

South Asian Climate Outlook Forum (SASCOF-2)

Pune, India, 13-15 April 2011

Consensus Statement

Summary

A consensus outlook for the 2011 southwest monsoon rainfall over South Asia was developed, through an expert assessment of the available indications. The outlook, based on the various prevailing global climate conditions and forecasts from different empirical and dynamical climate models, indicates large uncertainty partly because La Niña conditions are expected to weaken to a neutral state over the course of the coming monsoon season. However, the large-scale summer monsoon rainfall over South Asia, for the season as a whole, would most likely be within the normal range. The outlook indicates slightly enhanced likelihood for below normal rainfall conditions over the northwestern parts and some northeastern parts of South Asia. There is slightly enhanced likelihood of above normal rainfall over the southern parts of South Asia including the islands. Rainfall conditions close to the normal are more likely over the remaining parts of South Asia.

Introduction

The consensus outlook for the summer monsoon season (June to September) of 2010, developed by the First Session of the South Asian Climate Outlook Forum (SASCOF-1) highlighted that summer monsoon rainfall over region as a whole during 2010 was most likely to be normal. The actual rainfall over the South Asian region during the 2010 summer monsoon season, as a whole, was observed to be within the normal range.

The second session of SASCOF (SASCOF-2) was held at Pune, India during 13-15 April 2011. SASCOF-2 was preceded by a five days (8-12 April, 2011) 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 six South Asian countries, namely Bangladesh, Bhutan, India, Maldives, Nepal, and Sri Lanka. Experts from the IMD and the Indian Institute of Tropical Meteorology (IITM), Pune and international experts from National Centers for Environmental Prediction (NCEP), USA, Meteo France, France, International Research Institute for Climate and Society (IRI), USA, participated in the training workshop as the resource persons.

In SASCOF-2 (13-15 April 2011), the above experts as well as additional experts from Japan Meteorological Agency (JMA), 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, National Centre for Medium Range Weather Range Forecasting (NCMWRF), New Delhi, 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.

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

Moderate La Niña conditions, observed since mid-August 2010, strengthened subsequently and become strong in September 2010 and prevailed until early February 2011. The La Niña conditions since have weakened to weak to moderate strength as of mid-April 2011. The latest forecasts from a majority of the dynamical and statistical models indicate strong probability for the present La Niña conditions to continue until

June. Subsequently the La Niña conditions are expected to weaken further to reach El Niño – Southern Oscillation (ENSO) neutral conditions. If the La Niña conditions weaken as expected, it will have little impact on the southwest monsoon rainfall activity particularly during the later part of the monsoon season.

Conditions over the Indian Ocean

Associated with the prevailing weak to moderate La Niña conditions, cold sea surface temperatures are observed in the equatorial east and central Indian Ocean and positive anomalies along the west coast of Australia. Most of the climate model forecasts indicate that the prevailing SST anomaly pattern over the Indian Ocean is likely to persist in the following seasons. In the second half of 2011, a weak negative Indian Ocean Dipole (IOD) is likely to occur with positive sea surface temperature anomalies in the eastern equatorial Indian Ocean. 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

Between October 2010 and March 2011, the snow cover area over the Northern Hemisphere was above-normal. This may result in reduced land-sea heat contrast in the Asian monsoon region and thus may slightly weaken 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 empirical models developed during the capacity building workshop conducted for south Asian countries by IMD in association with SASCOF-2, 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. The experts agreed that there is a large uncertainty in the forecast information, partly due to the weakening of La Niña and the expected ENSO-neutral state during the course of the summer monsoon season. Therefore, 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 for rainfall outlook in each of the broad regions are also indicated in a tercile format. These probabilities were assigned subjectively through the consensus process, based on an expert assessment and synthesis of the available information. The outlook suggests that over South Asia, for the season as a whole, the large-scale summer monsoon rainfall would most likely be within the normal range. There is slightly enhanced likelihood for below normal rainfall conditions over the northwestern parts and some northeastern parts of South Asia. On the other hand, there is slightly enhanced likelihood of above normal rainfall over the southern parts of South Asia including the islands. 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.

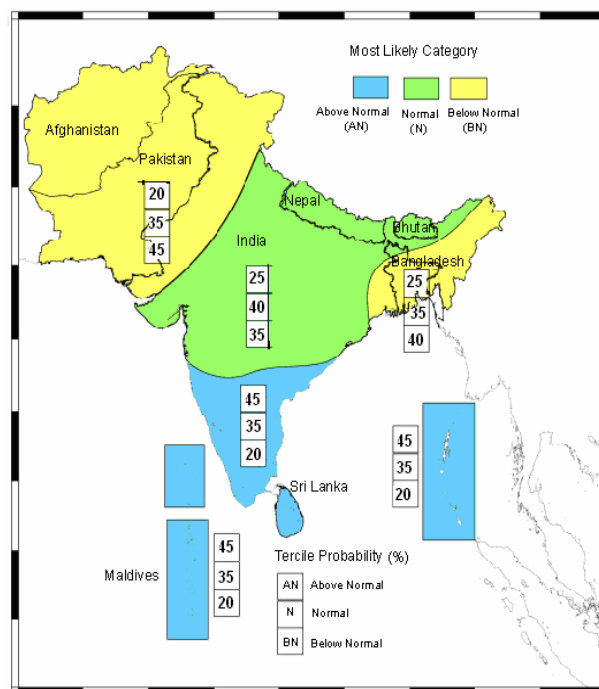
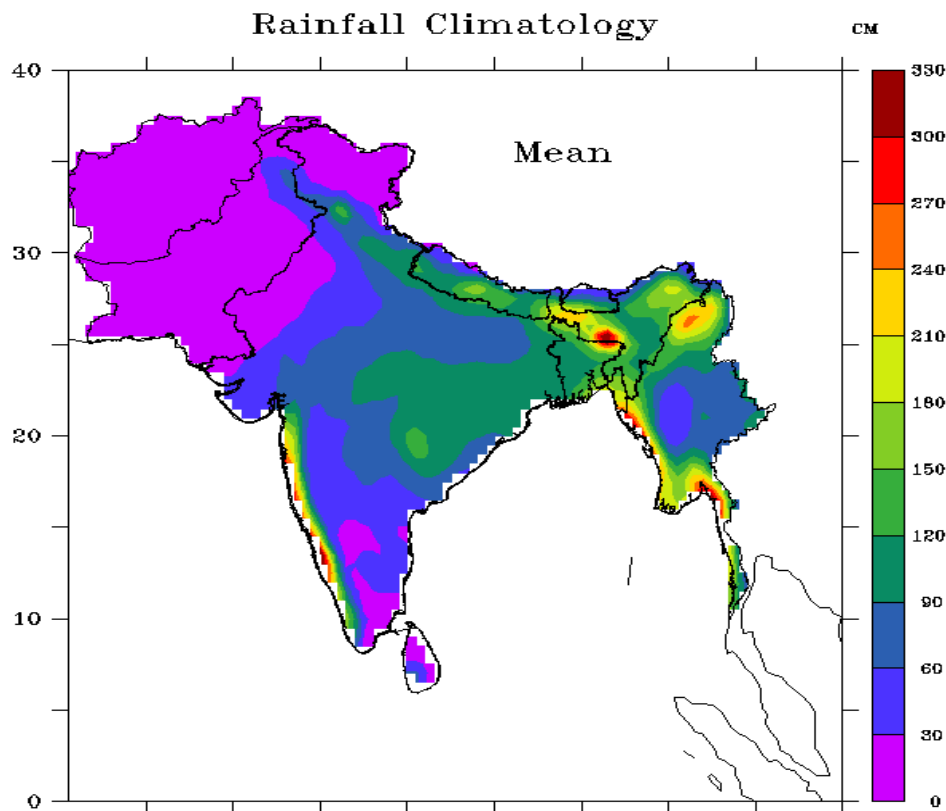


Fig.1. Consensus outlook for 2011 Southwest Monsoon Rainfall over South Asia.

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.



The first session of SASCOF (SASCOF-1) was co-hosted by the India Meteorological Department (IMD) and the Indian Institute of Tropical Meteorology (IITM) at Pune, India during 13-15 April 2010. 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.