 October 2020 <https://youtu.be/E1yombmniJU>

### FOCUS OF DISCUSSION

- Special procedure under Rule 19 of CCS (CCA) Rules,
- Importance/ Implications of Agreed List/ODI;
- Instructions regarding providing copies of CVC/UPSC advice.
- Role of DoP&T

“Vigilance Mechanism – an overview” by **Shri Akhtarul Hanif**, Deputy Secretary, Ministry of Road Transport and Highways on 5 November 2020 <https://youtu.be/sfYq32kuZtw>

**National Unity Day** (Rashtriya Ekta Diwas) was observed on 31 October 2020. On the day, a pledge was administered by all IITM employees in IITM from their residence.

### **71<sup>st</sup> Constitution Day (Samvidhan Divas):**

All IITM officials joined the Hon'ble Prime Minister in reading of e-Preamble/ e-pledge from their respective locations on 26 November 2020. A Webinar was also organized on “Constitutional Values and Fundamental Principles of the Indian Constitution” by **Dr. Satya Prakash**, Joint Secretary, M / o Parliamentary Affairs. <https://webcast.gov.in/mpa/>

As part of **PM's Jan Andolan Campaign on COVID-19** to initiate a campaign on prevention of COVID-19, IITM employees took E-pledge: <https://pledge.mygov.in/janandolan-covid/>.

निम्न लिखित व्याख्यान श्रृंखला में आईआईटीएम की सहभागिता:

- पृथ्वी विज्ञान मंत्रालय का द्वितीय वेबिनार दिनांक 01 अक्टूबर 2020 को आयोजित किया गया जिस में महात्मा गांधी अंतर्राष्ट्रीय हिंदी विश्व विद्यालय, वर्धा के पूर्व कुलपति प्रो. (डॉ.) गिरीश्वर मिश्र ने “महात्मा गांधी की सामाजिक दृष्टि” विषय पर व्याख्यान दिया। <https://youtu.be/CS4l8R2FhFc>.
- पृथ्वी विज्ञान मंत्रालय के तत्वावधान में आयोजित होने वाली ‘जन-जन के लिए विज्ञान’ वेबिनार श्रृंखला के अंतर्गत आयोजित वार्ता: प्रथमवक्ता: डॉ. ध्रुवसेनसिंह, भूविज्ञान विभाग, लखनऊ विश्व विद्यालय, गंगोत्री हिमनदके सन्दर्भ में जलवायु परिवर्तन: प्राकृतिक या मानवजनित, 20 अक्टूबर 2020 <https://youtu.be/0y43a2lN6BE>



- द्वितीयवक्ता:  
डॉ. राजीव निगम, राष्ट्रीय समुद्र विज्ञान संस्थान (NIO), गोवा के  
प्रतिष्ठित विद्वान एवं वैज्ञानिक, समुद्रीपुस्तक विज्ञान, २३ अक्टूबर  
२०२०  
[https://youtu.be/QUjW6D\\_j7-I](https://youtu.be/QUjW6D_j7-I)



### Editorial Team

Chief Editor: Prof. Ravi S. Nanjundiah, *Director, IITM*

Co-Editors : Dr. Parthasarathi Mukhopadhyay, *Sc. E, IITM*

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Mrs. Shompa Das, *Sc. E, IITM*

Concept & Design: Mr. Vijay H. Sasane, *Sci.Off.-II, IITM*



## Indian Institute of Tropical Meteorology

(An Autonomous Institute of the Ministry of Earth Sciences, Govt. of India)

Dr. Homi Bhabha Road, Pashan, Pune - 411 008, India

E-mail: [lip@tropmet.res.in](mailto:lip@tropmet.res.in) Website: [www.tropmet.res.in](http://www.tropmet.res.in)

[@iitmpuneofficial](https://www.facebook.com/iitmpuneofficial) [@iitmpune](https://twitter.com/iitmpune)