

South Asian Climate Outlook Forum (SASCOF-3)

Pune, India, 19-20 April 2012

Consensus Statement

Summary

A consensus outlook for the 2012 southwest monsoon rainfall over South Asia was developed, through an expert assessment of the available indications. The outlook was prepared based on the various prevailing global climate conditions and forecasts from different empirical and dynamical climate models. It is recognized that there is uncertainty partly because of transition of La Niña conditions to neutral El Niño/Southern Oscillation (ENSO) conditions and some possibility for the emergence of El Niño during the later part of the monsoon season. The consensus outlook indicates that the large-scale summer monsoon rainfall for South Asia and the season (June – September) as a whole would most likely to be within the normal range. However, there is also a slight tendency for the South Asian summer monsoon rainfall to be below normal.

In terms of spatial distribution of rainfall, there is likelihood for below normal rainfall over some areas of northwestern and southern parts of South Asia. Rainfall conditions close to the long-period average are more likely over the remaining parts. For more detailed information on the summer monsoon outlook and further updates on national scale, the concerned National Meteorological Services (NMHSs) may be consulted.

Introduction

The consensus outlook for the summer monsoon season (June to September) of 2011, developed by the second session of the South Asian Climate Outlook Forum (SASCOF-2) highlighted that summer monsoon rainfall over South Asia as a whole during 2011 was most likely to be within the normal range. The observed rainfall over the region as a whole was found to be normal, in general agreement with the forecast. However, the observed rainfall over the northwestern parts of the South Asia was normal, contrary to the forecast of below normal rainfall.

The third session of SASCOF (SASCOF-3) was held at Pune, India during 19-20 April 2012. SASCOF-3 was preceded by a 3 days (16-18 April, 2012) capacity building training workshop on “Seasonal Prediction of Southwest Monsoon Rainfall” for participants from the South Asian countries, and which was conducted at the India Meteorological Department (IMD), Pune. The training workshop was attended by representatives from 7 South Asian countries, namely, Bangladesh, Bhutan, India, Maldives, Myanmar, Nepal, and Sri Lanka. An expert from the South Asian Association for Regional Cooperation (SAARC) Meteorological Research Centre (SMRC), Dhaka, Bangladesh, also participated. Experts from the IMD and the Indian Institute of Tropical Meteorology (IITM), Pune and international experts from UK Met Office (UKMO) and Japan Meteorological Agency (JMA) participated in the training workshop as resource persons.

In SASCOF-3 (19-20 April 2012), the above experts as well as experts from Korea Meteorological Administration (KMA), representatives from the WMO and scientists from different research institutes from the host country (India) including the India Meteorological Department (IMD), Indian Institute of Tropical Meteorology (IITM), Pune, Centre for Development for Advance Computing (C-DAC), Pune, and Centre for Mathematical Modelling and Computer Simulation (CMMACS), Bangalore, took active part in deliberations for finalizing the consensus outlook for the summer monsoon rainfall over South Asia. Forecasts from National Centers for Environmental Prediction (NCEP), USA, Meteo France, France, International Research Institute for Climate and Society (IRI), USA, World Meteorological Organization’s Lead Centre for Long Range Forecasting - Multi-Model Ensemble, Japan Agency for Marine-Earth Science and Technology (JAMSTEC) and APEC Climate Center etc. were also considered for preparing the consensus forecast.

The Forum deliberated on various observed and emerging climatic features that are known to influence the performance of the monsoon, such as sea-surface

temperature conditions over the equatorial Pacific and the Indian Oceans, winter and spring snow cover and surface temperature anomalies over Northern Hemisphere. The key features of these conditions are as follows:

Sea Surface Conditions over the Pacific Ocean

The moderate to strong La Nina conditions that evolved during later part of 2010 disappeared in May 2011 and reemerged as weak La Niña conditions in early August, 2011 and subsequently strengthened to weak to moderate during the later part of 2011. The weak/moderate La Niña conditions continued till first half of February 2012 and started to weaken and the event is presently in transition towards ENSO neutral conditions. The latest forecasts from a majority of the dynamical and statistical models indicate strong probability for the ENSO neutral conditions to prevail during the monsoon season. The reemergence of La Niña conditions during the monsoon season is considered to be highly unlikely. However, emergence of weak El Niño conditions during the later part of the monsoon season may not be ruled out. If the La Niña conditions continue to weaken and neutral conditions get established as most of the models indicate, there may be little scope for typical ENSO impacts on the southwest monsoon rainfall activity. However, if the El Niño conditions do emerge as indicated by some models, it may have some adverse impact on the monsoon rainfall over the region, particularly during the later part of the monsoon season.

Conditions over the Indian Ocean

It is important to note that in addition to ENSO events, several other factors such as the Indian Ocean sea surface temperatures also influence monsoon performance. Associated with the prevailing weak La Niña conditions, currently, cold sea surface temperature anomalies are observed in the eastern equatorial region of the Indian Ocean and the adjoining northern coast of Australia. Negative SST anomalies are observed over Arabian Sea. But positive sea surface temperature anomalies are observed over most parts of Bay of Bengal, central equatorial Indian Ocean and southern Indian Ocean south of equatorial region. Recent forecasts from a few coupled models suggest the possibility of development of a weak negative Indian Ocean Dipole event during the later part of 2012. In general, a negative IOD weakens the monsoon. But as the negative IOD is likely to evolve only in the last part or after the monsoon season, it may not have much impact on the monsoon circulation, at least in the early part of the monsoon season.

Snow Cover over the Northern Hemisphere

Since November 2011, the snow cover area over the Northern Hemisphere has been normal to above-normal. Northern Hemisphere snow cover has a negative relationship with the monsoon circulation.

Consensus Outlook for the Summer Monsoon Rainfall over South Asia:

A consensus outlook for summer monsoon rainfall over South Asia was prepared based on the expert assessment of prevailing large scale global climate indicators some of which are mentioned above, experimental models developed during capacity building workshops conducted for South Asian countries by IMD in association with SASCOF-2 and SASCOF-3, and experimental as well as operational long range forecasts based on statistical and dynamical models generated by various operational and research centers within India and abroad. There was consensus among the experts about the existence of large uncertainty in the forecast information this year, partly due to the weakening of La Nina and the expected ENSO-neutral state during the course of the summer monsoon season. As the possibility of emergence of El Niño cannot be ruled out, there is a need for continued monitoring of the regional and global climatic conditions associated with the South Asian summer monsoon.

An outlook for the summer monsoon rainfall over South Asia has been generated by carefully considering the available indicators, and delineating the most probable categories of rainfall anomalies over various broad regions of South Asia, as summarized in the outlook map (Fig.1). The probabilities of rainfall outlook for these broad regions are also indicated in a tercile format, based on an expert assessment and synthesis of the available information. The outlook suggests that over South Asia and for the season as a whole, the large-scale summer monsoon (June to September) rainfall would most likely be normal. However, the expert assessment also noted a slight tendency for the South Asian summer monsoon rainfall to be below normal. There is slightly enhanced likelihood for below normal rainfall conditions over some broad areas of northwestern and southern parts of South Asia. Rainfall conditions close to the normal are more likely over the remaining parts of South Asia.

For more detailed information on the summer monsoon outlook and further updates, the concerned National Meteorological Services (NMHSs) should be consulted.

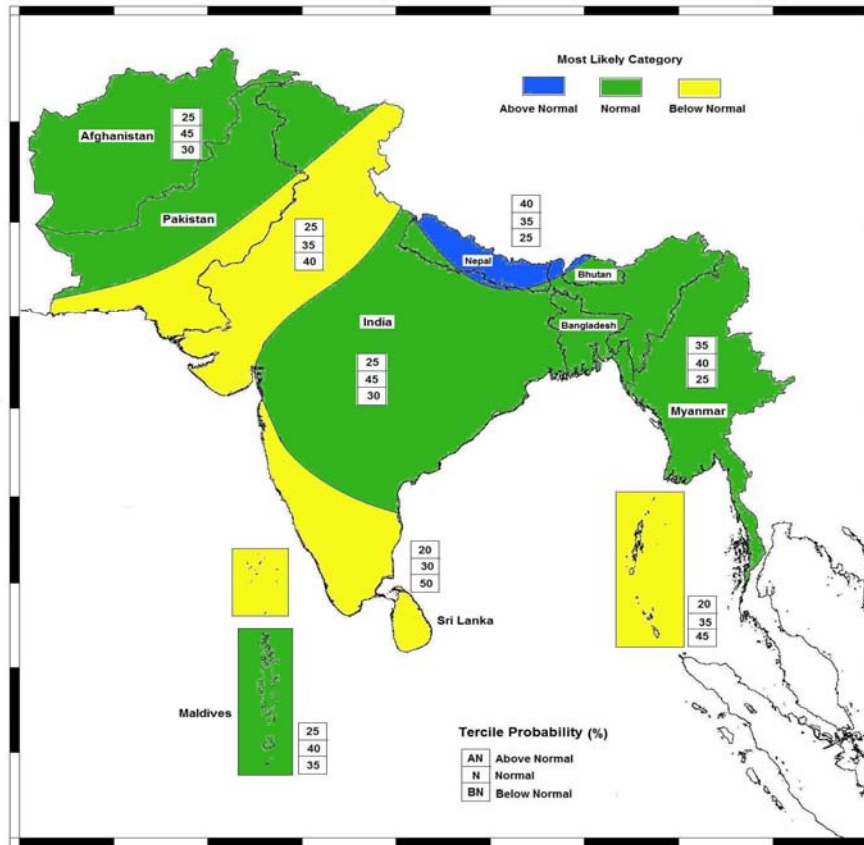


Fig.1. Consensus outlook for 2012 Southwest Monsoon Rainfall over South Asia.

Background of SASCOF

Climate predictions are of substantial benefit to many parts of the world in risk management and adaptation to cope with the impacts of climate variability and change. Recognizing this, regional climate outlook forums (RCOFs) were conceived with an overarching responsibility to produce and disseminate a regional assessment of the state of the regional climate for the upcoming season. Built into the RCOF process is a regional networking of the climate service providers and user-sector representatives. In Asia, China has been coordinating a RCOF called 'Forum on Regional Climate Monitoring, Assessment and Prediction for Regional Association II (FOCRA II) since 2005, covering the entire Asian continent.

Asia is a large continent with large differences in the climatological settings on a sub-regional scale. Therefore WMO's Regional Association II (Asia) recommended sub-regional RCOFs devoted to specific needs of groups of countries having similar climatic characteristics. Implementation of South Asian Climate Outlook Forum (SASCOF) in 2010 is a step in that direction with specific focus on the climate information needs of nations affected by the Asian summer monsoon climate. The long-term mean patterns of the summer monsoon rainfall over South Asia (Fig.2), characterized by remarkable spatial variability, provide the general reference points at the respective locations for the rainfall anomalies indicated in the outlook.

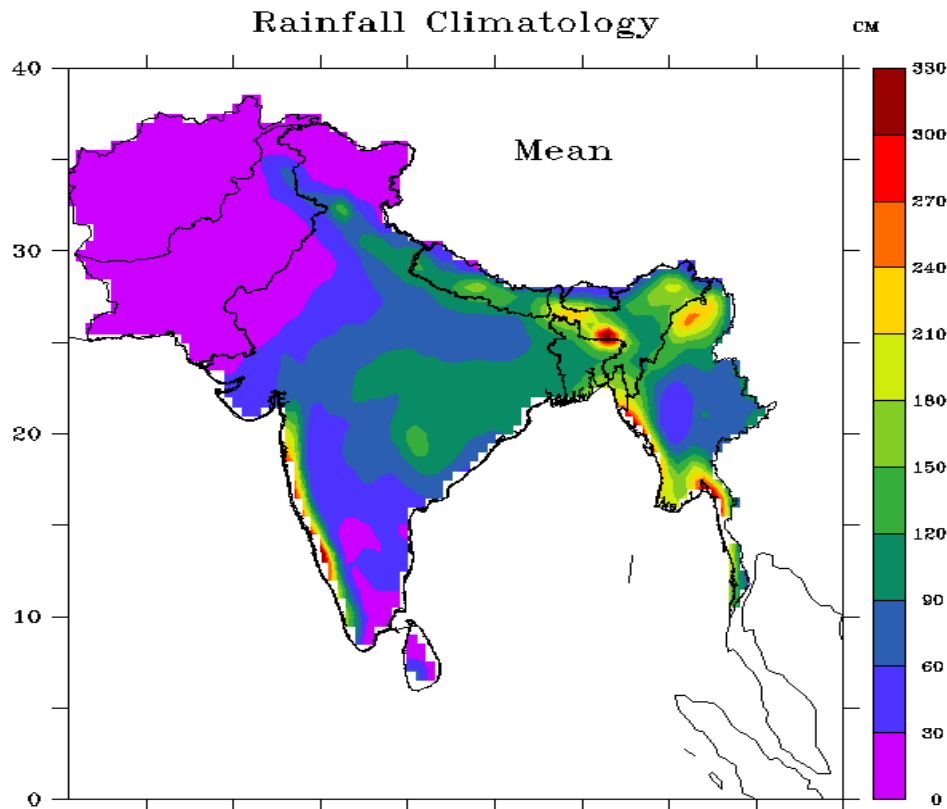


Fig.2 Rainfall Climatology over South Asia (Source: APHRODITE's Water Resources home page, <http://www.chikyu.ac.jp/precip/>]

The present SASCOF session, which is third of such event (SASCOF-3) was co-hosted by the India Meteorological Department (IMD) and the Indian Institute of Tropical Meteorology (IITM) at Pune and was co-sponsored by World Meteorological Organization (WMO) and Japan Meteorological Agency (JMA). Representatives from National Meteorological and Hydrological Services (NMHSs) of the South Asian countries and experts in the field from various climate centers of the world, including WMO, as well as research scientists from different institutions in India participated in the session.