

## KNOWLEDGE PRODUCTS: PUBLICATIONS, PRESENTATIONS...

*Knowledge creation, knowledge enhancement, knowledge dissemination and knowledge management have been among the core activities of CSIR-4PI. Ever since its inception, CSIR-4PI has maintained a high knowledge output in terms of publications and other scientific programmes, knowledge synthesis and exchange through conferences, workshops, brainstorming sessions, etc.*

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## Publications in Journals

Kavyashree K R, **Ashapura Marndi**, Maximizing accuracy of electricity load forecasting with deep learning, International Journal of Scientific Research and Development, 4(3), 53-55, June 2016

**Gouda K C** and Ankur Ghosh, Online library for weather and climate data, International Journal of Engineering Trends and Technology, 43(5), 297-301, doi:10.14445/22315381/IJETT-V43P249, 2017

Bhat N, Shricharan U, Hegde P P, Shetty N K, Shrikant Rao P, Shreya and **Gouda K C**, Development of integrated message alert system for weather informatics, International Journal of Advanced Research in Computer and Communication Engineering, 5(6), 612-614, 2016

Shobha N V and **Gouda K C**, Ground water vulnerability assessment using drastic model over Bangalore rural district, International Journal of Advanced Scientific Research and Publications, 2-5, 82-86, 2016

Rahisha T, **Gouda K C** and Sreedhara V, Change detection in Mangalore coastline using multi-temporal satellite data and GIS, International Journal of Advances in Mechanical and Civil Engineering, Special Issue, 9-14, 2016

Tiwari M, **Krishna Mohan T R** and Sen S, Decorated granular layers for impact decimation, Granular Matter, 18, 1-5, 2016

**Parvez I A**, Nekrasova A K and Kossobokov V, Earthquake hazard and risk assessment based on unified scaling law for earthquakes: State of Gujarat, India, Pure and Applied Geophysics, 174, 1441-1452, DOI:10.1007/s00024-017-1475-4, 2017

Joshi A U, Sant D A, **Parvez I A**, Rangarajan, G, Limaye M A , Mukherjee S, Charola, D, M J, Bhatt, M N and Mistry S P, Subsurface profiling of granite pluton using microtremor method: Southern Aravalli, Gujarat, India, International Journal of Earth Sciences, 1-11, DOI:10.1007/s00531-017-1482-9, 2017

Nanaiya Rithika, **Parvez I A** and Kamath Kiran, Progressive collapse analysis of steel and RCC frames using linear dynamic method, International Journal of Civil Engineering and Technology, 8 (6), 805-812, 2017

Abhilash M B, **Parvez I A** and Sarvade, Purushotham G, Study on special truss moment frames and special moment resisting frames with fluid viscous dampers as a seismicretrofit, International Journal of Civil Engineering and Technology, 8 (6), 948-959, 2017

Medini H K, Mahfooz Sheikh, Murthy D H R, Sathyanarayana S V and **Patra G K**, Identical chaotic synchronization for hash generation, ACCENTS Transactions on Information Security. 2(5), 16-21 2017. DOI:10.19101/TIS.2017.25002

**Rajendran K, Sajani Surendran**, A Kitoh, and Stella Jes Varghese, Reduction of uncertainty associated with future changes in Indian summer monsoon projected by climate models and assessment of monsoon teleconnections, Proceedings of SPIE, Remote Sensing and Modeling of the Atmosphere, Oceans, and Interactions VI, 98820D, doi:10.1117/12.2229392, 2016

**Rakesh V and Goswami P**, An evaluation strategy of skill of high-resolution rainfall forecast for specific agricultural applications, *Meteorological Applications*, 23 (2), 529–540, 2016

**Rakesh V and Kantha Rao Bhimala**, Impact of assimilation on Heavy rainfall simulations using WRF Model: Sensitivity of assimilation results to background error statistics, *Pure and Applied Geophysics* 174 (3), 1385–1398, 2017

Manas Mukul, Vinee Srivastava, **Sridevi Jade**, Malay Mukul, Uncertainties in the Shuttle Radar Topography Mission (SRTM) Heights: Insights from the Indian Himalaya and Peninsula, *Scientific Reports*, 7, 41672; doi: 10.1038/srep, 2017

Prakash Barman, **Sridevi Jade**, Shrungheshwara T S, Ashok Kumar, Sanjeev Bhattacharyya, Jagat Dwipendra Ray, Saigeetha Jagannathan, Wangshi Menla Jamir, Crustal deformation rates in Assam Valley, Shillong Plateau, Eastern Himalaya and Indo-Burmese region from 11 years (2002-2013) of GPS measurements, *International Journal of Earth Sciences*, doi:10.1007/s00531-016-1407-z, 106:2025-2038, 2016

Prakash Barman, **Sridevi Jade**, Ashok Kumar, Wangshi Menla Jamir, Inter annual, spatial, seasonal and diurnal variability of perceptible water vapor over northeast India using GPS time-series, *International Journal of Remote Sensing*, doi:10.1080/01431161.2016.1266110, 38 (02), 391 – 411, 2016

## Patent Filed

**Anil Kumar V** and Debabrata Das, Method and device for categorizing a Stream Control Transmission Control Protocol (SCTP) receiver terminal as a malicious, SCTP Receiver Terminal, USA, 03 June 2016

**Anil Kumar V** and Debabrata Das, Method and device for robust Multi Path Transmission Control Protocol (MPTCP) against data sequence signal manipulation attack, India, 19 July 2016

## Publications in Books

Shrungheshwara T S, **Chiranjeevi Vivek G**, Anil Kumar Maletha, Shantanu Sarkar, **Sridevi Jade**, Landslides studies using Global Positioning System (GPS), Sustainable development of natural resources, R.K. Books publishers

Edwin Raj E, **Ramesh K V**, Radhakrishnan B, Raj Kumar R, Tea, Impact of climate change on plantation crop, eds K.B. Hebbar, S. Naresh Kumar, P. Chowdappa, 123-144, Astral International Pvt. Ltd., 2017

## Publications in Proceedings

Megha K M, **Gouda K C**, Divya C P and Vanajakshi P, Climate-crop interaction modelling, Proceedings of International Interdisciplinary Conference on Research in Engineering Technology and Management–ICRET, BTL Inst of Technology, Bangalore, 16 April 2016, *International Journal of Engineering Research & Technology (IJERT)*, 4 (21), 191-193

Harshita P, **Gouda K C**, Megha K M and Chandramma, Hydro-meteorological disaster modelling and simulation study in HPC platform. Proceedings of International Interdisciplinary Conference

on Research in Engineering Technology and Management–ICRET, BTL Inst of Technology, Bangalore, 16 April 2016, International Journal of Engineering Research & Technology (IJERT), 4 (21),188-190

Nivedita N G, **Gouda K C**, Sangeetha M, Nibedita P, Proceedings of International Interdisciplinary Conference on Research in Engineering Technology and Management –ICRET, BTL Inst of Technology, Bangalore, 16 April 2016, International Journal of Engineering Research & Technology (IJERT), 4 (21), 4-8

**Gouda K C**, Divya C P, Harshitha Prabhudev, Prathima Guru Prasad, Multi-source observation and modelling for climate studies, Proceedings of International Interdisciplinary Conference on Research in Engineering Technology and Management–ICRET, BTL Inst of Technology, Bangalore, 16 April 2016, International Journal of Engineering Research & Technology (IJERT), 4 (21),185-187

Rahisha T, **Gouda K C** and Sreedhara V, Change detection in Mangalore coastline using multi temporal remote sensing satellite data and GIS, Proceedings of International Conference on Mechanical, Civil, Electronics, Communication and Computer Science Engineering (ICMCECE), Bangalore Technical Institute, Bangalore, 23 April 2016

Rahisha T, **Gouda K C** and Laxmikantha B P, Change detection study in Karnataka coast line using multi temporal satellite data-remote sensing and geographic information system approach, 4<sup>th</sup> International Conference on Oceanography & Marine Biology, 18-19 July, 2016 Brisbane, Australia, J Marine Sci: Res & Dev (Abstracts), 6 (Spl)

Hiremath G S, **Gouda K C** and Sameeran C P, Climate-disease interaction model, Proceedings of International Conference on Internet of Things, APS College of Engineering, Kanakpura,18-19 Aug 2016

Sahoo S K, **Gouda K C**, **Himesh S**, Samantray P, Drought over western Odisha: A case study of regional climate, Proceedings of WMO/CLIVAR Open Science Conference, Qingdao, China, 93, 18-25 Sep 2016

Samantray P, **Gouda K C**, Sahoo S K, **Himesh S**, Climate variability over the Himalayan region: Case of extreme rainfall events due to cloud burst, Proceedings of WMO/CLIVAR Open Science Conference, Qingdao, China, 95, 18-25 Sep 2016

Barik P S and **Gouda K C**, Mangrove eco-system and tiger population dynamics in climate change scenario, Proceedings of 10th International Wetlands Conference, Changshu, China,19-24 Sept 2016

Adarsh M Kulkarni, Manikiam B and **Gouda K C**, Forest eco-system changes impacting wildlife and humans, Proceedings of UGIT International Conference on Geospatial Technologies for Urban, Forest and Climate Change – Pathway to Sustainable Development, Bangalore University, 25-26 Nov 2016

Geethanjali M, **Gouda K C** and B Manikiam, Study on dynamics of coastal mangroves along Udupi coast using RS and GIS, Proceedings of UGIT International Conference on Geospatial Technologies for Urban, Forest and Climate Change – Pathway to Sustainable Development, Bangalore University, 25-26 Nov 2016

Malini P J and **Gouda K C**, Study of land use land cover over Pandavpur taluq using remote sensing and GIS, Proceedings of UGIT International Conference on Geospatial Technologies for Urban, Forest and Climate Change – Pathway to Sustainable Development, Bangalore University, 25-26 Nov 2016

**Gouda K C, Himesh S, Kantha Rao**, Seasonal forecasting of weather based malaria outbreak over India, Proceedings of India International Science Festival, NPL, New Delhi, 8-11 Dec, 2016

Radhika T V, **Gouda K C** and Kumar S S, Big data research in climate science, International Conference on Communication and Electronics Systems (ICCES), 1-6, 2016

**Gouda K C**, The vertical shear in Indian Summer Monsoon, Proceedings of TROPMET-2016, Bhubaneswar, 18-21 Dec 2016

Geeta Agnihotri, **Gouda K C**, Das S and Dimri A P, Observed and simulated structure of thunder clouds over southern peninsular India during pre-monsoon season, Proceedings of TROPMET-2016, Bhubaneswar, 18-21 Dec 2016

Samantray P, **Gouda K C**, Sahoo S K, **Himesh S**, Analysis of cloud structure dynamics during cloudburst events over India, Proceedings of TROPMET-2016, Bhubaneswar, 18-21 Dec 2016

Nagaraj Bhat and **Gouda K C**, Development of an integrated dissemination system for weather and climate informatics, Proceedings of TROPMET-2016, Bhubaneswar, 18-21 Dec 2016

Shaktidhar Nahak, **Gouda K C** and **Goswami P**, Regional monsoon variability studies over India using a variable resolution General Circulation Model, Proceedings of TROPMET-2016, Bhubaneswar, 18-21 Dec 2016

Barik P S and **Gouda K C**, Climate change and its impact on vector borne diseases over Odisha, Proceedings of TROPMET-2016, Bhubaneswar, 18-21 Dec 2016

Sahoo S K, **Himesh S, Gouda K C**, Ajilesh P P and Samantray P, Simulation of extreme rainfall event over Uttarakhand: Sensitivity to land-use changes, Proceedings of TROPMET-2016, Bhubaneswar, 18-21 Dec 2016

Bilakanti A, Anjana N B, Divya A, Divya K, Chakraborty N, **Patra G K**, Secure computation over cloud using fully homomorphic encryption, Proceedings of 2nd International Conference on Applied and Theoretical Computing and Communication Technology (iCATccT), 633-636, IEEE USA, DOI: 10.1109/ICATCCT.2016.7912077

**Mohapatra G N and Rakesh V**, Evaluation of mesoscale model lead hour in predicting tropical cyclone over North Indian Ocean, Proceedings of TROPMET 2016, National Symposium on Tropical Meteorology: Climate Change and Coastal Vulnerability, Bhubaneswar, 18-21 December 2016

Bilakanti A, Anjana N B, Divya A, Divya K, Chakraborty N, **Patra G K**, Secure computation over cloud using fully homomorphic encryption, Proceedings of 2nd International Conference on Applied and Theoretical Computing and Communication Technology (iCATccT), 633-636, IEEE USA, DOI: 10.1109/ICATCCT.2016.7912077

Khaja Bande Nawaz, **Ramesh K V**, Shambhavikamath, Methodology to estimate the spatial distribution variability and change in land cover over Koppal district of Karnataka, International Conference on Civil and Environmental Engineering, Nagpur, 1, 16 September 2016

**Ramesh K V** and Prakasa Rao E V S, Assessment and projections of spatio-temporal distribution of carbon stock in agro and other ecosystems over India, Journal of International Agronomy Congress, ICAR, New Delhi, 1: 193-194, 22-26 November 2016

**Ramesh K V**, Shafeer K B and **Himesh S**, Development of an integrated modelling platform to identify and estimate the sustainable renewable energy potential over India: Making India towards 100% green energy, Proceedings of India International Science Festival, CSIR NPL, New Delhi, 8-11 Dec 2016

Neethu C, **Ramesh K V**, Modeling the heat stress on human health: A health hazard map, Proceedings of Indian International Science festival, CSIR NPL, 483-484, 7-11 December 2016

Shafeer K B, **Ramesh K V**, Identifying new renewable energy sources around Andaman & Nicobar Islands: Wind generated electricity potential, Indian International Science festival, CSIR NPL, 483-484, 7-11 December 2016

Alfred Johny, **Ramesh K V**, Reliable drought projections over India for twenty first century, Proceedings of TROPMET-2016, Bhubaneswar, 1,179, 18-21 Dec 2016

Neethu C, Shafeer K B, **Ramesh K V**, Understanding the spatio-temporal structure of recent heat waves over India, Proceedings of TROPMET-2016, Bhubaneswar, 1, 19, 18-21 Dec 2016

Shafeer K B, **Ramesh K V**, Estimating the wind-generated electricity potential over Andaman and Lakshadweep groups of islands, Proceedings of TROPMET-2016, Bhubaneswar, 1, 94, 18-21 Dec 2016

**Rakesh V**, **Mohapatra G N**, Nibin Gopi, An assessment of economic benefit through forecast-based agro-advisories over Karnataka, Proceedings of India International Science Festival (IISF): Theme: Innovative agriculture practices and live stock management, Dec 8-11, 2016, New Delhi.

Praveen S and **Rakesh V**, Simulation of tropical cyclones over the Indian Ocean: Forecast skill of a mesoscale model for cyclones of different intensities, Proceedings of TROPMET 2016, National Symposium on Tropical Meteorology: Climate Change and Coastal Vulnerability, Bhubaneswar, 18 – 21 December 2016

Ajilesh P P, **Rakesh V**, **Himesh S**, Sahoo S K, Thermodynamic processes in heavy rainfall events over urban city: Analysis using high resolution observation and mesoscale modelling, Proceedings of TROPMET 2016, National Symposium on Tropical Meteorology: Climate Change and Coastal Vulnerability, Bhubaneswar, 18 – 21 December 2016

**Senthilkumar V**, Computation modelling of engineering structures, Proceedings of National Conference on Annals of Pure & Applied Mathematics, MVJ College of Engineering, Bangalore, 14-15, July 2016

**Senthilkumar V**, Computational mechanics: Methods and simulations, Book of Abstracts in Computational Science Symposium (CSS 2017), Department of Computational Data Sciences, Indian Institute of Science, Bangalore, 16-18 March 2017

**Jagat Dwipendra Ray, Vijayan M S M**, Ashok Kumar, Comparison of seasonal hydrologic deformations from GPS and GRACE over North-East India and Nepal Himalaya, Indo-US Bilateral Workshop on Assessment of Regional Hydrology using Space-Borne Gravity Observations, CSIR-NGRI, Hyderabad, 14-16 November 2016

### **Presentations in Conferences/ Symposia/ Workshops/ Seminars**

**Ashapura Marndi, Patra G K**, Filling gaps in ocean color observation using deep learning techniques, Ninth National Women's Science Congress, RLJIT Bangalore, 5-7 November 2016

**Ashapura Marndi, Patra G K**, Deep learning technique to estimate missing values of ocean color data, Impact of Aeronautical & Aerospace Programmes on Emerging India, CSIR Pensioners Welfare Association, National Aerospace Laboratories, Bangalore, 31March-1 April 2017

**Chiranjeevi Vivek G**, Suri Babu, **Sridevi Jade**, Establishment of Continuous Global Navigation Satellite System (CGNSS) network in Kashmir Himalaya, Young Scientist Conclave, 2<sup>nd</sup> India International Science Festival (IISF) 2016, CSIR-NPL, New Delhi, 8-11 December 2016

**Kalyani Devasena C, Sharada M K and Swathi P S**, Ocean biogeochemical studies of the Indian Ocean, Ocean Global Change Biology (GRS and GRC-Gordon Research Conference), 16-22 July, 2016, NH, USA

Amritha Babu, **Kalyani Devasena C, Sharada M K**, M K Shelva Srinivas **and Swathi P S**, Evaluation of model simulation results using satellite data: Influence of physical processes on biological components, Ninth National Women's Science Congress, RLJIT Bangalore, 5-7 November, 2016

**Kalyani Devasena C, Sharada M K and Swathi P S**, Study of oxygen minimum zone in the Arabian Sea using model simulations and observations, Ninth National Women's Science Congress, RLJIT Bangalore, 5-7 November, 2016

Sofia Evelin, **Kalyani Devasena C**, Suganya R, Azharuddin M, Anusha C **and Sharada M K**: Primary productivity and Chlorophyll variations in the Arabian Sea using model simulations and observations. 9<sup>th</sup>National Women's Science Congress, 5-7 November, 2016, RLJIT Bangalore

Amritha Babu, Azharuddin, **Kalyani Devasena C, Sharada M K**, Shelva Srinivasan M K, Sofia Evelin, Suganya R, **and Swathi P S**, Modelling and simulation of marine ecosystem and evaluation with satellite data, Impact of Aeronautical and Aerospace programmes on Emerging India, CSIR Pensioners Welfare Association, National Aerospace Laboratories, Bangalore, 31March-1 April 2017

Preethi S and **Mohapatra G N**, Urban flooding and its impact on drainage system over Bangalore city, National Symposium on Tropical Meteorology: Climate Change and Coastal Vulnerability (TROPMET-2016), Bhubaneswar, 18-21 December 2016

**Swathi P S, Indira N K, Sharada M K and Kalyani Devasena C**, Comprehensive carbon cycle modelling and measurement, CSIR Mega Expo, IITF, New Delhi, 14-27, November 2016

## **Participation in Conferences/ Symposia/ Workshops/ Training Programmes**

**Anil Kumar V, Chiranjeevi Vivek G, Gouda K C, Mohapatra G N, Patra G K, Rakesh V**

2<sup>nd</sup> India International Science Festival (IISF) 2016, CSIR-NPL, New Delhi, 8-11 December 2016

**Anil Kumar V, Gouda K C, Kantha Rao Bhimala, Mohapatra G N**

CSIR Platinum Jubilee Techno Fest, Pragati Maidan, New Delhi, 14-27 Nov 2017

**Anil Earnest**

Workshop on Geodynamics of the Indo-Eurasia Plate Boundary: Focus on its Eastern Margin, Centre for Earth Sciences, Indian Institute of Science, Bangalore, 13-14 April 2016.

Geodynamics 2016, Centre for Earth Sciences, Indian Institute of Science, Bangalore, 19 - 23 September 2016

**Ashapura Marndi**

Conference on Deep Learning, CMR Institute of Technology, Bangalore, 1 July ,2016,

Workshop on Deep Learn, Google India Pvt. Ltd , Bangalore, 2 July,2016

**Gouda K C**

Indo-US Colloquium on Recent Developments in Prediction of Tropical Cyclone and Associated Coastal Hazards, IIT Bhubaneswar, 14-16 December 2016

**Rajendran K**

CTCZ Results Workshop, CAOS, IISc, 5-7 May 2016.

Brain Storming Session on Future Earth, Divecha Centre for Climate Change, IISc, Bangalore, 9 July 2016

National Brainstorming Workshop on Climate Modelling: National Status, IIT Delhi, 19-20 Jul 2016.

**Rakesh V, Ramesh K V**

Two-day Workshop on the Concept of Incubation Centre and its functioning, 4-5 November 2016, IICT, Hyderabad

**Sajani Surendran**

CTCZ Results Workshop, CAOS, IISc, 5-7 May 2016

**Thangavelu R P**

HP-CAST 2016: HPC User Conference, Thiruvananthapuram, 29-30 September 2016

**Vijayan M S M**

Indo-US bilateral workshop on Assessments of regional hydrology using space-borne gravity observations, CSIR-NGRI, Hyderabad, 14-16 November 2016

Formal and Advanced Research in Materials, Shanmuga Industries College, Thiruvannamalai on 24 February 2017

## **Conference/Workshops/Seminars/Scientific Meetings at CSIR-4PI**

### **CSIR – Fourth Paradigm Institute Foundation Day**

Dr. M. Rajeevan, Secretary, Ministry of Earth Sciences spoke on Climate Change Studies in Ministry of Earth Sciences. He emphasised on the studies related to observations of climate change in India like trends in temperature, rainfall, droughts, heavy rainfall events, rainstorms, heat wave etc. He discussed about what is expected in future with global warming using IITM Earth System Model simulations. Brief description about the Coordinated Regional Climate Downscaling Experiment (CORDEX) for climate change studies was provided. Dr. M. Rajeevan also discussed on consequences of climate change, in particular on Human Health.

### **Open Day for Students on the occasion of CSIR Platinum Jubilee Celebrations, 9th November 2016 at CSIR – Fourth Paradigm Institute**

Students from colleges and Kendriya Vidyalaya visited HPC Facility. Scientists from different areas of research had poster presentations regarding their research work carried out at CSIR-4PI.

### **The meeting of the study visit of the Parliamentary Standing Committee on Science and Technology, Environment and Forests to CSIR – Fourth Paradigm Institute, Bengaluru on 31 August 2016**

The Parliamentary Standing Committee (PSC) on Science & Technology, Environment and Forests visited CSIR–NAL and CSIR–4PI as part of the study visit on 31<sup>st</sup> August, 2016. The Parliamentary Standing Committee headed by Smt Renuka Chowdhury, Hon'ble Member of Parliament was received by Shri Jitendra J Jadav, Director, CSIR–NAL. The Committee had meeting with Head, CSIR-4PI along with senior scientists and visited the High Performance Facility. The committee was explained about the CSIR-4PI work on different subject areas like Earth system science, Natural Hazards, Climate modelling, etc. The committee recommended that CSIR-4PI should strengthen the present modelling & simulation capability with focus on earth system & hazard by bringing in new capability in data and computational science.

### **Visit by Dr. Harsh Vardhan, Hon'ble Union Minister for Science & Technology and Earth Sciences on 5 February 2017**

Dr. Harsh Vardhan, Hon'ble Union Minister for Science & Technology and Earth Sciences visited CSIR Fourth Paradigm Institute (CSIR-4PI), formerly CSIR Centre for Mathematical Modelling and Computer Simulation (C-MMACS) at Bengaluru on 5 February 2017. He visited the CSIR Supercomputing facility which is sixth fastest in the country rated at 362 Teraflops, Cyber Security technology laboratory and witnessed demonstrations of live data feed from Green House Gas (GHG) measurement stations set up for the first time in India as well as live data feed from GNSS at different locations in the country. These data feeds are used by CSIR-4PI scientists to prepare earth-quake hazard maps and estimates of Carbon sinks which are important to establish India's commitment to COP 21. Many young scientists interacted with Dr. Harsh Vardhan explaining their research work on solid earth modelling, carbon cycle modelling, climate change, weather prediction, weather informatics with applications to smart agriculture, and vector borne diseases. Dr. Vidyadhar Mudkavi, Head, CSIR-4PI, presented an overview of the activities of the Institute and stressed on the need to build a strong data science group which will help realize the goal of bringing data science to the benefit of society. Dr. Harsh Vardhan said that while the size of the

Institute may be small, as a scientist one needs to dream big with a view to make an impact on the common man. He said that science has solutions to many problems faced by common man including poverty, health, poor infrastructure, corruption, etc. He felt that the Institute has the potential to make a big impact. He urged the scientists to be aware of similar work being carried out by other institutions in and outside the country, within CSIR and even within the institute. He also urged for an effective collaboration and changing the work environment where people should brainstorm to attack the problems of the society through their scientific research. He was of the opinion that knowledge sharing can bring about effective solutions which will improve the quality of life of common man. He noted that the institution has huge potential to work for better future of our country. During his visit, Dr. Harsh Vardhan also held discussions with Shri Jitendra Jadhav, Director, CSIR National Aerospace Laboratories (CSIR-NAL) particularly on way forward with regard to civil aircraft projects being pursued by CSIR-NAL.

## **Invited Talks**

### **Anil Kumar V**

Security challenges and countermeasures in next generation transport protocols, Technical Workshop on Trends on Networking and Communication, International Institute of Information Technology (IIIT-B), Bangalore, 21 April, 2016

Security dynamics in cyberspace: From Eution to State-of-the-art, India International Trade Fest (IITF), Pragati Maidan, New Delhi, 20 November 2016

Cyber security dynamics inference: A data-driven approach, Asia Pacific Advanced Network (APAN-43) Conference, New Delhi, 12-17, February 2017

### **Patra G K**

Cryptographic key exchange protocols: Recent developments and emerging trends, August 2016  
National Workshop on Cryptology 2016, JNN College of Engineering, Shivamogga, and  
PES Institute of Technology and Management, Shivamogga

### **Gouda K C**

Mathematical Modelling, simulation and big data analysis for geo-informatics, Karnataka Remote Sensing Application Centre, Bengaluru, 23 July 2016

Cloud computing for climate data, Dayananda Sagar Inst of Technology & Management, 4 October, 2016

Modelling, Simulation and the Data Intensive Research: The next step for IT-Students, BNM Inst. of Technology, Bangalore, 22 October, 2016

Climate and sustainability study in the big data era, National Conference on Research in Information Technology & Management, GIMS, Bangalore, 31 May 2016

### **Indira N K**

Greenhouse gas measurements and modelling in India, ESRL, NOAA Boulder, 15 Nov. 2016

### **Rakesh V**

Numerical Weather using Prediction Models, Short Course on Weather Forecasting, IIRS, Dehradun, 26 April 2016

Data assimilation in mesoscale atmospheric model, Department of Applied Mathematics & Humanities Department (AMHD), Sardar Vallabhbhai National Institute of Technology (SVNIT), Surat, 27 July 2016

### **Rajendran K**

Monsoon 2016: CFSv2 ensemble forecasts using Apr/May IC, Monsoon Cafè, DCC, Indian Institute of Science, Bangalore, 15 June 2016

Monsoon teleconnections in climate models with high reliability in response to external forcing, 2<sup>nd</sup> Workshop on Local and Remote Influences on Rainfall over India (LORRI), Divecha Centre for Climate Change, and Centre for Atmospheric and Oceanic Sciences, Bangalore, 18-19 July 2016

Weather and climate simulations using HPC, National Workshop on High Performance Computing, Rajagiri School of Engineering and Technology, Kochi, 9 December 2016

Variability of Indian summer monsoon in a warmer world, XIII Agricultural Science Congress, Satellite Meeting on Paris Agreement, 22 February 2017

### **Ramesh K V**

Multi-disciplinary Research in climate & weather informatics, Workshop on Effective Writing of Sponsored Research Proposals, Department of Mathematics, Ramaiah University of Applied Sciences, Bangalore, 9 November, 2016

### **Sajani Surendran**

Aerosol influence on Indian Summer Monsoon, 2<sup>nd</sup> Workshop on Local and Remote influences on Rainfall over India (LORRI), Divecha Centre for Climate Change, and Centre for Atmospheric and Oceanic Sciences, Bangalore, 18-19 July 2016

### **Senthilkumar V**

Computational mechanics: Methods and simulations, Computational Science Symposium (CSS 2017), Department of Computational Data Sciences, Indian Institute of Science, Bangalore, 16-18 March 2017

Applications of mathematical modeling, Department of Mathematics, M V J College of Engineering, Bangalore, 24 March 2017

### **Sridevi Jade**

GNSS based natural hazard assessment specific to Indian subcontinent, Symposium Causes, Response and Mitigation Strategies for Climate Change, 104<sup>th</sup> Indian Science Congress, Section V: Earth System Sciences, 5 January 2017

### **Swathi P S**

Parallel programming and debugging, Advanced School on Earth System Modelling & Workshop on Climate Change and Regional Impacts over South Asia, IIT-M, Pune, July 18-29, 2016

Parallellisation of the 2D heat equations, FDP on Theory and Applications of Mathematical Modelling in Engineering, M S Ramaiah Institute of Technology, Bangalore, August, 2016

Ecosystem Modelling in Monitoring Structure & Function of Pelagic Ecosystem at Regional Sectors: Relevance for fisheries, Central Marine Fisheries Research Institute, Ernakulam, Dec 2016

### **Thangavelu R P**

The road to exascale..., High performance computing simplified, Altair Technology Conference (ATCx 2016), Bangalore, 21 July 2016

The Road to Exascale..., High Performance Computing Simplified, Altair Technology Conference (ATCx 2016), Pune, 25 July 2016

**Vijayan M S M**, Role of modern physics and satellite geodesy in exploring the physics of earth system, FARM-2017, Shanmuga Industries College, Thiruvannamalai, 24 February 2017

## **Guest Lectures**

**Monojit Chakraborty**, ETH, Zurich  
Measurements and Estimations of Greenhouse Gases Emissions from Anthropogenic and Natural Sources (Abstract attached)  
24 March 2017

**Trina Bose**, Centre for Earth Sciences, IISc  
Process- based modelling for Paleoclimatic reconstructions from tree ring cellulose isotope data  
4 July 2016

## **Visitors at CSIR-4PI**

**Surendra Nath Somala**, IIT Hyderabad

**Monojit Chakraborty**, Swiss Federal Institute of Technology, Switzerland

**Trina Bose**, Centre for Earth Sciences, IISc, 4 July 2016

**Kota Harinarayan**, 22 November 2016

**Sherlekar, Nachiket, Chakradhar**, JNCASR, 22 November 2016

**Tilak Agerwala**, Research Emeritus & Ex Vice President, IBM USA, 10 January 2017-10-17

**AR Ravishankara**, Colorado State University USA, 13 January 2017

**Joel Korsakissok**, President of Syntony GNSS, France, 30 January 2017

**Scott William Tease**, Executive Director, HPC, Lenovo, USA, 9 February 2017

**Madhusudan Menghraj Matta**, Vice President, Server & Solutions, Lenovo, USA, 9 February 2017