Current Status of Operations of SASCOF

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WEATHER CLIMATE WATER
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World Meteorological Organization
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SASCOF Background

Target Region: South Asia

Co-ordinating Institution: India Meteorological Department

Target Seasons: SW Monsoon (JJAS), NE Monsoon (OND), winter (DJF)
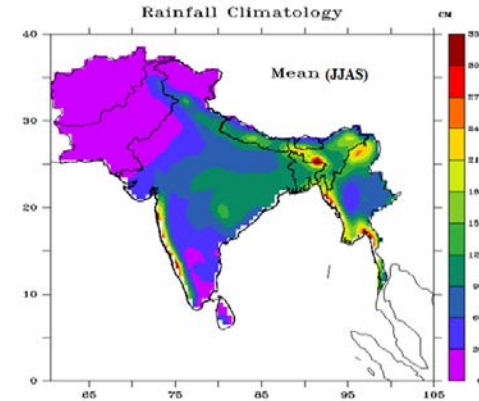
Parameters: Rainfall for all seasons. Temperature for OND and DJF

Major forcings on the regional climate: ENSO, IOD, Winter and spring Eurasian Snow Cover, Northern Hemisphere surface air temperature during spring season, sea surface temperature patterns over Atlantic Ocean, mid latitude flow pattern north of Asia etc.

Potential applications of seasonal outlooks: Agriculture (selection crops, crop yield forecast), Disaster preparedness and risk reduction (impact of floods and droughts), Public health (disease outbreaks like Malaria, cholera etc.), Energy sector (expected energy demand scenarios), water management (reservoir) etc.

Rainfall Climatology for the period 1951–2007 over South Asia.
(Data Source: APHRODITE's Water Resources Home page:
http://www.chikyu.ac.jp/precip/english/index.html)

RCOF frequency: Physical sessions in April for SW Monsoon & in September for NE Monsoon. online session in November for winter season (December to February):

sources of funding: Financial support for conducting SASCOF activities mainly come from WMO through its various funding agencies like The United States Agency for International Development (USAID), Department of the Environment, Government of Canada etc. Participation of the experts from IMD and IITM, Pune is funded by the respective institutions.

| S. No.	Country	Main rainfall periods
1	Afghanistan	Winter (DJF), Spring (MAM)
2	Bangladesh	Pre-monsoon (MAM), summer Monsoon (JJAS)
3	Bhutan	Winter (DJF), JJAS (summer monsoon)
4	India	Winter (JF) for north India, pre-monsoon for south peninsula and northeast India (MAM), SW Monsoon (JJAS) for most parts of the country and post monsoon (OND) for south Peninsula.
5	Maldives	May to October
6	Myanmar	Pre-monsoon (AM), Summer monsoon (JJAS), post monsoon (ON).
7	Nepal	Winter (DJF), JJAS (summer monsoon)
8	Pakistan	Winter (DJF), JAS (summer monsoon)
9	Sri Lanka	First inter-monsoon (MA), SW Monsoon (MJJAS), second inter-monsoon (ON)

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The SASCOF Process (1/2)

- Main forum meeting is generally held for 2-3 days. Experts from south Asian countries and other regional and international climate centers participate

- The consensus outlook is reached based on the prevailing large scale global climatic patterns (like ENSO, IOD, Snow Cover etc.) and seasonal forecasts for the relevant season from both statistical and dynamical models. At least 50% of the forecast information is derived from various dynamical models.

- Predictand data used in the statistical models are Grid point (GPCP) data from IRI data library & station data brought by the participating NMSs. Predictor data used are observed data (SST, precipitation, mslp, wind etc.) and model simulations (mainly NCEP CFS).

- Representatives from NMSs uses CPT to recalibrate the predictor data, assesses the skills of the methodology, and generate forecasts for the respective country.

- Forecast information derived from the participating NMSs of the region based on the exiting forecasting system, WMO GPCLRFs and RCCs, and other climate research centers like IRI, IITM, APEC Climate Center etc. is also used.

- During 2011-2015, the probability forecast map depicted areas of most likely tercile categories (below normal, normal and above normal using yellow, green and blue colour shades) over the region, as well as the probabilities for each tercile categories over broad areas of same colour shade. From 2016 onwards the probability forecast map depicted grid wise most likely tercile category as well as its probability for each of the 1° latitude x 1° longitude spatial grid boxes over the region. The box-wise tercile probabilities were derived by synthesis of the available information and expert assessment. It was derived from an initial set of gridded objective forecasts and modified through a consensus building discussion of climate
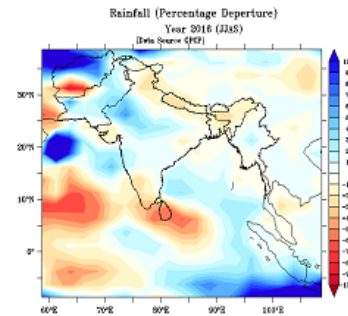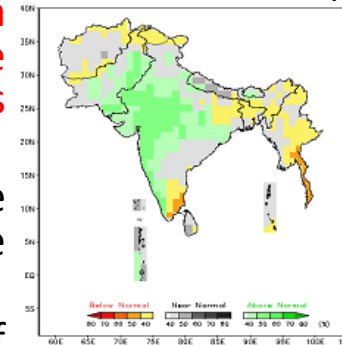
Consensus forecast for JJAS 2015
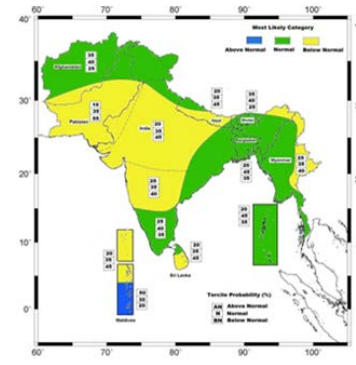
Consensus forecast for JJAS 2016

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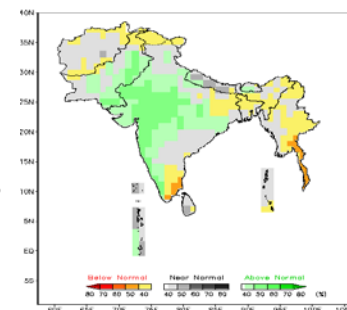
The SASCOF Process (2/2)

- The components of the SASCOF consensus statement are; Summary of the statement, Introduction, Current status and the forecast outlook of the large global climate anomalies like ENSO, IOD, snow cover over NH etc.,. Consensus forecast outlook along with a probability forecast map & a climatology map, and the verification of consensus forecast issued for the previous year.

- The practice of including the verification part in the consensus forecast was started from 7th session of the SASCOF held in Colombo, Sri Lanka.

- Once the regional consensus forecast is issued, most of the NMHSs of the region conduct National Climate Outlook Forums (NCOFs) in the country as well as sub-country scales in local languages.

Verification of the consensus forecast map for 2016 JJAS Season

- As the SASCOF consensus forecast process does not cover all the seasons, RCC, Pune issues forecast outlook for the rainfall and temperature for the next two three month moving seasons (i.e.,for next four months period) over the region, The outlook is updated every month. The forecast outlook is prepared based on the high resolution climate forecasting system (CFS) model. RCC, Pune also provides forecast anomaly maps of rainfall and temperature over the region for the next 9 months and the anomaly maps are for monthly and 3 month moving seasons. RCC, Pune also provides latest status of the ENSO and IOD and its forecasts for next 9 months and issues ENSO and IOD bulletin updated every month.

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Capacity Development Activities

- Capacity Development workshop as a part of main forum meeting was introduced in response to recommendation of the SASCOF-1, Pune, India in April, 2010.
- Conducted every year prior to Forums for summer monsoon.
- However, the last capacity development workshop was conducted as a part of the 9ITWCVP
- The main subject of the capacity development workshop has been seasonal prediction.
- The aims of the workshop are (i) Provide an updated overview on current research on the seasonal prediction (ii) provide dedicated lessons and opportunity to develop simple empirical prediction schemes for the nation-wide or homogeneous region-wide rainfall through hand on computer sessions and (iii) training to prepare country based seasonal forecast outlook.

Capacity Development Workshops Conducted Associated with SASCOF

Place	Duration	Topic
Pune, India	8-12 April, 2011	Seasonal Prediction of SW Monsoon
Pune, India	16-18 April, 2012	Seasonal Prediction of SW Monsoon
Kathmandu, Nepal	15-17 April, 2013	Seasonal Prediction of SW Monsoon
Pune, India	14-21 April, 2014	Seasonal Prediction of SW Monsoon
Dhaka, Bangladesh	19-20 April, 2015	Seasonal Prediction of SW Monsoon
Colombo, Sri Lanka	19-23 April, 2016	Seasonal Prediction of SW Monsoon
Pune, India (as a part of 9th International Training Workshop on Climate Variability and Prediction (9ITWCVP)	13-21 April, 2017	Climate Variability & Prediction

Issues faced:
- No continuity in the training as new participants each year.
- Some participants lack required background in the subject
- Lack of good quality gridded climate data

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User Involvement

- ➢ To provide a platform for interaction with users of climate services and promote the use of RCOF products, the Forum invites representatives of the user community from climate sensitive user sectors, include Agriculture and food security, health, energy, water resources, disaster risk reduction and response, media etc.

- ➢ Some of the main forum meetings were also followed by a joint meeting of climate experts, and practitioners & decision-makers from these user sectors and stake holders from the region.

- ➢ These joint meetings review various issues related to the use of climate information to sector specific applications, sharing the experiences and lessons learned from the applications of previous SASCOF products etc.

- ➢ The meeting also encourage sector experts to develop detailed sector specific risk information including warnings based on the SASCOF products, and communicate to decision-makers and the public.

- ➢ Special outreach sessions involving media experts are also conducted to develop effective communication strategies.

User Forum Conducted Associated with the SASCOF

Place & Period	Session of the SASCOF	User Forums Conducted
Pune, India 23 - 25 April 2014	SASCOF-5	1st User Forum for the Water Sector (CSUF-Water)
Dhaka, Bangladesh 21-22 April 2015	SASCOF-6	2nd CSUF-Water
Chennai, India 14-15 Oct 2015	SASCOF-7	1st CSUF-Agriculture
Colombo, Sri Lanka. 27-28 April 2016	SASCOF-8	3rd CSUF-Water and 1st CSUF-Health
Nay Pyi Taw, Myanmar 27-29 September 2016	SASCOF-9	second CSUF-Agriculture

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SWOT Analysis

Strengths	Weaknesses
• Countries of the region with nearly similar climatic characteristic and large agrarian community have nearly similar requirements of seasonal and sub-seasonal forecast outlook. • NMHSs of the region have long experience in providing weather services and have started extending climate services. • Significant improvement in the understanding and predictability of the climate variability (particularly that of the monsoons, which are the most dominating climate feature) of the region due to long global and regional research efforts.	• Climate services activity is new area for some countries and there is lack of general awareness about the existing of such services. • Limited infrastructure and expertise (particularly in respect of seasonal prediction, which either absent or require further development) in some countries for extending the climate services. • Non availability of long period, high resolution, and quality data bases &Lack of coordination with end users
Opportunities	**Threats**
• Keen interest from the NMHS and user sectors is an opportunity to develop sustainable SASCOF services. • Success in providing reasonably correct climate forecast outlook in previous years (like deficient southwest monsoon rainfall over the region during 2014 & 2015) has given confidence in our ability to provide forecasting information/ climate services about extreme events. • Opportunities to develop sector specific SASCOF products.	• The NMSs have technical skills often unfamiliar to users. • Legal responsibility issues often unclear when weather/climate information is disseminated. • Entry of private companies in the met. Services.

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Way Forward

Based on the discussions among the climate experts, experts from user sectors and other participants of the main forum and user forum meetings of SASCOF during the last 8 years (2010-2017), following points are important for further acceptability and usability of the SASCOF products.

- Development of high resolution and quality data bases over the region for better climate monitoring as well as bias correction and verification of climate forecasts.
- Make the process of preparing the consensus forecast map from various forecast inputs to be objective as much as possible.
- Skill map of such objective methods available for improving confidence in using the consensus forecast products
- Standard tools for verification of consensus forecasts
- Mechanism to update the consensus forecast regularly (say every month). An expert team of focal points from each NMHS lead by RCC can generate the forecast.
- The seasonal forecast to be supplemented by sub-seasonal/monthly climate forecasts.
- Conduct capacity training workshops on other topics such as the construction of long time series of gridded climate data over the region, extended range prediction, climate applications and climate impact assessment
- Increased interaction with the user community and generation of tailored climate products for the users.
- Specialised capacity building workshops for user community.

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Thank you
Gracias

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