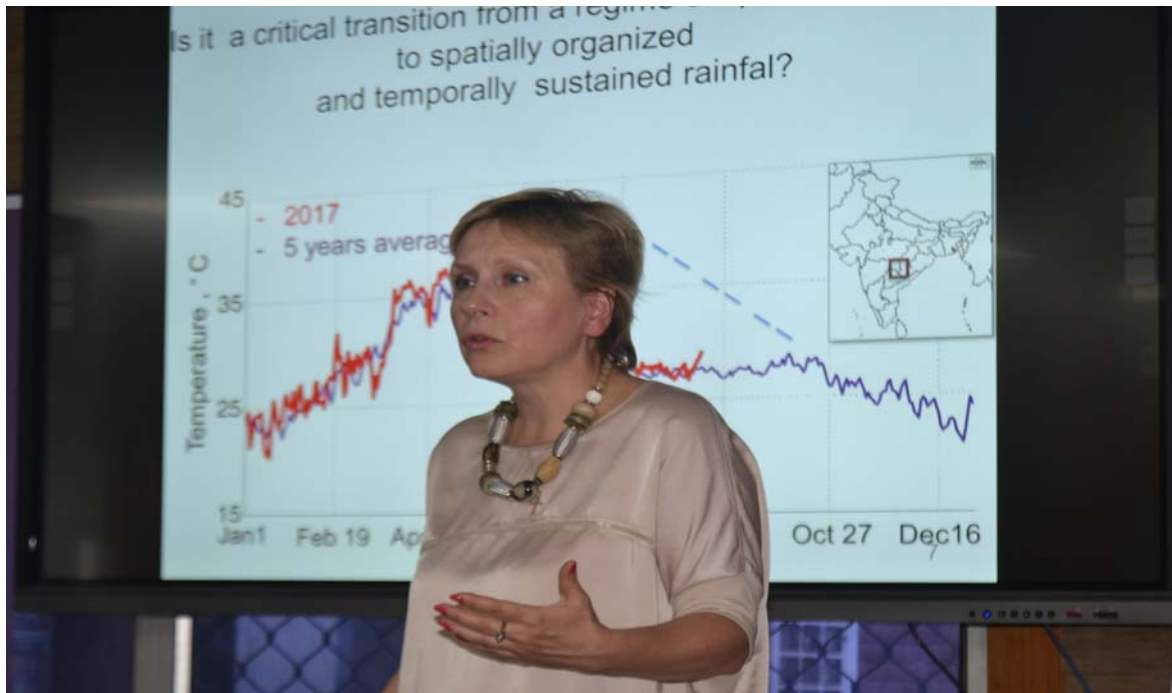


A Report from Indian Meteorological Society and its Local Chapters (April to September 2018)

1. IMS Lecture

Prof. Elena Surovyatkina, Professor at the Potsdam Institute for Climate Impact

invited to deliver IMS lecture on 22 June, 2018 at 12:00 noon in the DGM Conference Hall on 6th Floor, Mausam Bhavan. She spoke on "Monsoon forecast under climate change".



Research, Germany, and a Leading Researcher at Space Research Institute of Russian Academy of Sciences, Moscow, Russia was

Her lecture was primarily based on her paper entitled 'Tipping elements of the Indian



monsoon: Prediction of onset and withdrawal. GRL 43, 1–9 [doi:10.1002/2016GL068392]

Seasonal variability implies two aspects: first, the seasons do not begin at fixed dates but must be determined by observation and are known only after the fact; and second, a new season begins at different dates in different parts of the country and over the world. Seasonal variability strongly affects different aspects of human life such as agricultural productivity and food security, economic growth and political stability. In Central India, the variability of Monsoon is quite high due to local changes such as rapid urbanization and industrialization. The forecasting of climate phenomena on a seasonal scale is a challenge mostly because of the fact that there is no recent historical precedent for such changing in the climate system.

In her study of the Indian monsoon season, she has found the evidence in observational data that we can consider the onset of monsoon as a critical transition – a sudden transition to the monsoon when critical thresholds (in particular, in near-surface air temperature, relative humidity) are reached. This finding allows us using the critical transition theory for developing the Tipping elements approach for prediction of onset and withdrawal dates of

the summer monsoon under the conditions of climate change. Her prediction relies on observations of near-surface air temperature and relative humidity from both the ERA-40 and NCEP/NCAR re-analyses. Her method allows predicting the monsoon not only retrospectively (over the period 1951-2015) but also in the future. In 2016 and 2017 she successfully predicted the onset and withdrawal dates of the Southwest monsoon over the central part of India for 40 and 70 days in advance respectively. Hence, she claimed that such early prediction of season timing is possible.

The proposed approach is applicable for different kind of season, which exhibits properties of critical transition. Her prediction is based on observational data only whereas the model cannot accurately predict the transition.

2. IMS Bangalore Chapter

IMS Bangalore chapter conducted a training Programme on Meteorology for College Teachers at IMD Meteorological Centre, Bengaluru during 4-5, October 2018. The beginning of Atmospheric science can be traced back to ancient India, as the Upanishads contain in-depth discussion about the processes of cloud formation and rain, and the seasonal cycles caused by the movement of



Earth around the Sun. Atmospheric physicists attempt to model Earth's atmosphere using fluid flow equations, chemical models, radiation balancing and energy transfer processes in the atmosphere and underlying oceans. The weather phenomena include thunderstorms, tornadoes, tropical cyclones, jet streams and monsoon circulations. Atmospheric science is a popular subject and attracting the attention of students and teaching fraternity due to innumerable exciting issues. The day-to-day variation of weather has attracted the young faculty and Bangalore Chapter is actively involved in educating the students from schools and colleges including the faculty.

The training programme was organised jointly by IMS-Bangalore chapter in association with Sir MV – ISRO Chair of Bangalore University at IMD-MC, Bengaluru. About 100-teaching staff participated in the programme from several colleges/institutions. The Workshop was aimed at improving the understanding of meteorology, imparting basic training about weather observations, familiarising the teachers with salient aspects of weather & climate, introducing climatic variability and climate change, generating awareness about weather information/services and their

applications. Participants visited surface observatory for in-situ observations and launch of Radiosonde through balloon ascent. They also visited other divisions for recording of synoptic observations and short-range and medium range weather forecasts.

Based on the lectures and presentations, a) lecture notes on Atmospheric Physics and b) study material on basics of atmospheric physics were prepared and distributed to the all participants. To minimise printing, only 30-copies each were printed and soft copies were shared with all. All the participants well appreciated the contents of material distributed.

Feedback of Participants:

Several participants expressed their satisfaction on the conduct of the event and requested IMS-B to have more number of events in future and expressed willingness to host more events at their institutions. The programme was useful for getting better knowledge and understanding in the field of meteorology. Executive Members of the IMS-B wish to convey their grateful thanks to the IMS-National for their financial support (funded by MoES GoI) and encouragement.

3. IMS Bhubaneswar Chapter

The “Workshop on Weather, Climate & Natural Hazards for School Teachers of Odisha” was held on 17th – 18th August 2018 at the Seminar Hall-1 within the Bansuri Guru Auditorium Complex of Institute of Technical Education & Research (ITER), Siksha ‘O’ Anusandhan (Deemed to be University), Bhubaneswar. This workshop was jointly organized by IMS-Bh Chapter and Centre for Environment & Climate (CEC), Dept. of Civil Engineering of S O A University. It was

organizing dissemination workshops at their schools.

In order to make the workshop successful and fruitful, it had been planned in an innovative way. In this regard the focal activities of the workshop included:

- Inaugural Session: This was cancelled due to sad demise of Former Prime Minister of India Shri Atal Bihari Vajpayee. Instead, a Condolence Meeting was held. Subsequently, the technical programme was



Group Photography of Eminent Participants during Valedictory Session

partially supported (funded by MoES GoI) by IMS National. The major objective of this workshop was capacity building of school teachers so that awareness, understanding and knowledge on weather, climate and climate hazards can be disseminated in grass root level of the society, which will promote preparedness in this climate change era. The special focus of the workshop was on the live presentations by experts of national and international repute on basics of weather & climate understanding, climate hazards like floods, cyclones, droughts, lightning, severe thunder storms and adaptation strategies. In this context this workshop intended to bring together the Science & Social Science Teachers of Secondary & Higher Secondary Schools for sharing and dissemination knowledge on different climate hazards like floods, cyclones, droughts, lightning, severe thunder storms and adaptation strategies. There were 77 participant school teachers from across the state of Odisha. At the end, the participants were given an exit assignment for

continued with an address by Prof. S. K. Dash, President, IMS.

- Technical Sessions: The technical sessions comprised of four oral presentation sessions. On day 1, the Technical Session-1 comprised of presentation by Prof. U. C. Mohanty, IIT-Bhubaneswar and the Technical Session-2 comprised of presentation by Dr. D. R. Pattanaik, Scientist E, IMD, Govt. of India. Further, teachers visited the Meteorological Centre, IMD, Bhubaneswar and joined the presentation by Mr. H. R. Biswas, Director, MC, Bhubaneswar, on weather observations. On the 2nd day, there were two oral sessions. The Technical Session-3 comprised of two presentations by Dr. S. C. Sahu, Director, CEC, SOA and by Dr. D. Swain, IIT-Bhubaneswar. In technical session-4 there was one presentation by Prof. G. K. Panda, Utkal University.
- Interaction Session: The interaction session was planned to capture the views,

feedback and opinions of the participants. As the participants represented the stake holders of the theme, this session targeted to capture the thoughts of the participants on the theme of the workshop. In fact a specially designed feedback form had been circulated in this regard.

- **Valedictory Session:** The valedictory session was the concluding session during which the eminent expert guests delivered their address on the theme relevant aspects. The session was chaired by Prof. D. Acharya, Principal Advisor, SOA. Subsequently the certificates and workshop material were distributed to participants.

In this workshop, the participation of local media persons was excellent and their coverage was widespread. The workshop marked a great success in the arena of activities of IMS Bhubaneswar under the dynamic leaderships of Prof. U. C. Mohanty, Dr. S. C. Sahu, Dr. Nihar Ranjan Das, Dr. H. R. Biswas, Prof. Manas Ranjan Das, Dr. Debadatta Swain and Sh. R. K. Mohapatara.

4. IMS Chandigarh Chapter

IMS Chandigarh Chapter and Department of Geography, Panjab University, Chandigarh jointly organised Teacher Awareness Programme on 'Utility and Limitations of Weather Services and Climate Change' during 30-31st August, 2018 at the Golden Jubilee Hall, Panjab University, Chandigarh. It was sponsored (funded by MoES GoI) by IMS National.

Acknowledging the reality of climate change and weather anomalies leading to severe impact on our economy, environment and society, IMS Chandigarh chapter organised the above mentioned two-day interactive workshop so as to deliberate upon and disseminate knowledge among teachers and research community on applications of weather services, forecasts and themes related to climate change. The workshop was inaugurated by Prof. Raj Kumar, Vice Chancellor, Panjab University, Chandigarh who appreciated the efforts of IMS in generating awareness among masses about such important theme.

The workshop was attended by more than 100 participants which included teachers from colleges of Chandigarh, Himachal Pradesh and Haryana; school teachers from Chandigarh, researchers and students from Panjab University. Scientists from IMD, Faculty and eminent researchers from various scientific and academic institutions such as Panjab University, IMD Delhi, IMD Chandigarh, PGI Chandigarh, IISER Mohali, Armed Forces and Media graced the occasion and interaction with participants. There were two technical sessions and one panel discussion in the workshop apart from inaugural and valedictory session. Dr. D. Pradhan, Scientist G, Instrumentation, IMD, New Delhi gave his insightful talk on significance of IMD, its capabilities in weather forecast and climate services and Doppler Radar technology. Eminent Scientists and scholars such as Prof. A.S. Ahluwalia, Prof. K.K. Brar, Sh. Surender Paul, Dr. Abhijeet Sarkar, Dr. Sonu Goel, Prof. Smita Bhutani, Prof. Krishna Mohan, Dr. Vinayak Sinha, Dr. Ashwagosha Ganju, Sh. Deepak Dhiman, Dr. Ravindra Khaiwal, Col. Jayant Wannere, Prof. G.K. Panda interacted with participants and shared their ideas on technological developments in weather forecast and services, issues of climate change and its impacts on human, air quality, biodiversity etc.

The talks were highly appreciated by the audience and lots of observations, questions, and queries came from the participants. The participants also raised certain important issues and observed that such issues should be an integral part of teaching at school and







college level so that knowledge can be disseminated to young minds to make them prepare in combating problems emerging from climate change.

The workshop concluded with valedictory session in which Prof. Shakerji Jha, Dean of University Instruction (DUI), Panjab University, Chandigarh, and Sh. Rubinderjit Singh Brar, PCS, DHE, UT, Chandigarh praised IMS Chandigarh Chapter and IMD for sensitizing teachers and researchers on such important theme. It was also acknowledged that more such workshops must be organised by IMS so that dissemination of scientific knowledge about climatology of local places, collection of data in educational institutions and their analysis and weather bulletins services in schools can be promoted to create awareness in the society

5. IMS Kolkata Chapter

Annual General Body Meeting of IMS Kolkata Chapter was held on 24.4.2018. In the meeting election results of Kolkata Chapter 2018-2020 were

announced by the Returning officer of Kolkata Chapter Mr. U.Bhattacharjee.

On 24.4.2018 Dr. K. Chandrasekhar, Head (Applications), Regional Remote Sensing Centre-East, National Remote Sensing Centre, ISRO, New Town, Kolkata delivered a Scientific lecture on the topic "Role of Space Technology in Drought Monitoring".

An emergency executive body meeting was held on 27.6.2018. In the meeting, decisions for creation of Sub-Chapters under IMS Kolkata Chapter and organization of invited lectures were taken. Subsequently, a Sub- Chapter was opened at Calcutta University Geography Department on 07.8.2018. Dr. Mafieul Haque was selected as Secretary of the Sub-Chapter.

6. IMS Nagpur Chapter

The workshop entitled "Preparedness of heat wave and lightning" for teachers and stake holders was organized by IMS-Nagpur Chapter, Nagpur on 24th May 2018. It was sponsored by RMC, Nagpur & IMS National (funded by MoES, GoI) and co-sponsored by Public Health Services, Nagpur. Venue of the



workshop was Chintan Hall, Public Health Services, Matakacheri, Nagpur.

Registrations of the program started at 10 AM. Folders were distributed to the participants'. A folder had consisted of IMS Membership form & information of the IMS including objectives of IMS, brochures highlighting the working of IMD and heat action plan format. Five displays/posters regarding function of IMD and information such as heat wave, forecasting, radar etc. were kept outside the hall of the workshop. Around 120 participants attended the workshop which included teachers, stake holders, medical officers of state & Municipal Corporation, health services, state stake holders, disasters managers and IMS members. Mr. Ashwin Mugdal, IAS, Collector, Nagpur who was the Chief Guest for the event could not attend the event due to urgent official work. In the absence of Mr. Mugdal, Dr Swapnil Lale was honoured as chief guest of the programme. Dr. D. R. Pattanaik chaired the proceedings. Shri. J. R. Prasad represented RMC, Nagpur.

The program began by lighting traditional lamps. Dias was shared from left to right by Dr. N.M. Rathi, Dr Trivedi, Dr. Swapnil Lale, Dr.D.R. Pattnaik, Mr.J.R. Prasad, Dr. Ashok Jadhao and Dr. R. S Akre. All the guests were welcomed by presenting floral bouquet and were honoured by mementoes. After the welcome address by Dr. R. S. Akre, Secretary, IMS, Nagpur Chapter, the chief guest Dr. Swapnil Lale and chairperson Dr. D. R. Pattanik addressed the participants. The inaugural session was concluded by vote of thanks proposed by Mr. S. N. Bidyanta. The technical session commenced after a short break for high tea. Total seven lectures were organised over the day. Certificates of attendance were presented to the participants. S/Shri. D.S.Gaikwad, M.M.Ghormade, S.S.Ambarte, M.R.Kanholkar, P.D.Dhawle, P.S. Chinchole, S.A.Pawar, Kunal and Ajaya, Mrs.Reena Surpam, Mrs. Shanta Unikrishnann and Smt. ApurwaBhaje worked hard for the grand success of the workshop. In the

technical session, following lectures were delivered by various experts.

TOPIC	EXPERTS
Forecasting of heat wave and warnings	Dr. D.R. Pattnaik, Scientist-E, IMD, New Delhi
Effect of Heat wave on Human Health.	Dr. Ashok Jadhao, Prof. & HOD. of Community Medicine, IGGMC, Nagpur
Built Environment and issues of heat wave preparedness	Dr. RajashreeKotharkar, Prof. Environmental Department, VNIT, Nagpur
Preparation of heat wave action plan	Dr. N.M.Rathi, Medical Officer Nagpur Municipal Corporation, Nagpur
Heat related illness and prevention	Dr. Gunjan Singh Dalal, Asstt.Prof. Deptt. of Medicine, IGGMC,Nagpur
Groundwater quality and health hazard with emphasis on Maharashtra	Dr. Umesh S Balpande, Scientist-D (Senior Hydrogeologist)Dr.DevsharanVerma,Scientist-B (Chemist)Central Ground Water Board, Nagpur
Precaution from lightning a natural disaster and management	Mr. Ankush Gawande, District Disaster Management Officer, Nagpur

The following recommendations were made at the end of the programme. 1. Awareness programme should be arranged on various disaster events such as heat wave, lightning, flood & drought, earthquakes, storms & cyclones etc. 2. To understand effect of extreme disaster events such as agricultural, poultry farms, dairy, fishing, animal husbandry, transports, industrial production, human health etc. 3. Frequent interaction should be arranged of different groups such as farmers, teachers & students, forecasters, administrators, planners etc. 4. Places of the discussion should be selected in respect of the

occurrence of events in the respective areas which are affected by the events. 5. Workshop should be arranged at various places i.e. rural & urban areas, district places & block levels etc. 6. To promote awareness programme in human ecology. 7. To determine relationship between environment and climate change. 8. To recognize impact of environment and human life. 9. To disseminate weather forecasting and warning of extreme weather phenomena. 10. To project the role of biometeorological parameters among students, teachers and common people. 11. To develop one platform of network of like interagency of weather forecasters, administrators, NGO, disaster managers etc 12. To disseminate the Operational forecast of temperature over India in short, medium and extended range timescale to various stakeholders. 13 To provide extended range forecast (Up to 2/3 weeks) of extreme weather in guidance for Agriculture, Power sector, Health Sector etc 14 To avoid conducting School & university examinations during heat wave. 15. To create awareness for taking precautions & preventive measures during extreme weather among the people. 16. To prepare long term plan for safety during natural hazards. 17. To determine Quality & quantity of water for good health & progress in life

7. IMS Noida Chapter

IMS NOIDA Chapter conducted teacher awareness program called 'Weather Environment and Climate In School Education (WISE)' for Geography and Science Teachers of Secondary and Higher Secondary Schools during 16-17 August 2018 in collaboration with National Centre for Medium Range Weather Forecasting (NCMRWF) and Vigyan Prasara (Department of Science and Technology, Govt. of India) at the training hall of NCMRWF, A-50, Institutional Area, Sector 62, NOIDA. It was partially funded (MoES GoI) by IMS National.

The registration process of the workshop started at 9:00 AM on 16 August 2016 and registration materials along with "Weather Kits", an educational material designed and developed by Vigyan Prasara were distributed to the teachers. The inauguration function of the workshop started at 9:30 AM on 16 August

2016. Dr. Arvind C. Ranade, Secretary, IMS Noida Chapter officiated the inauguration function and invited the chief guest and other dignitaries to the dais as well as presented floral bouquet to the chief guest on the dais. The Chairman of IMS NOIDA Chapter, Dr. Ashish Routray welcomed the chief guest Prof. S. K. Dash, President IMS National Chapter, Dr. E. N. Rajagopal, Head, NCMRWF, Prof. Ajit Tyagi, Ex-president IMS, Air Vice Marshal (Retd.), the selected workshop teacher-participants from various schools and IMS members of NOIDA Chapter, scientists from NCMRWF and Vigyan Prasara to the teachers training workshop on Weather, Environment and Climate In School Education (WISE). The chairman, NOIDA chapter explained the main objective of the workshop and its importance. The chief guest, Prof. Dash in his speech emphasized the importance of the weather and climate in our day to day life, career prospects for the interested students in this subject, etc. The other dignitaries also highlighted the importance of the workshop, role of a teacher in the society and the benefit to acquaint the teachers who will actually build the future generation of weather and climate scientists of our country, future aspects of subject weather and climate etc.

After the inauguration function, the workshop started with lectures as per the scheduled program. During the two days workshop, a total of 11 lectures on different topics mainly concerning fundamentals of the weather and climate sciences were delivered by eminent scientists from various organizations. During the workshop, the teacher-participants also visited the High Performance Computing (HPC) facility at NCMRWF and participated in the daily NCMRWF map discussion. At the end of Day-2 (17 August 2018), there was a discussion forum on the take-away from the workshop to their respective school syllabi and general feedback. During this session, few teachers presented their views about the workshop and syllabus i.e. necessary modification required in the workshop lectures to avoid repetition of the topics, more basics about the weather and climate sciences, request to conduct this workshop more





frequently, facilitate regular visits to weather stations, access to hands-on weather data sets to understand weather pattern, etc. So it will help the teachers to update their knowledge and teaching the students on weather and climate sciences in a better way. The teachers submitted their filled feedback forms with more comments/suggestions about the workshop and usefulness of the workshop in their teaching curriculum of school.

Finally, the participation certificates were distributed in the valedictory Session of the workshop to the teachers by Prof. Ajit Tyagi, Ex-president IMS, Air vice marshal (Retd.) in the presence of the executive members of IMS NOIDA chapter and scientists from NCMRWF and Vigyan Prasar. The teachers training workshop i.e. WISE concluded with a vote of thanks given by Dr Arvind C. Ranade, Secretary of IMS, NOIDA chapter, followed by high-tea. The training workshop was successfully conducted due to the immense help and contributions from the Executive Council members of NOIDA Chapter, NCMRWF and Vigyan Prasar.

8. IMS Pune Chapter

i) IMS, Pune Chapter (in association with IITM & IMD) organized 3-days 'Teachers' Training Workshop on Meteorology' at IITM, Pune during 30th August to 1st September, 2018. The first two days' program was sponsored by MoES/IMS National Council, Delhi and the program on 1st September was sponsored by Director, IITM, Pune. The workshop was inaugurated by Chief Guest Prof. Ravi Nanjundiah (Director, IITM) and Guest of Honour Dr. Ajit Tyagi (Ex DG IMD & Ex. IMS President). Dr. A.K. Sahai (Head, CR&S, IMD, Pune and Vice President, IMS) was also present. On this occasion, the Bulletin of IMS-P (BIMSP) was released at the hands of the dignitaries. The workshop was attended by 42 participants (school & college teachers and coordinators) from various parts of the country, mainly from Maharashtra (representing more than 26 Schools/ Junior Colleges/ Organizations) and learned faculty (from IITM, IMD & CDAC) for delivering lectures to the participants. 30 participants

were from Pune City and rest 12 were outstation participants. Lectures were delivered by Dr. J. R. Kulkarni, Dr. A. K. Sahai, Prof. Sulochana Gadgil, Mr. R. R. Mali, Dr. G. Pandithurai, Dr. A. K. Srivastava, Dr. S. D. Pawar, Mr. S. M. Jamadar, Dr. Dinesh M. Rase, Ms. Latha Sridhar, Dr. Divya Surendran, Dr. Santosh Kulkarni (CDAC), Dr. T. P. Sabin, Dr. B. S. Murthy and Mr. S. Mahapatra. The participants were also taken to the IITM laboratories and the observatory of the Meteorological Training Institute (MTI) of IMD by IITM & IMD coordinators. During the valedictory function, the Chief Guest Dr. G. B. Pant gave away participation certificates to the participants. Feedbacks were taken from the participants and the Scientific & Financial reports & feedbacks were sent to IMS NC, New Delhi.

ii) IMS-P reactivated publishing the Pune Chapter's Newsletter in the form of "Bulletin of IMSP" (BIMSP) on monthly basis. The August issue of BIMSP was released by Prof. Ravi S. Nanjundiah, Dr. Ajit Tyagi, Dr. A. K. Sahai, Dr. J. R. Kulkarni, Dr. G. Pandithurai and Mr. S. Mahapatra. The September and October issues of BIMSP have been released.

iii) IMS-P had been associated with several events of IITM on 19th September 2018, at IITM campus (as part of MoES), GOI's "Swachhta Hi Seva" campaign during 15th September to 02nd October 2018; the "Green Good Deeds" campaign of the Union Ministry of Environment, Forest & Climate Change (MoEF), etc.]. On this occasion, about 100 students from 10 selected Pune Zilla Parishad schools and their teachers were invited. Mr. S. Mahapatra delivered a lecture on "Indian monsoon rainfall and its prediction" (in Hindi) to these visitors. Dr. J. R. Kulkarni, Dr. H. P. Borgaonkar and Dr. Kothawale interacted with the students. Dr. J. R. Kulkarni took lead role in answering various questions from the students and their teachers.

iv) IMS-P arranged an One Day Scientific Visit to Supe, Nagar Road on 6th October 2018, for witnessing the Wind Mill & Farm of Suzlon Ltd. and their conversion process of Wind Energy into Electrical Energy, after taking necessary permissions from Suzlon Ltd. About 45 persons enthusiastically participated



Dignitaries on the dais during Teachers' Training Workshop; and Release of Bulletin of IMS-P



Group photograph of dignitaries, faculty and participants at IITM, Pune on 30th August 2018

in this scientific visit and the event was highly successful. Dr. J. R. Kulkarni and Mr. S. M. Jamadar took lead role in coordinating this

visit and they were supported by Mr. S. Jose and Mr. S. Mahapatra.