

***Proceedings of the of meeting of Core  
Group VI for steering activities South  
Asia Forum on Agricultural  
Meteorology***

*Under the Theme:*

**Build capacity in ICT program  
management and also build such cadre  
and mentor them for ensuring continuity  
of Agromet success and innovation  
sustenance**

**Date: 20<sup>th</sup> March 2021**

**Time: 1600 Hrs IST to 1900 Hrs IST**

**Venue: Virtual Platform (The Google meet)**



The meeting was started by welcoming all the members of the Core Group VI (list of the members is available in Annexure I) for steering activities of South Asia Forum on Agricultural Meteorology (SAFOAM) under the theme “**Build capacity in ICT program management and also build such cadre and mentor them for ensuring continuity of Agromet success and innovation sustenance**”. **Dr. N. Chattopadhyay** said that he was really thankful to all the members of Core Group VI for participating in today’s meeting and whole heartedly supported the formation and on-going activities of SAFOAM. He mentioned that the present theme was very important as it would cover wide range of activities of SAFOAM.. He added that it was sure that under the presence of all the honourable advisors and all other esteem members today’s meeting would be highly productive and useful. , Before, handing over to **Mr. Abhijit Basu** for moderation of the meeting, **Dr. Chattopadhyay** presented a brief introduction of **Mr. Abhijit Basu** Founder and CEO Smartex Cognitive, XCED, APAC CEDMA, California, USA.

At the outset **Mr. Abhijit Basu** made couple of comments. He said that most of members in the meeting have ground experiences and thus they knew what were the challenges and how ICT could help and what were the ICT initiatives that might help the whole cause. According to him, ICT is an enabler. Two pieces of ingredients of ICT are technology and people. Like for other tool, it should be with capable hand to use it full potentials. ICT implementation consists of success and failure and the people who run the project and uses the existing and to be used technology always bring the actual outcome. He assured that he would help the proposed activities of SAFOAM by sharing his knowledge of latest technology. As far as customers experience in such initiative are concerned, he commented that farmers in the field are our customers, the people helping the farmers are customers and who use the technology are the customers. He said that we might be regarded as think tank putting together the ideas. According to him ICT may be regarded as tool for connecting strategies to actual implementation. He requested **Dr. L.S. Rathore** to help and share his rich experience on implementation of ICT in producing and communication of information particularly on agromet advisories.



**Dr. L.S. Rathore**, Former Director General of Meteorology & International Consultant, The



World Bank said that novelty of all of us was that we were all doing the social service by helping food security and livelihood of farmer during our professional career and also post retirement period. The arena which we are currently addressing here how we are using of meteorological information in enhancing the farmer's better livelihood. According to him, at this juncture and challenges, three things are very critical & important

under SAFOAM activities. These are (i) organisation of information of weather climate, crop, soil & pest data from diverse sources and driving the data for the decision-making process system; (ii) organising hand holdings for the countries, where operational AAS in infancy stage, for setting up agromet system in a relatively short time by grasping entire information on weather, climate, crop, derived information like crop weather relationships etc. This would be done through using tools in semi-automation mode deriving data, knowledge resources., (iii) thirdly use of ICT in dissemination of information and among the three, more weightages should be given on this point. He added that the value of the information was usually determined by the question rather dynamic questions received from the user community. He was referring about the value of the information communicated to farmers and also multi way of communications from all those directly or indirectly involved in the agromet advisory services. He requested to Mr. Basu and all the senior members, who spent most of the service career for the welfare of the farmers, to throw more light on the three aspects more in today's meeting, At the end, he elaborated the transformation from traditional packages to modern day of production and utilisation of Numerical Weather Products in weather forecasting which are being used more ease and confidence. He also requested **Dr. Akhilesh Gupta** to give more light on this aspect.

**Mr. Basu** appreciated **Dr. Rathore** so nicely touched upon the traditional and contemporary aspects but, according to him, information is the enabler and the pull of the information as per the customer experiences are more important, He suggested that the third aspect mentioned by **Dr. Rathore** may be given first priority and focus to get the more sense of the customer. **Mr. Basu** requested **Dr. Akhilesh Gupta** to give more in sight on this subject and present his thoughts in this respect.



**Dr Akhilesh Gupta**, Adviser/Scientist-G & Head, STIP-2020 Secretariat, Head, Policy Coordination & Programme Management (PCPM) Division, Head, Strategic Programmes, Large Initiatives and Coordinated, Action Enabler (SPLICE) Division and Climate Change Programme, Department of Science & Technology, New Delhi was mentioning

the inception of agromet advisory services in India with five units initially and also extension of these units at district level. He added that this extension was happened not only technology of producing the information has changed but also the technology of consuming the information has changed and transform the thing. He described how the transformation of weather forecast from NWP (T80 models) over synoptic charts based generic weather forecast in producing the accurate weather forecast and its uses in agromet advisories. He also

highlighted the role of ICT in information production and information dissemination. According to him, though initially the dissemination was relatively slow due to non-advancement in ICT, but today there is a sea-change in dissemination of information in urban and rural areas due to huge progress in ICT in dissemination particularly through different types of upgraded phones including mobile phones and communication of information through SMS, touch screen etc. He was mentioning about the substantial increase in tele density from 6% in 2003 to 68% today. As on today penetration of information is there and it reached to rural areas; however, there is need to better products and contents in the information usable to the farming community. He said that quantum communication is coming very fast and route with multiple kind of information, interacting with each other and ultimately reach out to user community. He also mentioned big technology like artificial intelligence, ML and others would be used extensively for next two years; however, we should be ready to use it. Huge kind of opportunity would be available and we should ready for that and grab the opportunity

At this point **Mr. Abhijit** commented that data structure and verifiable data should be perfect as this would ultimately build the powerful AI

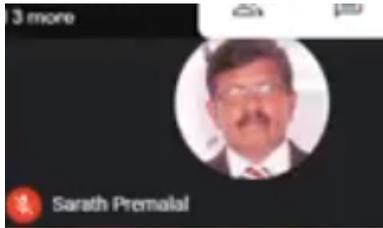
**Dr. Chattopadhyay** mentioned how the perception on ICT changed over the last decade particularly in dissemination of information to the large number of farmers through SMS under PPP mode in India. He also elaborated the different key areas, i.e., ICT, mentor & success stories, taken for in depth discussion in the meeting

At this stage of the meeting almost all the members have joined and a quick round of introductions of the members was made. During the introduction all the members of the group informed their respective assignments during professional services for rendering the services in agriculture and especially to agricultural meteorology. And those who have retired, mentioned how they are involved with the welfare of the farmers. In addition to that all the members mentioned their close association with the subject of agrometeorology in the past and present as well.

**Dr. Nachiketa Acharya**, Associate Research Scientist, International Research Institute for Climate and Society (IRI), The Earth Institute at Columbia University, NY, USA introduced himself as statistical climate forecaster in IRI, Columbia, USA. He said that earlier in 2008 he worked as project staff under Extended Range Forecasting System (ERFS) project



in India and producing the information tailored to the farmers in India. At present stationed at IRI, he has been working as climate scientist on improved version of the S2S forecast tailored to the farmers & involved in the activities of SASCOF, ASIANCOF, other ARCOFs. In addition to that, he is actively involved in BMD's capacity in improvement of weather forecast and also similar activities in nine African countries particularly improvement of capacity of sub-seasonal forecast in respect of when will start rain, dry spell, wet spell etc. He informed that he would really help the forum to share his experience on S2S and what are the limitation and tailoring the information to the farmers in South Asian Region (SAR).



At the outset, **Mr. KHMS Premalal**, Former Director General of Meteorology, Sri Lanka appreciated the efforts of organisation and discussion on different fields of agromet advisory under SAFOAM. He also informed his association with the operational agromet advisory services in Sri Lanka. He said that still the correct and timely information is not reaching to the farmer in Sri Lanka. However, he has a high hop that this forum would improve ICT capacity in dissemination of information as well as developing specific bulletins in member countries in South Asia including Sri Lanka.

While introducing himself in front of the members, **Dr. Gupta** said that the initiative of launching SAFOAM for the services of the farmers in SAR was indeed a great job. He said that he was sure that the present forum would be going to be a very important association which would contribute in a big way in SAR. He also stressed for three areas (I) Interactions and organising of meetings involving the participants/representatives of SAR, which have already been taken up (ii) sharing of knowledge especially the best practices in operational agrometeorology with the member countries and (iii) after the cessation of the on-going pandemic situation, a physical meeting might be arranged inviting the representatives in SAR and the support and also funding required for such meeting/works would be extended by the Department of Science & Technology, Govt. of India.

After introducing himself **Dr. Rathore** gave emphasis on development of framework on the agromet services in SAR and outlined three areas among other activities under SAFOAM. These are: (i.) going to do such areas which has not been done/doing before by the operational agencies and nobody has touched yet. He said though WMO and WB have initiated some work in this region, still there was a lot of voids in agromet system in SAR. (ii) introduction of e-community radio in dissemination of information in local languages in clusters of villages and capacitate large number of people at community level as it needs minimal cost, (iii), ICT tools should be used for capacity building programme which again an area of development of tools as at present, we have lot of resources

**Mr. Basu** briefed himself and shared his experience with the concept of customer in execution of project during so many years. He informed the significant variability of three aspects being discussed in today's meeting i.e., ICT, mentors and success stories in SAR, however there is presence of ICT in all the member countries. He discussed at length the role of ICT in data structure and management, ICT for capacity development and ICT for success stories. He wanted to know from **Dr. Gupta** about the reach of the information to the users.

In reply to the query of **Mr. Basu**, **Dr. Gupta** said that this, i.e., the issue of reach of information to the user, might not at present valid for India. At present mobile phone penetration is in rural and remotest villages in India. He said initially such activity started with progressive farmers which is not the scale now. According to him scale of dissemination is not an issue. Thus, information reach is there in rural areas but ease of content is missing. He said that his active involvement in the Science and Technology Innovation Policy Formulation initiative and an outcome of the project, he inferred that right information at the right people and right language was missing. He continued that at present 291 community radio in India were operating different parts of the country. He said that a pilot study was made by the Department of Science and Technology to observe the impact of disseminate information in 13

languages from 25 community radio centres, worked in a bimodal way. According to him, the observations were very encouraging and 2.5 lakhs feedback were received. He concluded that there was no issue in information penetration in rural areas; the issue was the lack of content penetration.

**Mr. Basu** said that though information network penetration was happening, but he was not sure how the content information actually usable by the farmer are taking place. He said that as farmers were now ready to take the information, more emphasis might be given on this issue. He also mentioned about the universal language for content in SAR including the touch screen where graphical representation of content is made available. He suggested that the content should be useful, understandable and applied in farmer's field with credentials. **Dr. Chattopadhyay** elaborated the reach out of the content in India by mentioning the economic assessment reports released by the Ministry of Earth Sciences (MoES), Government of India and also the reports prepared in Nepal & Bangladesh based on linker scale **Dr. Nachiketa** mentioned that State Agricultural Universities (SAUs) in India are doing excellent job in reaching out the content to the farmers in India and nowhere such system exists in SAR. In addition to that, the number of NGOs and other intermediaries are also involved in interaction as well as sharing of the content to the farmers. Considering Indian system as benchmark, he suggested for establishment SAU type system and also training to trainers (TOT) in the member countries in South Asia. **Mr. Basu** asked **Dr. Rathore** whether intermediaries are absolutely necessary.

**Dr. Rathore** said that intermediaries would always add value to the agromet system. He said that our role would be to enhance the capacity to understand with much ease and skilful manner and share the information to the farmers. He also elaborated the role of agrometeorology in agricultural marketing system and its rapid transformation across the country. According him, this is new and emerging area. He also suggested to capacitate the service provider in the process data for farmer and other users and linking to market

**Dr. Gupta** mentioned about the important project of potential of commercialisation on use of meteorological products & data in 2009. He elaborated the huge potential of agricultural market for national interest. According to him, private companies may be roped into the system. He said that a national policy might be framed on Public Private Partnership (PPP) mode for greater participation of private sectors in this system so that the objective of the government of India would be fulfilled. Additionally, he said that use of manpower, knowledge pool, dissemination technology including touch screen should be used to communicate the seamless information in local languages and their own languages from producers to the users.

**Mr. Basu** discussed elaborately the soil moisture sensors particularly the factors influencing soil moisture, calibration data, data acquisition, generation sharing of information with farmer also available in real time and its application. He said that this might be applicable to any data. So far discussion made, he commented that air ways might be the best way of dissemination of information along with the facility of chat radio, FAQ etc. **Mr. Basu** asked **Dr. Gupta** to comment on community radio based on his ground level experience.

**Dr. Gupta** has shared his experiences in different parts of the country including the north-east during the policy level initiative on DST's consultation programme on science. He added that extraordinary responses were received from the rural areas in the country in the form of feedback on the information sent through community radio especially in the north east, island

He inferred that though there is some limitation, community radio for dissemination of information should be used as a secondary channel of information to fill the gaps along with the other modes of dissemination.

**Dr. Chattopadhyay** said that in addition to the above dissemination system, the concept of Farmers awareness programme and Climate Farmer Field (CFFS) School might be included as climate resilient programme in SAFOAM. He aptly described the WMO's initiatives in organising FAP programme in Latin America, Africa and South Asia and CFFS in Indonesia.

**Mr. Abhijit** requested other members of the meeting to express their views particularly other points of the meeting especially on capacity building.

**Dr.N.V. K Chakravarty**, Retd.Principal Scientist (AgMet)& Head, Agril.Physics, ICAR-IARI, New Delhi, India was referring the issue of PPP model in AAS raised by **Dr. Gupta**. He said that sometimes the competitiveness and cooperation spirit conflicts under PPP mode and ultimately the purpose PPP mode could not be materialised. Thus, more efforts are required to establish cooperative atmosphere to resolve the issues. He was mentioning about the migration of rural farmers to urban areas and suggested to make agromet advisory service more popular and farming more profitable by proper use of climate service in agriculture



**Dr. GGSN Rao**, Former Project Coordinator (Agrometeorology) I/c, AICRP on Agrometeorology (AICRPAM), ICAR - Central Research Institute for Dryland Agriculture (CRIDA), Hyderabad, India discussed on traditional to mechanization, migration of farmers from village to urban, ways and means of profitable agriculture.

Dr. Rao was also of the same opinion that through there is substantial improvement in ICT in dissemination of agromet advisories, still there is lacuna in the content of the same. He suggested that the content should be attractive and convincing to the farmers taking up the bottom-up line of approach. He informed that his interaction with the farmers showed that farmers need the very high resolution i.e., 1km weather forecast i.e., at village level. He stressed for issuing alert using nowcasting also to the farmers under extreme weather conditions instead of issuing generic agromet advisories. He said that model products derived from past weather, weather forecast, crop and pest information should be used for operational agromet advisory services. He also stressed for specific agromet advisories for urban, rural, coastal, low rainfall areas etc. He also agreed to **Dr. Rathore's** observation that market information would be very useful to the farmers for disposal of his harvested products in appropriate markets for better price.

**Dr. Gupta** appreciated the points raised by **Dr. Rao** on the need of high-resolution weather forecast. He informed that in India GFS and unified models were being used for high resolution weather forecast and also informed the schedule for the preparation of next generation weather forecast at finer scale. Also informed about NWF, ECMRWF & IBM's intervention in

producing 1km resolution weather forecast. He advised to avoid mismatch in the scale of weather forecast and the area considered for issuing agromet advisories

**Dr. Rathore** said that large number of issues and problems aptly mentioned could not be resolved under this forum. This forum would not compete with any of the agency; on the contrary would, supplement the national initiatives, augment and add value which are available in our disposal. These aspects should be clear in our mind. This forum would supplement the activities to be taken up by the member countries with the available knowledge pools and finance, if possible. He said that initially to take up the low hanging fruits. He mentioned that we definitely need finance and support without these nothing would be fruitful. Once again, he mentioned that at this point of time there was a need to identify the low hanging fruits and ride on kind of transformative process which can be done or happen with the existing data available freely in public domain and our disposal would be knowledge pool. He continued that we might seek information from the govt sources; however, it would take lot of time and energy. Thus finances, He said that out of the all the six themes identified under SAFOAM, this is the theme and web portal, we might generate business model, generate information marketable and ultimately generate revenue as well. Thus, we could set up arm support, data to donor agency as we need sustainable economic model and kind model. We might identify plethora of problems but select few things important to farmers and intermediaries and Govt to propagate it as ultimately govt wherefrom we seek support.

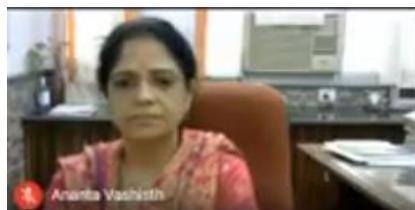
**Mr. Basu** said that business model is a good example wherefrom we could create success. He continued by saying that

1. Whole value chain is content which can help anybody for the business model. Content and knowledge pool help to create business model like soil moisture information for insurance.
2. Doing for somebody where from revenue can be generated give finances.
3. It has to be sustainable.
4. Content and services knowledge pool can be extended to the member countries taking the Indian conditions as benchmark.
5. Possible assistance may be provided the member countries and in this regard three basic information are required and these are weather, market and free data source.

**Dr. Chattopadhyay** said that as there is substantial variability of data and services among the countries in South Asia, slow and steady approaches from very elementary to advance stage of upgradation would be required. As agromet system is sustainable and there are number of successful case studies are available in India and Bangladesh, these may be shared with the other member countries to create interest and confidence in operational agromet advisory services. He explained how an initiative could be started with freely available satellite data on drought monitoring and also preparation of agromet advisories based on sub-seasonal forecast after making all the necessary home works i.e., sharing of data, organising specific training etc.

**Mr. Abhijit** agreed to what **Dr. Chattopadhyay**. He said that a basic level of benchmark of service along with the knowledge, which we have, in SAR is absolutely. Afterwards, further initiatives need to be taken up. We should see that there would be no distortion of interest while executive the programme on SAFOAM. He once again said that e-community radio concept could be a viable solution as its low cost and packet size is not so big and additionally number

of activities like FAQ, feedback, chat system could be performed. **Mr. Abhijit** requested **Dr. Anatha** what could be her role in SAFOAM activities in elevating the agromet services in the SAR

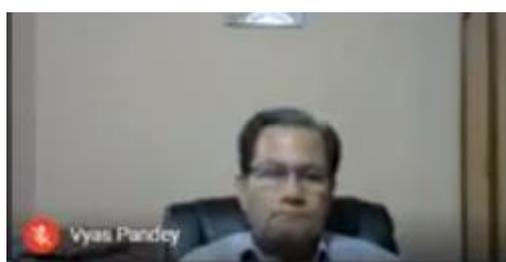


**Dr. Ananta Vashisth**, Principal Scientist & Nodal officer, GKMS Project, Division of Agricultural Physics, ICAR-Indian Agricultural Research Institute, New Delhi, India informed in detail the preparation and dissemination of agromet advisories for NCR, New Delhi. She commented that special attention should be given for multichannel dissemination system along with AI & ICT Models for real time communication of information to the farmers. She was emphasising on organisation of FAP and also share the success stories in India to create interest among the farming community on the necessity of these services in the member countries. She talked about the training modules particularly on weather beneficial and impact on crop; soil moisture, evapotranspiration irrigation, management of crop which might be imparted to the member countries. There was discussion on the proposed strategies in terms of modules, resource persons etc. for organising training programme.

**Dr. Rathore** mentioned for proper strategies of training for the new entrants from the member countries. He said in India, comprehensive training programme for 21 days are arranged at different levels covering the entire spectrum of agromet advisories from weather forecast, its translation, tools, to dissemination to feedback, economic assessment etc This training programme consists of different modules. As per the need of the member countries these training modules would be selected. Training would not be given in one go; on the contrary in fragmented manner for those who are at the initial stage, simple module on forecast, observation and translation of the same into agromet advisory might be chosen. Then after having the field experience, training with additional modules might be taken up.

**Dr. Chattopadhyay** said with satisfaction that the technical officers of GKMS project of India have agreed in principle that they would assist training to the new entrants from the member countries. He added that a proper institutional mechanism would be set up with the Governmental organisation before requesting them to be part such training programme.

**Dr. Vyas Pandey**, Emeritus Scientist (ICAR), President, Association of Agrometeorologists, Former Professor and Head, Department of Agricultural Meteorology Anand Agricultural University, Anand, Gujarat, India informed that the Agromet Association would be going to organise virtual training programme on “Climate Risk Management” as per the request from India Meteorological Department. The proposed training would be organised in 17 chapters of the Association inviting participant from neighbouring states. The expert members in the Association would be the resource persons for providing the training



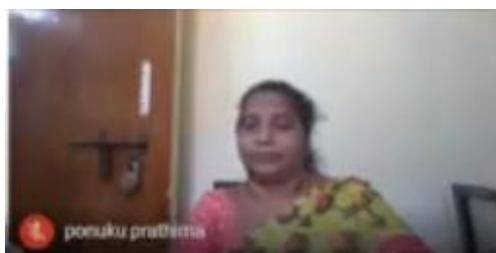
**Dr. Rathore** said the beauty of these days that under the combined efforts of SASOAM, SAMA & Agromet Association in India, it is possible to organise such training programme and other activities. He added that Government needs these services as Government could not do all the works as their hands were full. He suggested to rope those who retired from service might be requested to provide training voluntarily. Besides, effective mechanism might be built

up for the people who are outside and inside the Government. Once everything would be clear in our mind what we are going to do, government may be approached for further cooperation.

**Mr. Abhijit** said that from the foregoing discussion it was clear that we have services, medium what would be the course content and its availability and the resource persons who could give the training and how to get the feedback on digital platform. He also said that it appeared that similar kind course content in India, resource persons from India. Agromet association in India, and other organisations in India might be involved in the training programme.

**Dr. Rathore** said that one thing might be clear in our mind that we would not provide service. Providing service is herculean task and might not be feasible. However, we would contemplate by creating web portal which have value to the service provider, organising capacity building programme, introduction of e-community radio, as an extended arm that become role model for the SAR and ultimately prepare the framework that could be modified by the intermediaries and user group. He said today we were doing brainstorming and came to know where we were; afterwards different core groups would address different issues in the proposed workshop where further deliberation and refinement of the roadmap of SAFOAM would be made in holistic manner. Third phase related implementation which are far off but keep in mind

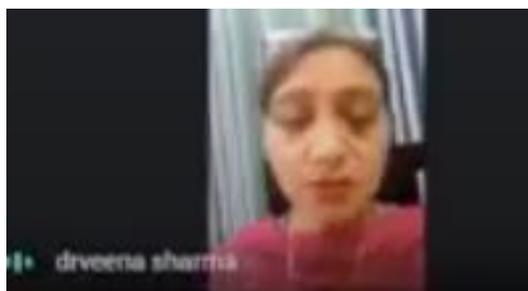
**Dr. Chattopadhyay** tried to present a clear idea how to proceed from the Core Group meetings to implementation phase through organising workshop, preparation of road map etc. He said that he has a high hope that SAFOAM would be a reality by developing number of linkages between SAFOAM headquarters to individual chapters in member countries and government to government etc as envisaged by all of us in spite of hurdles.



**Dr. T. Prathima**, Sr. Scientist (Agromet), RARS.Tirupati., Andhra Pradesh, India nicely informed the different dimensions of agromet advisory services being implemented successfully by her and team in Andhra Pradesh even upto block level and disseminating the information to Gram Panchayat level. According to her e-community radio for

dissemination of information and other related activities would surely help the farming community. She said that the lacuna and needs in other countries should be understood first and accordingly the related information on pest weather information and other related information might be shared and this would be used after proper validation including organising training programme to effective use such information in the respective country.

**Dr Veena Sharma**, Technical Officer/Assistant Professor, Agromet Section, SKUAST-Jammu, Jammu, J&K stressed upon the importance of past weather data for development of ICT tools and also irrigation advisory. Like weather data and weather forecast, soil moisture information is also equally important for timely and amount of irrigation. She also discussed the importance of portal including



the languages to be used in the portal. According to her, it is very much necessary to know the correct information on agro-ecosystem, cropping pattern, weather, climatic condition in the member countries before helping them in preparation of agromet advisories. She stressed for

the need of automation in preparation of high resolution agromet advisories correctly and effectively useable by the farming community.

**Dr. Nachiketa** wanted to know whether RIMES has taken any initiative in automation of preparation of agromet advisories. **Dr. Rathore** said that such initiative has been made in Agromet Project in Bangladesh and the same could not be materialise and it was in developmental stage. **Dr. Chattopadhyay** also said that RIMES has developed ADSS system and experimentally for preparing the advisories for limited number of districts. **Dr. Rathore** mentioned similar project was also taken with Triple IT, Hyderabad but the outcome of the project was not encouraging on the user's point of view. Similar work was also carried out in Tamil Nadu Agricultural University. Thus, lot of work was carried out in this respect but because of the ideal data base not only weather but also crop, soil etc, such project could not be in place in operational agromet advisory services. **Dr. Chattopadhyay** also explained the existing automation of agromet advisories by RIMES in India Meteorological Department.



Like other Technical Officers of GKMS project in India, **Dr. Sanjay S. Wanjari** Ex. Associate Professor Agronomy /Agromet, Department of Agronomy: Akola (MS). Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Maharashtra, India informed how actively he was working for the preparation of agromet advisories particularly in Vidarbha region, Maharashtra. All the technical officers under GKMS project mentioned the on-going activities and also agreed to share the knowledge gained so far to the fellow agrometeorologists in the member countries. It has also been said that a proper mechanism would be developed to arrange capacity development programme involving the technical officer, GKMS project.

**Dr. Chattopadhyay** informed that **Dr. Nachiketa** was very resourceful person in generating sub-seasonal forecast and done good job in India, Bangladesh and now in African countries. He wanted to know how **Dr. Nachiketa** could help us in SAFOAM activities particularly use of sub-seasonal forecast in agriculture in SAR. In principle **Dr. Nachiketa** agreed to assist in generation of sub-seasonal forecast tailored to the farming community in member countries in South Asia. For better knowledge of the existing S2S, he explained the operational and experimental S2S systems in India & Bangladesh respectively. He opined that the output of sub-seasonal forecast needs to be different from seasonal forecast. He also described how IMD CFS model and IMDAA reanalysis data are being used in this regard. He said that he would explore how it would be possible to visit the member countries and help them to generate the sub-seasonal forecast. Alternatively, he said that IMD & BMD might take the lead role in organising such programme where he could be involved. **Dr. Chattopadhyay** appreciated **Dr. Nachiketa** for his willingness to cooperate in this regard and also for his idea in implementation of the same for SAR. **Dr. Rathore** also advised **Dr. Nachiketa** whether S2S could generate the information on sowing rain during monsoon season based on the threshold of accumulated rainfall available in CRIDA or IMD. **Dr. Chattopadhyay** also requested to explore to forecast flash flood in Bangladesh and Bhutan with sufficient lead time. **Dr. Nachiketa** said that each model has its own biases, he would try to value add to the SST corrected forecast generated by **Dr. Sahai** in Indian Institute of Tropical Meteorology (IITM) and could provide wet spell episode which could be combined with WRF forecast and ultimately be possible to provide inputs for sowing rain and flash flood. However, a lot of R & D would be required in this

regard. **Dr. Nachiketa** desired that SAFOAM could also take part in the SASCOF type of activities.

A quick round of discussion was made on the role on agency in weather data, weather forecast generation and also accountability of translated version of the later into the agromet advisory. It has been said that NHMS is surely accountable in providing weather data and development of weather forecast whereas those who use this information they are accountable to the Weather Department, if funding is coming from the weather department. In different countries, full operation as mentioned, there are some similarities and dissimilarities

At the end of the meeting Mr. Abhijit thanked all the members of the meeting for their inputs and good conversation on number of important areas particularly on the different aspects of data in decision making process and tools for ICT along with the ICT in producing, application and dissemination of advisories. Besides, organisation training in different perspectives were highlighted nicely. One of the important outcomes of the meeting would be the introduction e-community radio for dissemination and other interactive system. Productive discussion on automation and use of sub-seasonal weather forecast in agriculture were made. He was sure more discussion would be made in future to make the SAFOAM in reality.

### **Recommendations of the Meeting**

1. Under SAFOAM, activities which have not been touched/ done by any agencies, will be taken up.
2. There was a need to Identify the low hanging fruits and ride on kind of transformative process which can be done or happen with the existing data available freely in public domain utilising available knowledge pool
3. Efforts should be made to introduce of e-community radio in dissemination of information in local languages in clusters of villages and capacitate large number of people at community level as it needs minimal cost.
4. ICT should be used in producing, dissemination & capacity building programme in the member countries in South Asia
5. Penetration of better products and contents in the information usable to the farming community are the need of the hour.
6. Sharing of knowledge especially the best practices in operational agrometeorology with the member countries and
7. national policy might be framed on Public Private Partnership (PPP) mode for greater participation of private sectors in this system.
8. capacitate the service provider in the process data for farmer and other users and linking to agricultural market system.
9. Concept of Farmers awareness programme and Climate Farmer Field (CFFS) School might be included as climate resilient programme in SAFOAM
10. This forum would not compete with any of the agency; on the contrary would, supplement the national initiatives, augment and add value which are available in our disposal.
11. This forum would supplement the activities to be taken up by the member countries with the available knowledge pools
12. Artificial intelligence, ML and other state of art technology should be used in agromet advisory system.

13. It is essential to generate business model, generate information marketable and ultimately generate revenue as well for sustainable economic model.
14. As per the need of the member countries, training modules would be selected. Training would not be given in one go; on the contrary in fragmented manner. Effective mechanism might be built up for the people who are outside and inside the Government.
15. Initiatives to use of sub-seasonal forecast in agriculture in SAR.
16. Considering Indian system as benchmark, establishment SAU type system and also training to trainers (TOT) in the member countries in South Asia are essential

**Dr. Chattopadhyay** once again thanked all the advisors and all the members for their active participation, sharing their ideas and also patient hearing for an extended time period and also wishing to meet all virtually shortly and periodically

Meeting was ended at 19.00 hrs with vote of thanks

## *Annexure I*

### *List of the Members of Core Group VI for steering SAFOAM activities*

***Theme VI: Build capacity in ICT program management and also build such cadre and mentor them for ensuring continuity of Agromet success and innovation sustenance.***

#### ***Leader***

##### **\*\*Mr. Abhijit Basu**

Founder and CEO Smartex Cognitive, XCED, APAC CEDMA, California, USA

#### ***Advisors***

##### **\*\*1. Dr. L.S. Rathore**

Former Director General of Meteorology  
International Consultant, The World Bank  
Consultant, United Nations Development Programme (UNDP)  
Member, Advisory Board, National Disaster Management Authority (GOI)  
Member, Research Council CSIR-NISTADS  
Member, Appeal Committee, National Agricultural Education  
Accreditation Board, ICAR  
Vice President, Vigyan Bharti  
President, Society for Rural Improvement

##### **\*\*2. Dr. Akhilesh Gupta**

Adviser/Scientist-G & Head, STIP-2020 Secretariat, Head, Policy Coordination & Programme Management (PCPM) Division, Head, Strategic Programmes, Large Initiatives and Coordinated, Action Enabler (SPLICE) Division and Climate Change Programme, Chief Vigilance Officer (CVO), Room No 16B, Administrative Block, Department of Science & Technology, Technology Bhavan, New Mehrauli Road, New Delhi-110 016, INDIA

**3. Mr. KHMS Premalal**, Former Director General of Meteorology, Sri Lanka

##### **4. Dr. G. Srinivasan ,**

Chief Scientist, Climate Applications, Regional Integrated Multi-hazard Early warning System (RIMES), Asian Institute of Technology (AIT) Campus, Klong Luang, Pathumthani, Bangkok, Thailand

##### **5. Dr. Mrutyunjay Mohapatra**

Director General of Meteorology,  
Permanent Representative of India with WMO,  
& Member of Executive Council, WMO  
India Meteorological Department  
Mausam Bhavan, Lodi Road, New Delhi-110003

##### **6. Mr. A. Karunanayake**

Director General of Meteorology  
Colombo, Sri Lanka

**7. Dr. V. Geethalakshmi**

Director (Crop Management),  
Directorate of Crop Management,  
Tamil Nadu Agricultural University, Coimbatore, India -

**8. Dr. B.V.R. Punyawardene**

Principal Scientist/ Director, Natural Resources Management Center (NRMC), Department of  
Agriculture, Ministry of Agriculture. Colombo, Sri Lanka

**Members**

**\*\*1. Dr. Nachiketa Acharya**

Associate Research Scientist, International Research Institute for Climate and Society (IRI),  
The Earth Institute at Columbia University, Lamont Campus, 61 Route 9W, Palisades, NY,  
USA

**2. Mr. Zahiruddin Imampoor**

Director of Agricultural Statistics & Information System  
Ministry of Agriculture, Irrigation and Livestock  
Afghanistan

**\*\*3. Dr. GGSN RAO**

Former Project Coordinator (Agrometeorology) I/c  
AICRP on Agrometeorology (AICRPAM)  
ICAR - Central Research Institute for Dryland Agriculture (CRIDA)  
Santoshnagar, Hyderabad, India -

**\*\*4. Dr. N.V.K Chakravarty**

Retd. Principal Scientist (AgMet) & Head, Agril. Physics, ICAR-IARI, New Delhi, India -

**\*\*5. Dr. Vyas Pandey**

Emeritus Scientist (ICAR)  
President, Association of Agrometeorologists  
Former Professor and Head, Department of Agricultural Meteorology Anand Agricultural  
University  
Anand 388 110, Gujarat, India

**\*\*6. Dr. Ananta Vashisth**

Principal Scientist & Nodal officer  
GKMS Project  
Division of Agricultural Physics  
ICAR-Indian Agricultural Research Institute, New Delhi, India -

**7. Dr. AVM Subba Rao**

ICAR - Central Research Institute for Dryland Agriculture (CRIDA)  
Santoshnagar, Hyderabad, India -

**8. Dr Gopi Krishna Das**

Director farms (seed & farm) & Head of Department  
Agro meteorology  
Indira Gandhi Krishi Vishwa Vidyalaya  
Raipur, Chhattisgarh, India -

**\*\*9.Dr.Sanjay S. Wanjari**

Ex.ASSOCIATE PROFESSOR AGRONOMY /AGROMET,DEPARTMENT OF AGRONOMY: Akola (MS)444104.Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Maharashtra, India -

**\*\*10.Dr. T.Prathima,**

Sr.Scientist(Agromet),  
RARS.Tirupati.  
Andhra Pradesh, India -

**11.Dr..Arun Kumar Senapati**

RRS, BCKV  
Kakdwip, 24- Pgs(S)  
West Bengal, India -

**12.Dr.Shibani Chowdhury**

Agromet Field Unit  
Kakdwip  
South 24 Parganas  
West Bengal, India -

**13.Dr. Shiromani Jayawardane**

Director (Weather Forecasting)  
Sri Lanka Meteorological Department  
Colombo

**14.Ms. Anusha Warnasooriya**

Director (Climate and Agromet)  
Sri Lanka Meteorological Department,  
Colombo

**\*\*15.Dr. Nabansu. Chattopadhyay**

President, International Society for Agricultural Meteorology  
Executive Secretary, Global Federation of Agrometeorological Societies (Global FAMS)  
Former Deputy Director General & Head & Scientist F, Agricultural Meteorology Division,  
India Meteorological Department  
Former Chairman of Open Panels of Commission of Agricultural Meteorology, World  
Meteorological Organisation, Geneva  
Former Senior International Agrometeorological Technical Consultant, Agromet Project,  
Bangladesh  
Former Short Term Consultant: World Bank  
Alternate E-mail: nabansu\_c@yahoo.co.in

**\*\*16.Ms. Swati Chandras**

Agricultural Meteorology Division  
India Meteorological Department  
Pune

**\*\*17.Ms. Malathi Seetamraju**

Agricultural Meteorology Division  
India Meteorological Department  
Pune

**\*\*= Attended the Meeting**

*Photo Gallery*



