



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

Theme:

New Dimension of Agromet Advisory  
Services in hill region in South Asian  
Countries

**Date: 13<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 V (list of the members is available in Annexure I) for steering activities of South Asia Forum on Agricultural Meteorology (SAFOAM) under the theme “**New Dimension of Agromet Advisory Services in hill region in South Asian Countries**”. **Dr. N. Chattopadhyay** said that he was really thankful to all the member of Core Group V for participating in today’s meeting and whole heartedly supported the formation and on-going activities of SAFOAM. A quick round of introductions of all the members of the meeting was done. He mentioned that the present theme was very important as the science of agrometeorology and operational services in particular in plain land were comparatively better position present days than the hilly region. According to him, in the hilly areas, there are number of constraints like slope in the hill, insufficient weather observation, maintenance of observatories, large variation of temperature along the slope within a short distance, frequent extreme weather events, landslides etc. He also said that it has been mentioned elsewhere that remote sensing may solve a number of problems under such inadequate infrastructure facilities in hills. He said that he was sure that under the leadership **Dr. Archana Shrestha**, Deputy Director General, Meteorological Forecasting Division, Department of Hydrology and Meteorology, Kathmandu, Nepal and presence of all the honourable advisors and esteem members today’s meeting would be highly productive and useful. Before, handing over to **Dr. Archana Shrestha** for moderation of the meeting, **Dr. Chattopadhyay** presented a brief introduction of Dr. Archana Shrestha.

At the outset, **Dr. Archana** said that as significant areas in South Asia were in the hilly region and the challenges in providing the services in hills, compared to plain lands, were high, the theme of the meeting was highly appropriate. Afterwards **Dr. Archana** gave a detail presentation mentioning the different common issues and also some relevant issues pertaining to hilly areas.

**Dr. Archana** added that as within the hilly region there is diversity in weather, diversity in cropping pattern, etc. special attention needs to be taken up to handle these issues in preparation of crop and location specific advisories in hills. According to her, there is also need for dense observational network as inadequate observation network still persists in some of the member countries in South Asia Region (SAR).

Discussion was made on integrated agrometeorological information particularly on seamless weather and climate forecast that could help in taking up strategic and tactical decisions in agriculture meaningfully. As far as the skilful forecast and its utilisation in agriculture is concerned, data assimilation and model development, production of medium range and sub-seasonal to seasonal forecast were mentioned meticulously. It has also been suggested that customized agromet products

including the satellite products particularly in hilly areas would be useful for providing crop and location specific agromet advisories at very high-resolution scale in hills. Agricultural information particularly the crop state and stage and pest & diseases information varies considerably along the different locations in the hills. Thus, special care should be taken to record the ground observation which are used as a component in preparation advisories for the farmers in the hills. Here satellite information may serve efficiently. The idea of increasing the number of weather stations (at least one rain-gauge and on SSS) to understand local variation of weather and climate in hill areas was appreciated as weather/climate varies with a very short distance. Besides, following suggestion were made to improve the operational agromet advisory services in hills.

1. Development of forewarning models of pest & diseases is very important in hills. Pest weather relationship studies have not been done sufficiently; however, this aspect is very important to understand behaviour of insect-pests and diseases in relation to prevailing weather conditions. Such understanding would be beneficial for developing useful forewarning models. Developing thumb rule/forewarning models in terms of weather parameters on development of insects-pest & diseases may be very useful for quality agromet advisory services.
2. Crop-weather relationship studies have not been done sufficiently till date for different crops in a locality in hills. However, such types of studies are very important not only adoption of better crop management practices for increasing productivity of the crops both in terms of quality and quantity, but also generating quality agromet advisories.
3. Identification of the location specific weather hazards/aberrations/extreme events and prepare contingency crop plan according to the prevailing weather constrains in that locality, as well as also by considering experienced/observed changes of weather and climate of the locality.
4. Promotion of multidisciplinary research in agrometeorology is very important so as to identify crop management, disease pest management or evolving effective adaptation and mitigation strategies in view of impact of climate change.
5. There is the requirement of development of interactive and dynamic application (decision support tools), so as to support farmers by providing need based specific advisories to the farmers. Moreover, strengthening weather based agro-advisory services not only through use of modern technologies and tools, but also involvement of NGOs, government organizations, mainly by developing farmers to farmers contacts (farmers' network with the climate smart farmers in the nodes of the farmers net).

It has been discussed that because of difficult terrain, dissemination of agro-met advisory is challenging in hills particularly through extension services. It has been suggested that along with the conventional approach and along with mobile phones for dissemination, some innovative approaches in this regard might be thought off e.g., introduction of 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. Formation of WhatsApp groups of crops specific, block level farmers have also been suggested

An important discussion was made on the coproduction particularly in respect of collaboration between meteorologist and agriculturist at policy level, scientific and implementation level. Still there are some countries in South Asia, the operational agromet services either has not started or at the initial stage; more discussion should be made by the meteorologist and agriculture with the respective Governments to convince the need of the services under the climate variability and projected climate change. Besides, both meteorologists and agriculturists should jointly prepare road map on development of strategies, need for specific meteorological and agromet products and finally the implementation strategies for operationalization of agromet advisory services. One important point to take care of in the hills is micro climate-based advisory for which micro climatic studies are a must. Adoption of model villages for pest and disease app development and advisory based on such inputs can also be beneficial as a large portion of produce is lost due to diseases and pests. Studies on modification of microclimate in the crop field and animal houses are very important aspects not only for identifying better management practices of crop for higher productivity, but also for effective management of pests and disease management. It is to be mentioned that there are number of examples area available of controlling insects-pest and diseases through modification of crop microclimate without applying any chemicals.

As the agromet advisory services involve manpower at different level i.e., meteorologist/agriculturist, intermediaries and farmers, capacity building programme should be organized at different levels with appropriate modules so that better communication skill among meteorologists and agriculturist, farmers would be developed. More efforts should be required to make farmers weather information responsive. At the ground level. farmer awareness programme, farmer field schools should be organized to make the farmers more climate resilient.

At present the skill of the weather forecast at different temporal and spatial scale are different in the member countries in South Asia. Thus, under the SAFOAM, regional collaboration on weather/climate forecast would be very helpful. Indian Institute of Tropical Meteorology & India Meteorological Department jointly issue sub-seasonal weather forecast for South Asian region. Some mechanism may

be established for data sharing of meteorological observation across the South Asian Region (SAR). This would definitely help in improvement of weather and climate forecast in SAR. It has also been 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. 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. Sharing knowledge and lessons learned from regional projects on development of standard agromet products (especially in hilly regions) not only help at technical level but also in the implementation (national) level in operational agromet advisory services in the member countries in South Asia.

Networking among the member countries need to be improved. Annual/biannual South Asian Agricultural Meteorology Workshop may be arranged. It is also suggested that SAFOAM could also take part in the SASCOF type of activities. It was also suggested to organise webinars on important topics on agrometeorology & monthly e-meet to discuss their feedback and other problems. Cooperation amongst member countries for exchanging ideas through organizing seminars, trainings etc were also highlighted.

Curriculum development on agriculture meteorology under Department of Meteorology of the Universities and Agriculture Universities in South Asia and proper strategies of training for the new entrants from the member countries were discussed elaborately. It was said that 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. Training on weather smart advisories to location specific undergraduates was also suggested.

It has been informed that a number of countries in South Asia have initiated project on climate change adaptation in agriculture. Such initiative may be shared with other countries for better livelihood and food security of farmers in SAR. Ultimately SAFOAM may share and contribute its inputs on Strategic planning/vision for the Climate Change Adaptation in agriculture in South Asia to in IPCC Reports.

## **Recommendations of the Meeting**

1. Special attention needs to be taken up to handle the diversity in weather, large variation of temperature along the slope within a short distance, frequent extreme weather events, landslides diversity in cropping pattern, etc in preparation of crop and location specific advisories in hills.
2. . There is need for dense observational network as inadequate observation network still persists in some of the member countries in South Asia Region (SAR). Full utilisation of remote sensing data/information/ products may be explored especially for the unrepresentative area in respect of weather observation for preparation of agromet advisories.
3. Development of customized agromet products for hills should be made.
4. Development of forewarning models of pest & diseases & crop-weather relationship & promotion of multidisciplinary research in agrometeorology in hills should be made.
5. Identification of location specific weather hazards/aberrations/extreme events and prepare contingency crop should be done.
6. Introduction of community radio in dissemination of information in local languages in clusters of villages and capacitate large number of people at community level should be made.
7. Promotion of micro climate-based advisory based on micro climatic studies should be made.
8. Organisation of capacity building programme at different levels with appropriate modules so that better communication skill among meteorologists and agriculturist should be developed.
9. . Annual/biannual South Asian Agricultural Meteorology Workshop should be arranged.
10. Coproduction particularly in respect of collaboration between meteorologist and agriculturist at policy level, scientific and implementation level is recommended.

**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 V***

### ***for steering SAFOAM activities***

#### ***Theme V: New Dimension of Agromet Advisory Services in hill region in South Asian Countries.***

##### ***Leader***

**\*\* Dr. Archana Shrestha**

Deputy Director General,

Department of Hydrology and Meteorology, Nepal

##### **Advisors**

###### **1.Prof. Ajit Tyagi**

Air Vice Marshal (Retd) Prof. Ajit Tyagi

Chairman, IDC Foundation

Senior Adviser, IRADe

Member, WMO Working Group on Tropical Meteorology

Former Director General of Meteorology &

Member, W.M.O. Executive Council

Immediate Past President, Indian Met Society

Patron

India Water Foundation

###### **2.Dr. Y.S.Ramakrishna**

Dr.Y.S.Ramakrishna, Ex- Director, CRIDA (ICAR)

and

Member, Advisory Committee

National Disaster Management Authority (NDMA)

and

Ex- Dr. E A H ROBERTS CHAIR on NRM (TRA), Tocklai

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**\*\*3.Mr. KHMS Premalal**

Former Director General of Meteorology

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**4.Dr.Saraju Baidya**

Director General, DHM, Nepal

## **Members**

**1.Dipak Bhandari**

Executive Director, NARC, Nepal

**2.Jagdish Karmacharya,**

National Project Director, PPCR\_BRCH, DHM, Nepal

**3.Dr. San San Win**

(Head of Plant Protection, Assistant Director, Department of Agriculture, Yangon office)

Myanmar

**4.Ms. Sonam Pem**

Consultant

Agromet Project

Bhutan

**5.Dr Raihana Habib Kanth**

Chief Scientist FoA SKUAST Kashmir, India

**\*\*6.Dr Parminder Kaur Baweja**

PRINCIPAL SCIENTIST – AGROMETEOROLOGY, DIRECTORATE OF EXTENSION EDUCATION, DR Y S PARMAR UNIVERSITY OF HORTICULTURE, AND FORESTRY NAUNI- SOLAN 173230 (Himachal Pradesh), India

**\*\*7.Dr. Sameera Qayoom**

Associate Professor,

SKUAST Kashmir, India

Nodal Officer ICAR (Edu.)

**\*\*8.Dr. Latif Ahmed**

Assistant Professor, SKUAST Kashmir, India

**\*\*9.Dr. S.K. Sharma**

Professor & Deputy Director Instructions, RVSKVV, Gwalior., Rjapancham Singh Marg, Near Aakashwani, Gwalior, India

**10.Dr. U.P.S.Bhadauria**

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**\*\*12.Mr. Rameshwar Rimal**, National Agricultural Environment Research Centre, Nepal

**\*\*13.Ms. Shanti Kandel**, Department of Hydrology and Meteorology, Nepal

**\*\*14.Dr. Madan Sigdel**, Central Department of Hydrology and Meteorology, Tribhuvan University, Nepal

**\*\*15.Ramhari Acharya**, Central Department of Hydrology and Meteorology, Tribhuvan University, Nepal

**\*\*16.Dr. Krishna Panta**, Consultant, FAO, Nepal

**\*\*17.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

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**\*\*18.Ms. Swati Chandras**

India Meteorological Department, Pune

**\*\*19.Ms. Malathi Seetamraju**

India Meteorological Department, Pune

**\*\*= Attended the meeting**