



**Seventeenth Session of  
South Asian Climate Outlook Forum (SASCOF-17)  
Online Session, 8<sup>th</sup> June 2020**

**Statement on the Updated Forecast Outlook for the 2020  
Southwest Monsoon Season (June – September) Rainfall  
over South Asia**

**Summary**

Rainfall for the season as a whole is likely to be normal during the 2020 southwest monsoon season (June – September) over most parts of South Asia. Above normal season rainfall is likely over some areas of north-western and southern most parts of the region. Below normal season rainfall is likely over some areas of south-eastern part of the region. Normal season rainfall is -likely over the remaining areas.

The South Asia Climate Outlook Forum (SASCOF) is an avenue to collaboratively develop consensus-based seasonal climate outlooks and related information for South Asian region. The first regional climate outlook for monsoon season rainfall for South Asia - was issued on 22<sup>nd</sup> April 2020 following the sixteenth session of SASCOF. The regional climate outlook for the 2020 southwest monsoon season over South Asia was developed collaboratively by the National Meteorological and Hydrological Services (NMHSs) of South Asian countries with the support from international experts.

The El Niño/Southern Oscillation (ENSO), which is known to be a major influencing factor on South Asian summer monsoon variability, is currently marked by cool ENSO neutral conditions prevailing in the tropical Pacific. The latest global climate model forecasts indicate further cooling of sea surface temperatures in the tropical Pacific during coming months. Few climate models also indicate a possibility of the development of weak La Niña conditions during the second half of the season or soon thereafter.

For more information and further updates on the southwest monsoon climate outlook on national scales, the respective NMHSs may be consulted.

## **Introduction**

The first climate outlook for the 2020 southwest monsoon season (June to September) was released during the sixteenth session of the South Asian Climate Outlook Forum (SASCOF-16) held during 20-22 April 2020 conducted online. Now an update has been prepared for the above during the 17<sup>th</sup> session of the SASCOF conducted via video conferencing on 8<sup>th</sup> June 2020. The session was attended by experts representing the National Meteorological and Hydrological Services (NMHSs) of nine South Asian countries as well as those representing several global and regional climate agencies, WMO Regional Climate Centre Pune, Met Office (UKMO), International Research Institute for Climate and Society (IRI), Regional Integrated Multi-hazard Early-warning System (RIMES), etc.

The forecast outlook is now updated using latest prevailing global and regional climate conditions influencing South Asian climate and updated forecasts from different climate models around the world.

The key features of these conditions are as follows:

### **ENSO Conditions over the Pacific Ocean**

ENSO is one of the global scale climate phenomena that have significant influence on the year-to-year variability of the monsoon over South Asia. A warm ENSO event is associated with weaker monsoon and vice versa. Currently normal equatorial sea surface temperatures are observed across most of the Pacific Ocean. Many atmospheric variables over the region indicates ENSO Neutral to cool ENSO neutral conditions over the region. The latest forecasts from global models together indicate cool ENSO neutral conditions are likely to prevail during most part of the monsoon season. However, a few climate models also indicate possibility of development of weak La Niña conditions in the later part of the season or thereafter. Generally, La Niña conditions are associated with stronger than normal monsoon.

### **Conditions over the Indian Ocean**

In addition to ENSO conditions over the Pacific, other factors such as Indian Ocean sea surface temperature patterns also have influence on the South Asian southwest monsoon. At present, basin-wide warming is observed in the Indian Ocean and neutral Indian Ocean Dipole (IOD) conditions are prevailing over the region. A positive (negative) IOD is associated with a stronger (weaker) than normal monsoon. The latest forecasts from climate models suggest that these neutral IOD conditions

are likely to continue during the monsoon season. However, a few climate models indicate development of weak negative IOD conditions in the later part of the monsoon season.

### **Snow Cover over the Northern Hemisphere**

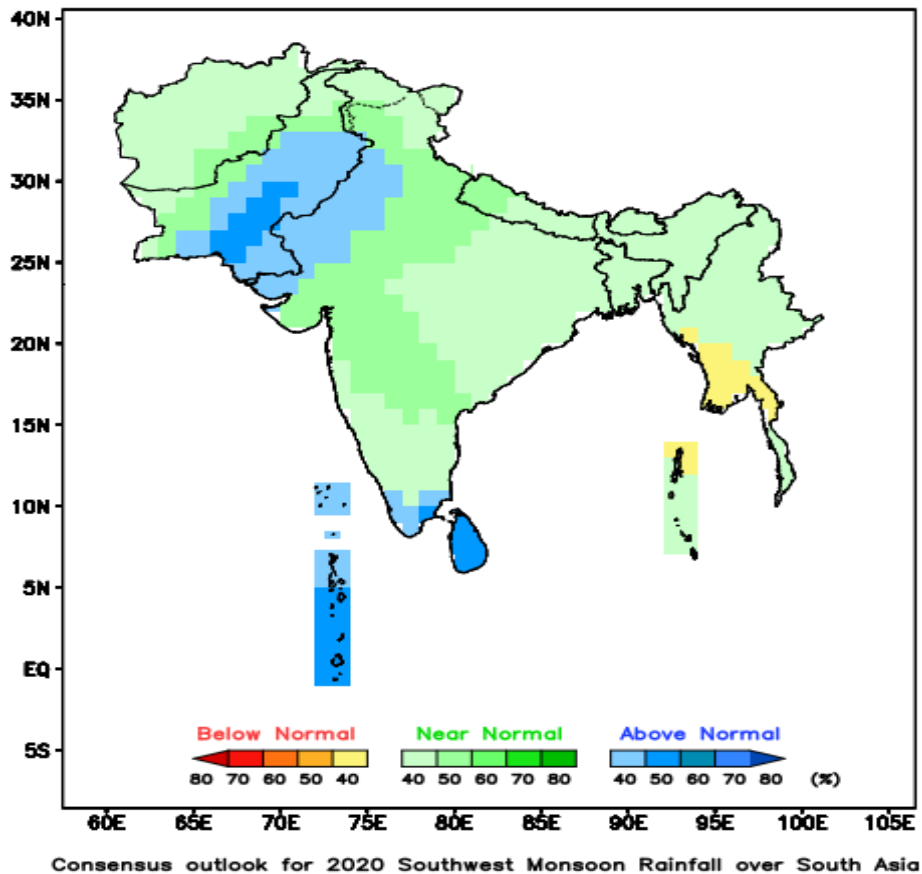
The snow-covered area over both Northern Hemisphere (NH) and Eurasia was below normal during all the last six months (December 2019 to May 2020) with record below normal snow cover area during the recent four months NH snow cover areas during May 2020 were sixth lowest ever during the last 54 years. On the other hand, the Eurasian snow cover area was fourth and third lowest ever during last two months in the last 54 years. Winter and spring snow cover extent has a generally inverse relationship with the subsequent Asian summer monsoon.

### **Regional Outlook for the 2020 Southwest Monsoon Rainfall over South Asia:**

A regional climate outlook for the 2020 Southwest monsoon season rainfall over South Asia was prepared based on the expert assessment of prevailing large-scale global climate indicators mentioned above, calibrated climate model forecasts and experimental as well as operational long-range forecasts based on statistical and dynamical models generated by the NMHSs in the region and various other operational and research climate centres of the world.

There is a strong consensus among the experts about the continuation of prevailing cool ENSO neutral conditions in the equatorial Pacific during south west monsoon season. Though a few latest (May 2020) forecasts from global models are suggesting a possibility of the development of weak La Niña conditions in the later part of the season or thereafter. It is also recognized that, in general, neutral ENSO conditions are associated with normal southwest monsoon rainfall over the South Asia. However, it is important to note that ENSO is not the only factor that determines the performance of Southwest monsoon over the region. Other relevant climate drivers such as the state of the IOD, the tropical Atlantic sea surface temperatures, Eurasian land heating etc. are also important. The relative impact of all these parameters needs to be considered to determine the expected state of the monsoon over the region, which are implicitly considered by the dynamical climate models that underpin the present outlook.

The updated outlook for the southwest monsoon rainfall over South Asia is shown in Fig. 1. The figure illustrates grid wise most likely tercile category<sup>1</sup> 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 iterated through collaborative expert assessment to synthesize predictive signals coming from reliable multiple sources.



**Fig.1.** Probability of the most likely category for the 2020 southwest monsoon rainfall over South Asia

The updated outlook suggests that Rainfall for the season as a whole is likely to be normal during the 2020 southwest monsoon season (June – September) over most parts of South Asia. Geographically, some areas of north-western and some southern most parts of the region are likely to experience above normal rainfall. Below normal season rainfall is likely over some areas of south-eastern part of the region. Normal season rainfall is likely over the remaining areas.

<sup>1</sup>Tercile categories have equal climatological probabilities, of 33.33% each.