

Climate Monitoring and Prediction for the Maldives – October 2016

Prepared by Staff from Foundation for Environment, Climate and Technology, Sri Lanka and USA, Maldives Meteorological Service, and Columbia University

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November 4, 2016,

PACIFIC SEAS STATE Oct 20, 2016

During mid-October 2016 the tropical Pacific SST anomaly was slightly cooler than -0.5°C , the threshold for weak La Niña. However, not all of the atmospheric variables have been supporting weak La Niña conditions for a sufficient duration to constitute good ocean-atmospheric coupling. Although the upper level winds suggest weak La Niña, the lower level trade winds only became stronger than average in mid-September. The Southern Oscillation index and the pattern of cloudiness and rainfall do indicate weak La Niña conditions. The lack of enhanced trade winds until recently makes us hesitate to say La Niña has really begun, so our diagnosis remains ENSO-neutral. The collection of ENSO prediction models indicates SSTs near or slightly cooler than the threshold of La Niña during fall, then weakening to cool-neutral during winter. (Text Courtesy IRI)

INDIAN OCEAN STATE Oct 26, 2016

$\sim 0.5^{\circ}\text{C}$ above average SST was observed around the Maldives

Highlights

Monitored: In October, central islands received up to 120 mm above average rainfall while northern and southern islands received up to 120 mm below average rainfall. Up to 180 mm rainfall received by the central islands is the highest rainfall received in past six years in this region for this period. During the last week of October a decrease in rainfall throughout the country was visible. The sea surface temperature around Maldives and Sri Lanka is up to 0.5°C above the seasonal average.

Predictions: IRI seasonal prediction predicts 50% chance of having below average rainfall until the end of 2016. Some El Niño prediction models suggest of weak La Niña conditions as the Pacific SST anomaly is close to -0.5°C . Long Range Weather prediction models simulations do not expect heavy rainfall in the next week.

Summary

CLIMATOLOGY

Monthly Climatology: In November, the whole country usually receives up to 200 mm rain. Wind is westerly. Usually in December, northern islands receive up to 150 mm while central and southern islands receive up to 200 and 250 mm rain respectively. Northern islands get north easterly wind while southern islands get northerly wind. In January northern islands receive up to 50 mm rain while central and southern islands receive up to 100mm and 250 mm rain respectively. Wind is north easterly.

MONITORING

Weekly Rainfall Monitoring:

Date	Rainfall
19 th Oct 2016	Up to 100 mm in Kolhumadulu atoll. Up to 50 mm in southern atolls.
20 th Oct 2016	Up to 50 mm in central and southern islands.
21 st – 22 nd Oct 2016	Up to 20 mm in central and southern islands.
23 rd – 24 th Oct 2016	Up to 20 mm in northern and central islands.
25 th Oct 2016	Up to 35 mm in central islands.
26 th -28 th Oct 2016	No rain.
29 th Oct 2016	Up to 15 mm in northern islands. Up to 30 mm in southern islands.
30 th -31 st Oct 2016	Up to 15 mm in northern island.
1 st Nov 2016	Up to 35 mm in northern islands. Up to 15 mm in southern islands.
2 nd Nov 2016	Up to 15 mm in northern islands.

Monthly and Seasonal Rainfall Monitoring: In October 2016 the central islands received ~ 120 mm rainfall above the climatological average and northern and southern islands received ~ 120 mm rainfall below the climatological average. In central islands the second highest recorded rainfall this year (~ 180 mm) was received in October. This is the highest rainfall observed in central islands during the past 6 years during this period. Central islands including Kolhumadulu atoll received up to ~ 450 mm rain in October while rest of the southern and the northern islands received up to ~ 240 mm rain.

PREDICTIONS

Weekly Rainfall Forecast: According to IMD GFS model up to 70 mm rainfall is expected in southern Maldives while up to 10 mm and 40 mm rainfall is expected in the central and northern islands respectively during 4th to 6th November. There shall be up to 40 mm rain on the 7th and 8th in southern islands and up to 10 mm rainfall in central islands. Up to 70 mm rainfall is expected in southern islands on 9th. No rainfall is expected in any part of the country on 10th. The IRI CFS model predicts extremely heavy rainfall events during 3rd -8th November.

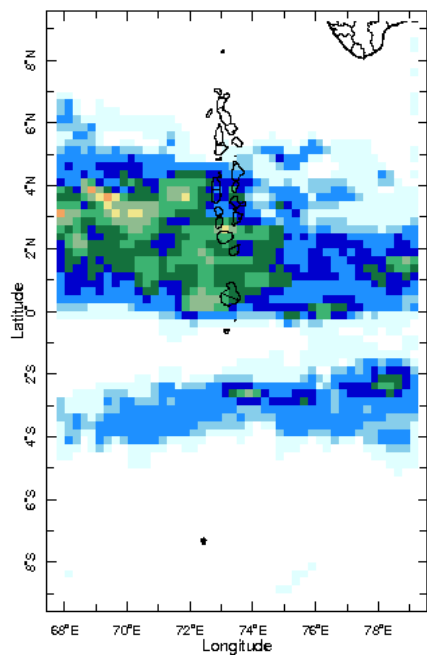
Seasonal Rainfall and Temperature Prediction: As per IRI Multi Model Probability Forecast for October to December 2016, there is a 50% chance that the rainfall shall be below average in central islands. The 3-month average temperature has a 60% likelihood to be in the above-normal tercile in southern islands during these 3 months.

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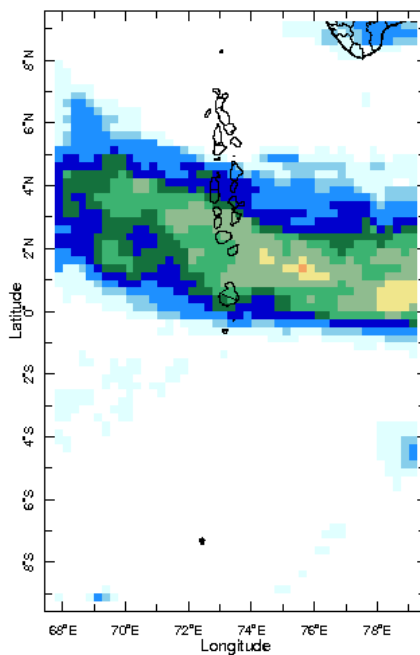
1. Rainfall Monitoring
 - a. Daily Satellite derived Rainfall Estimates
 - b. Monthly Rainfall derived from Satellite Rainfall Estimate
 - c. Monthly and Seasonal Monitoring
2. Ocean Surface Monitoring
3. Rainfall Predictions
 - a. Weekly Predictions from NOAA/NCEP
 - b. Seasonal Predictions from IRI¹

Daily Rainfall Monitoring

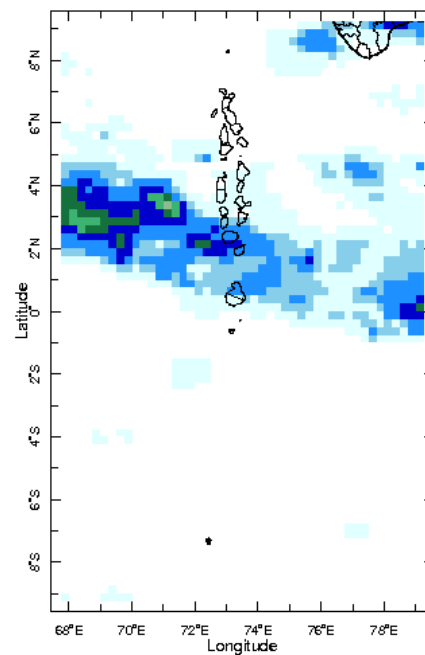
The following figures show the observed rainfall in the last 15 days in Maldives.



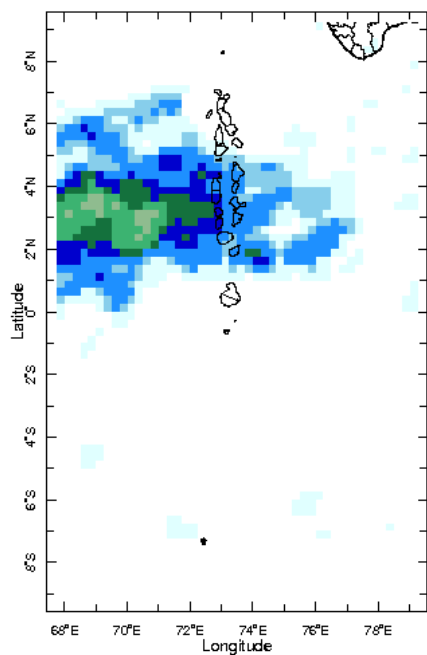
19 Oct 2016



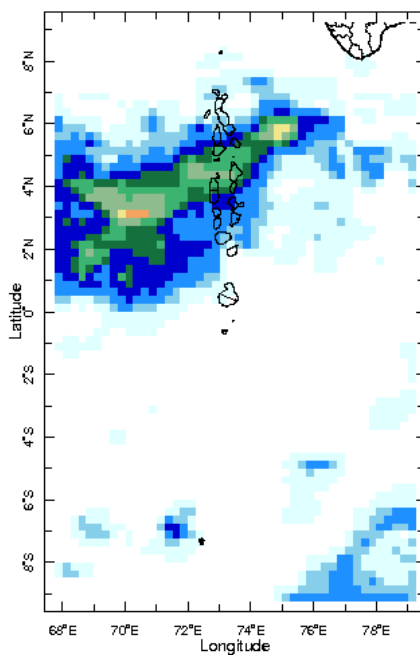
20 Oct 2016



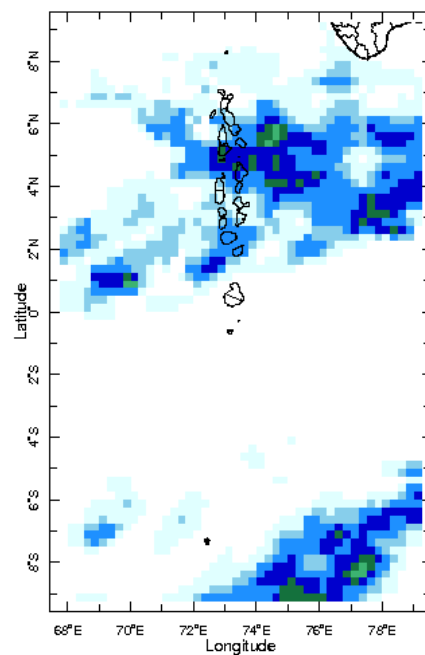
21 Oct 2016



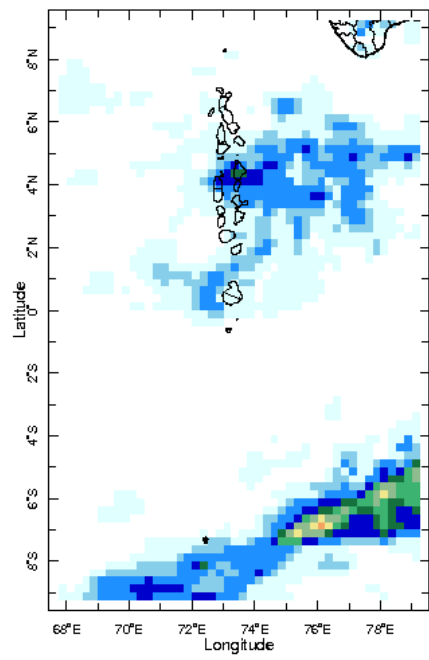
22 Oct 2016



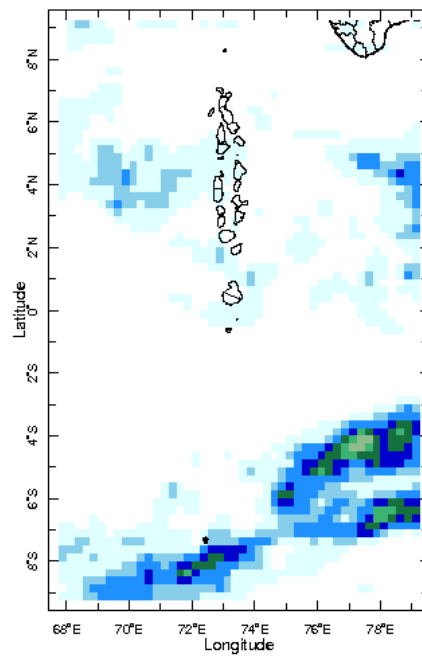
23 Oct 2016



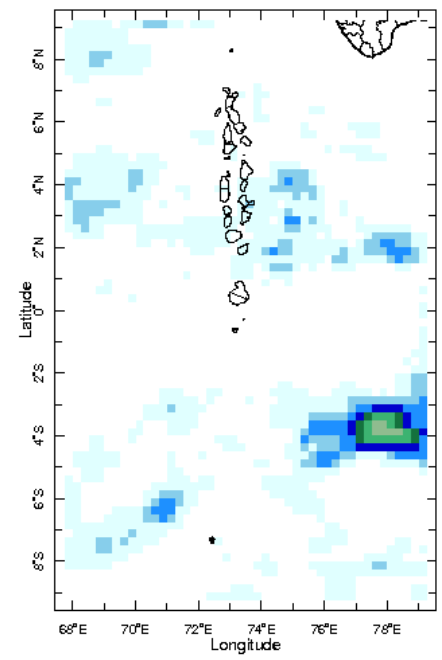
24 Oct 2016



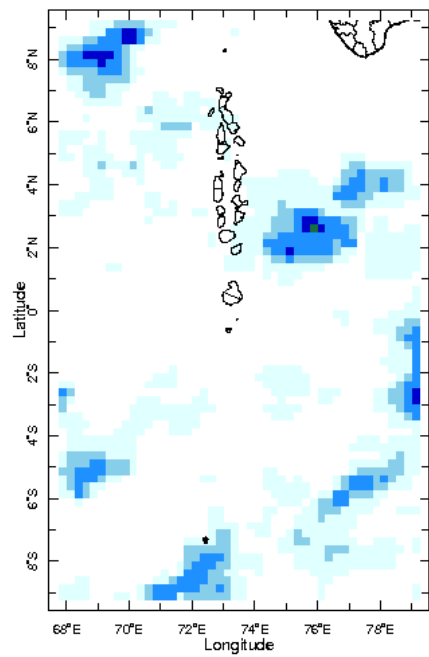
25 Oct 2016



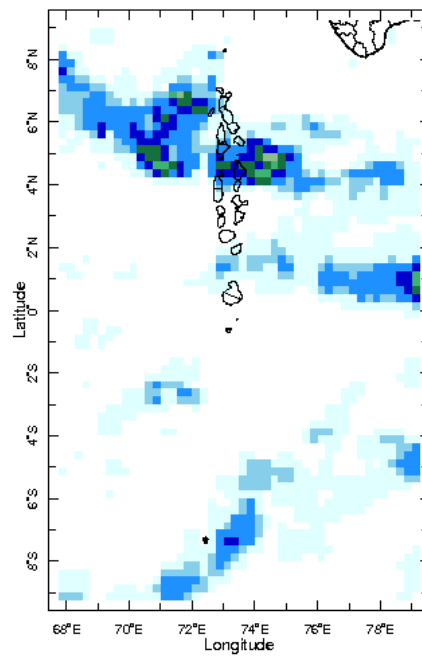
26 Oct 2016



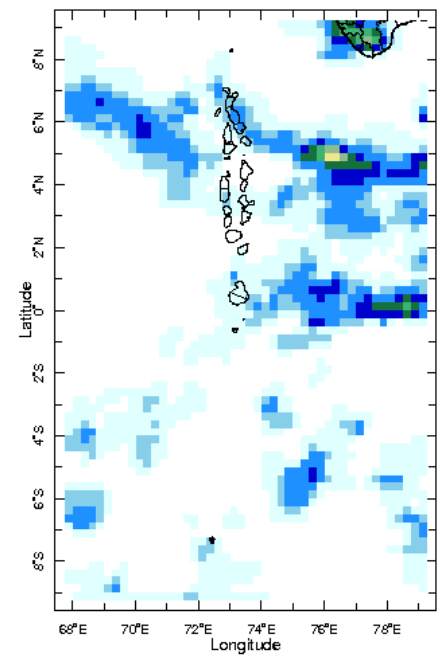
27 Oct 2016



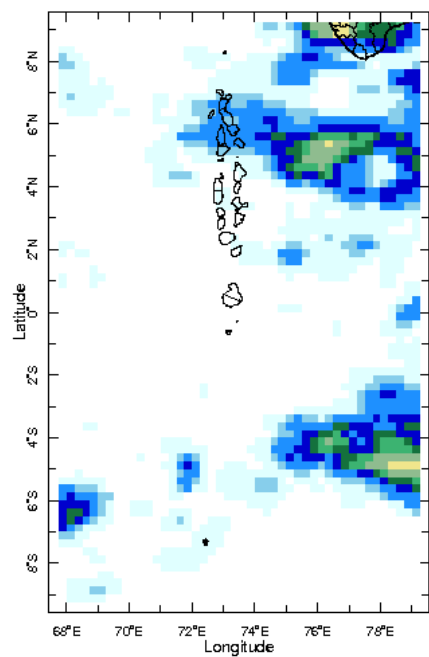
28 Oct 2016



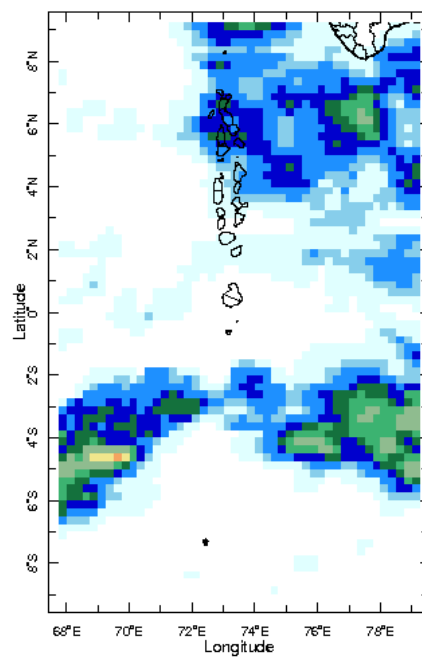
29 Oct 2016



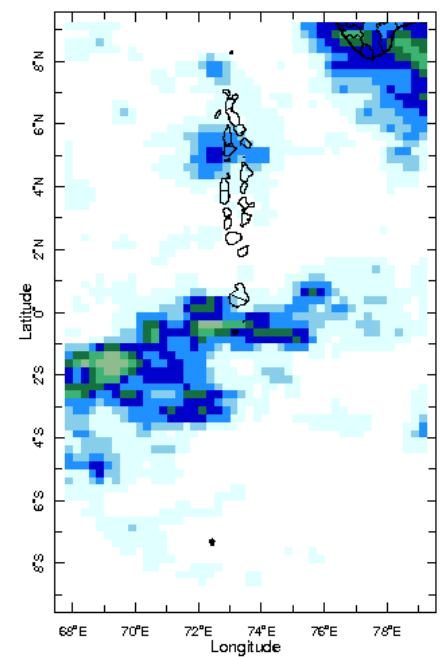
30 Oct 2016



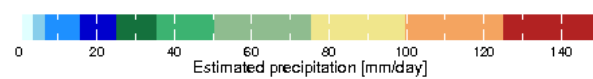
31 Oct 2016



1 Nov 2016

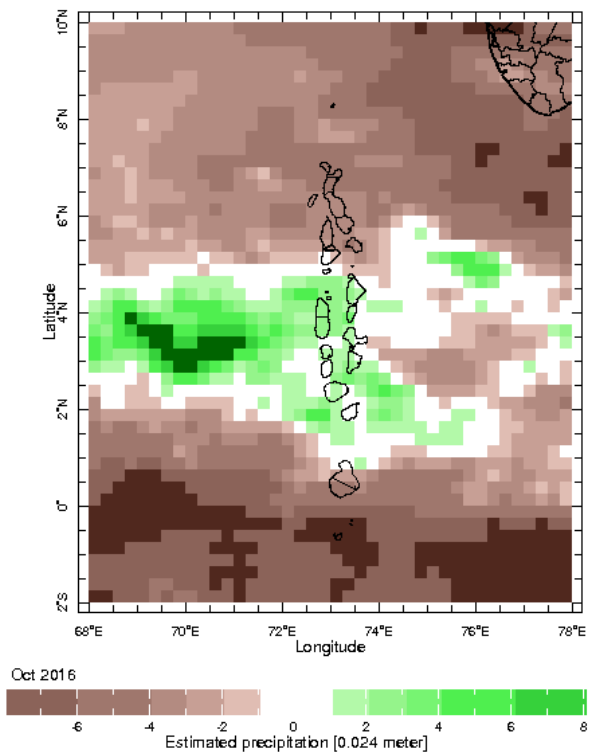
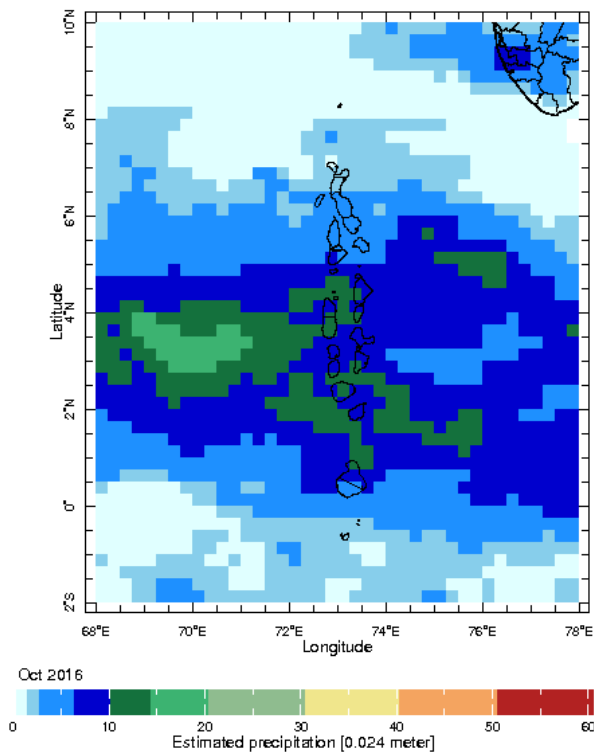


2 Nov 2016

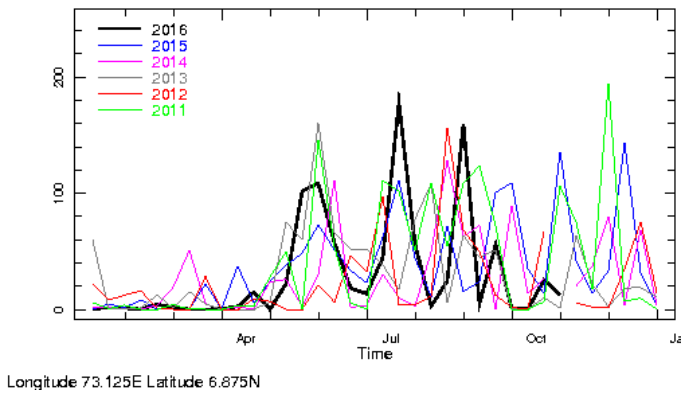


Monthly Rainfall Monitoring

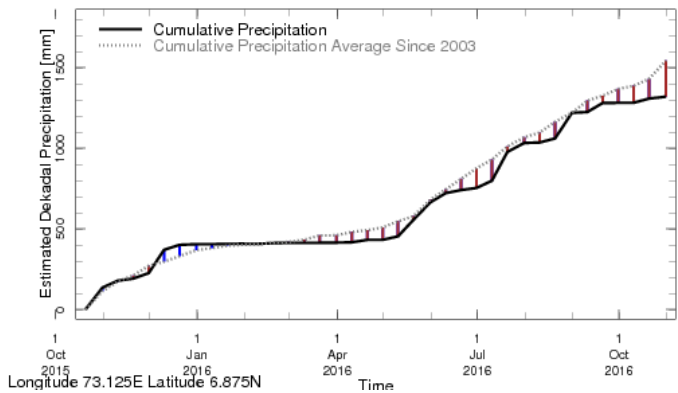
The figure in the left shows the average observed rainfall in the previous month. The rainfall anomaly in the previous month is shown in the figure to the right. The brown color in the anomaly figure shows places which received less rainfall than the historical average while the green color shows places with above average rainfall. Darker shades show higher magnitudes in rainfall



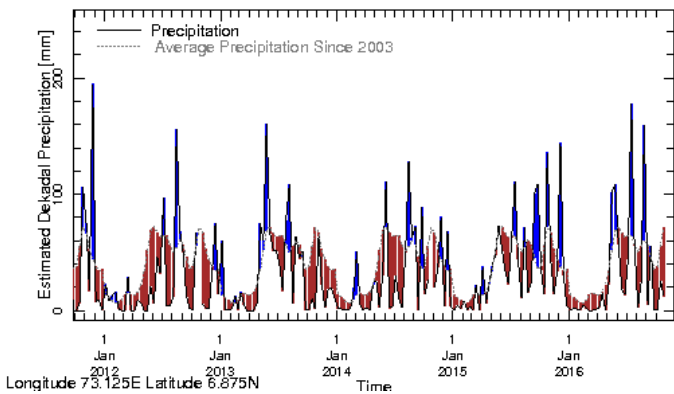
Northern Maldives:



Rainfall in the current year (black) compared to rainfall in previous 5 years

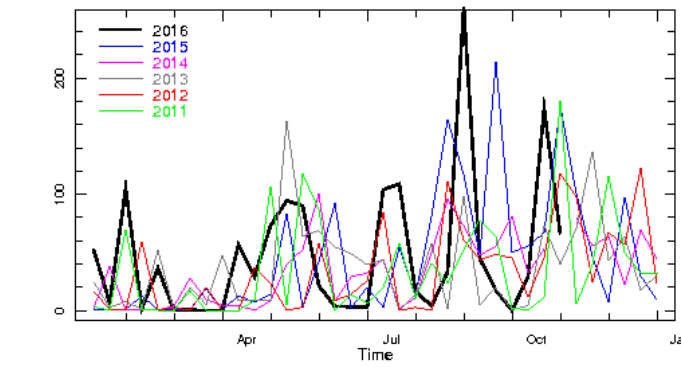


Rainfall of past 365 days (black) compared to average rainfall in previous 8 years.

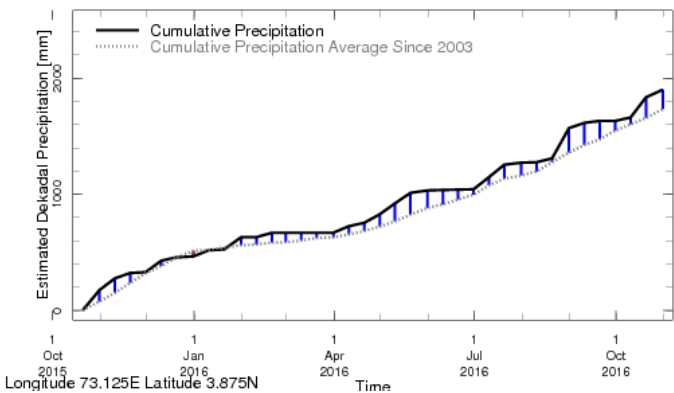


Rainfall in the past 5 years with above-average rainfall hatched in blue and below-average hatched in brown

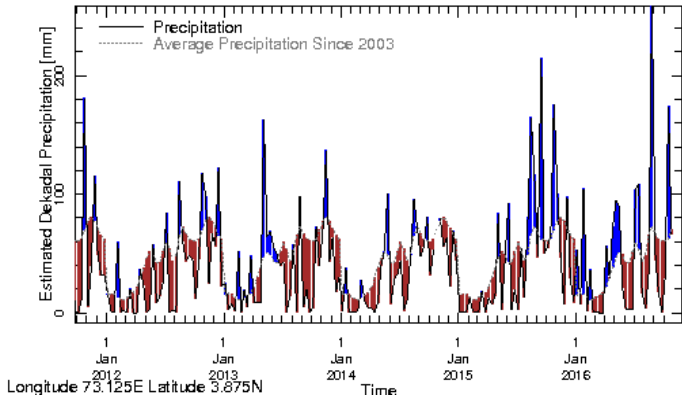
Central Maldives:



Longitude 73.125E Latitude 3.875N
Rainfall in the current year (black) compared to rainfall in previous 5 years

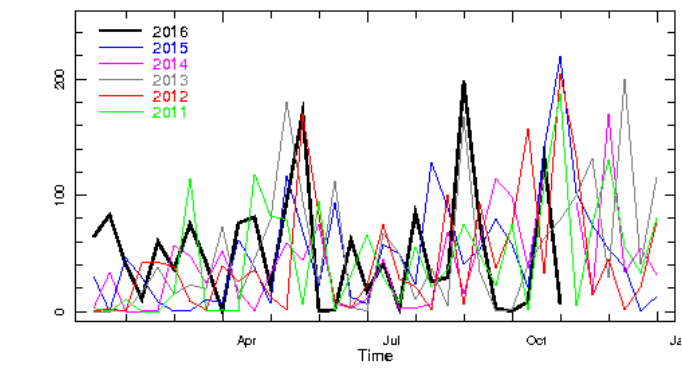


Rainfall of past 365 days (black) compared to average rainfall in previous 8 years.

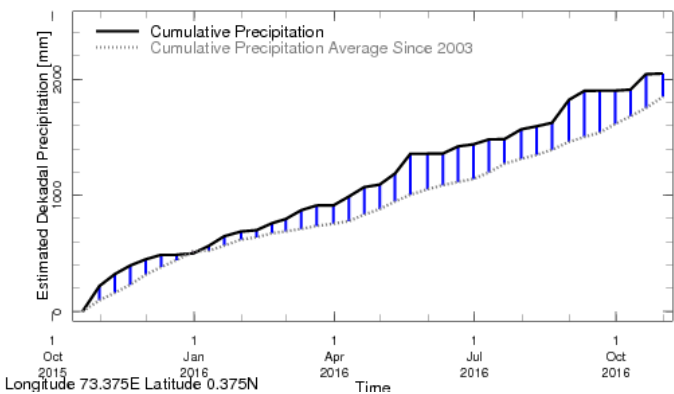


Rainfall in the past 5 years with above-average rainfall hatched in blue and below-average hatched in brown

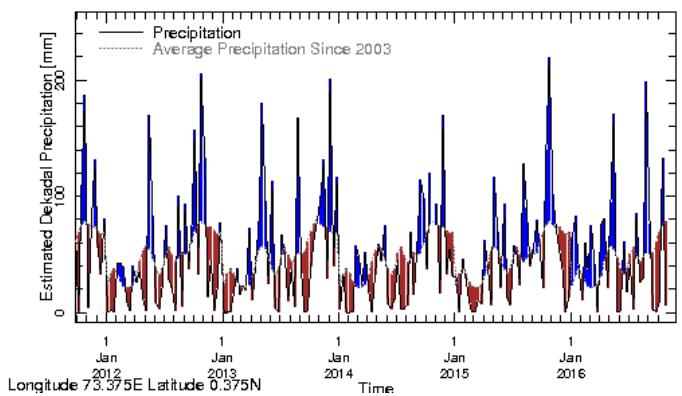
Southern Maldives:



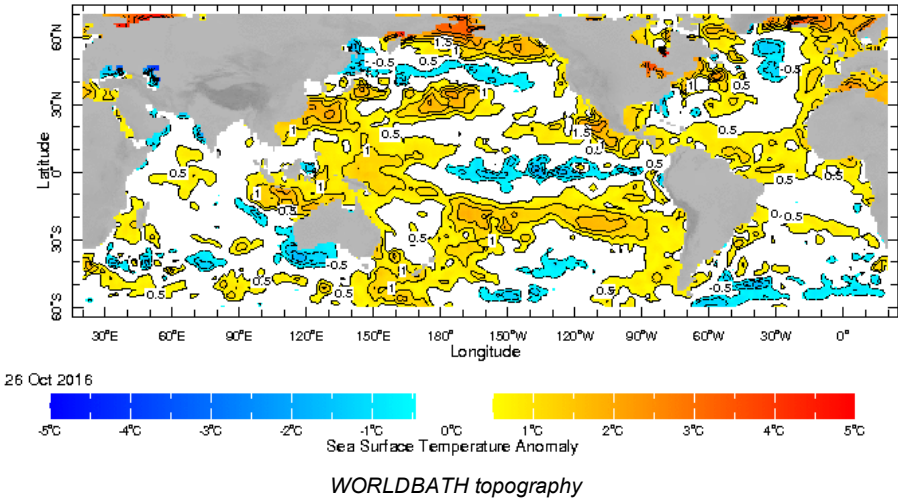
Longitude 73.375E Latitude 0.375N
Rainfall in the current year (black) compared to rainfall in previous 5 years



Rainfall of past 365 days (black) compared to average rainfall in previous 8 years.

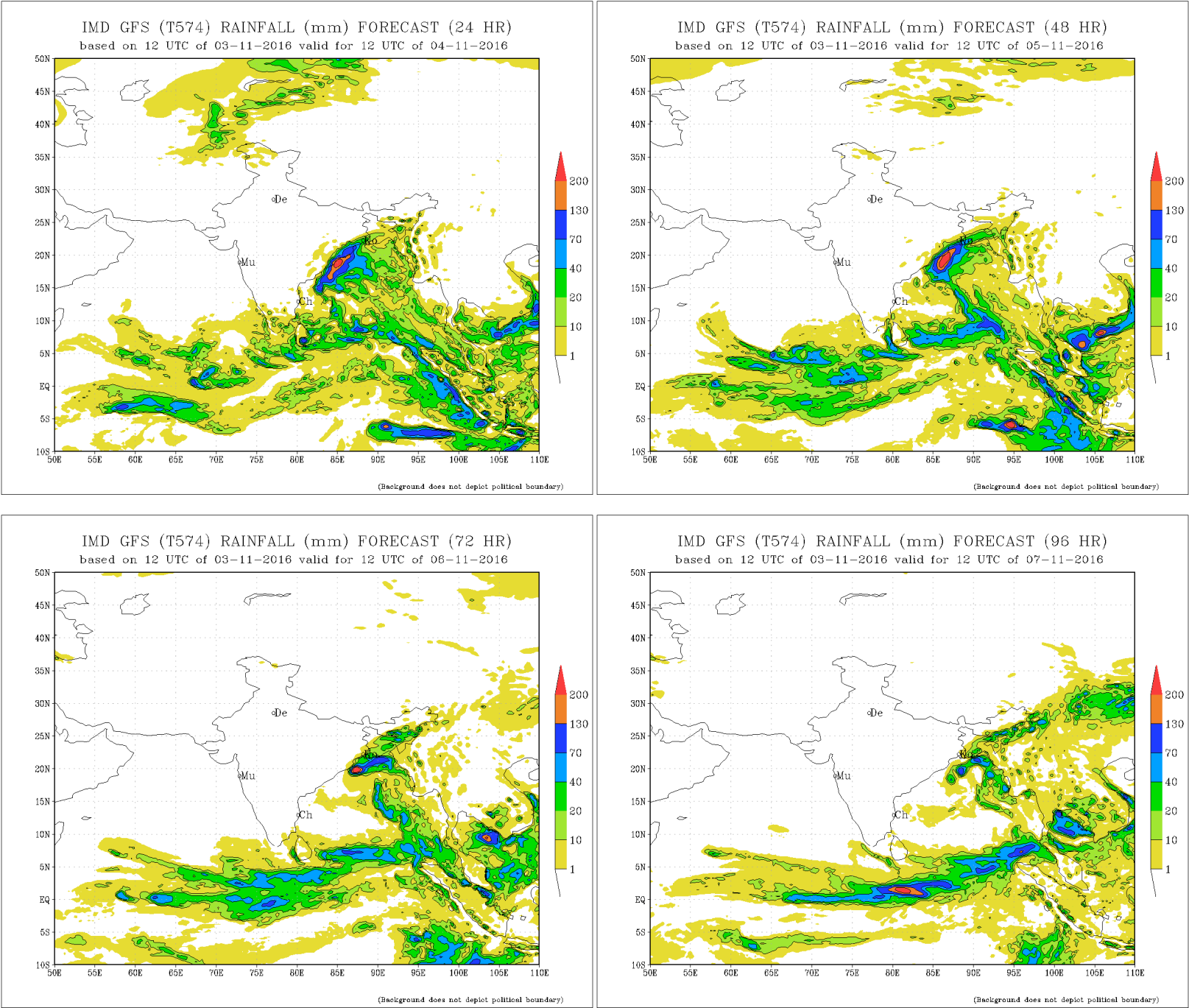


Rainfall in the past 5 years with above-average rainfall hatched in blue and below-average hatched in brown

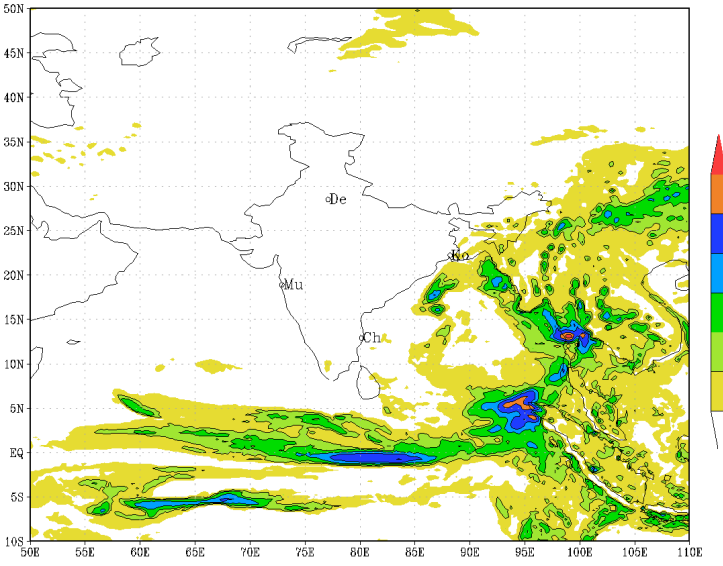


Daily Rainfall Forecast

Daily Rainfall forecasts (up to 7 days ahead) from the IMD New Delhi is provided in figures below. These predictions are from the GFS (T574) model covering the entire south Asian region.

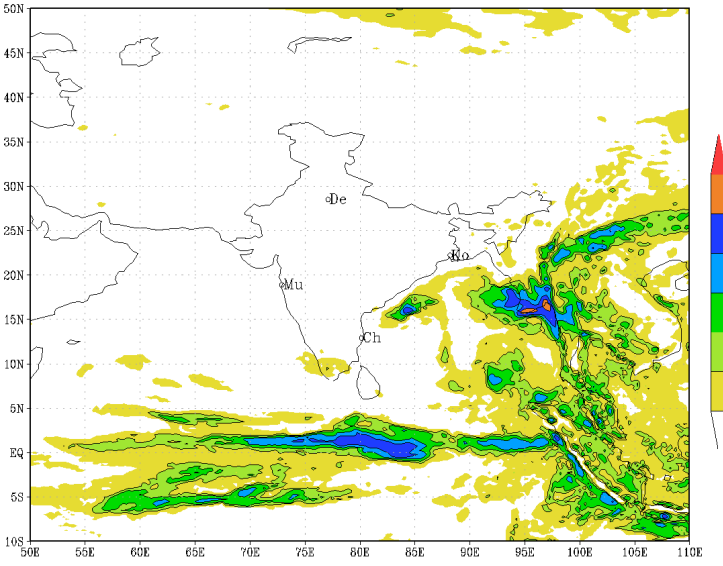


IMD GFS (T574) RAINFALL (mm) FORECAST (120 HR)
based on 12 UTC of 03-11-2016 valid for 12 UTC of 08-11-2016



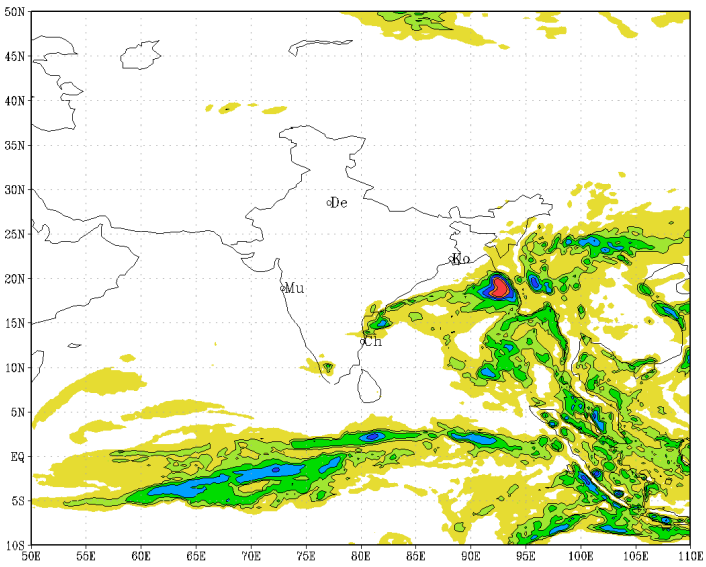
(Background does not depict political boundary)

IMD GFS (T574) RAINFALL (mm) FORECAST (144 HR)
based on 12 UTC of 03-11-2016 valid for 12 UTC of 09-11-2016



(Background does not depict political boundary)

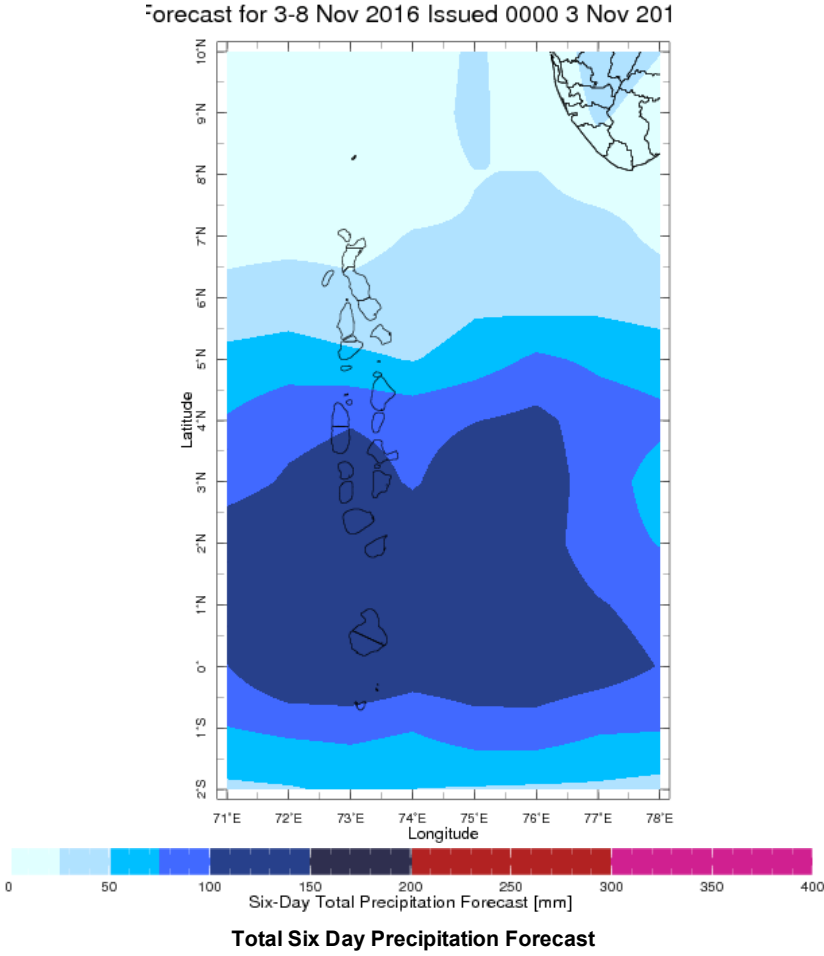
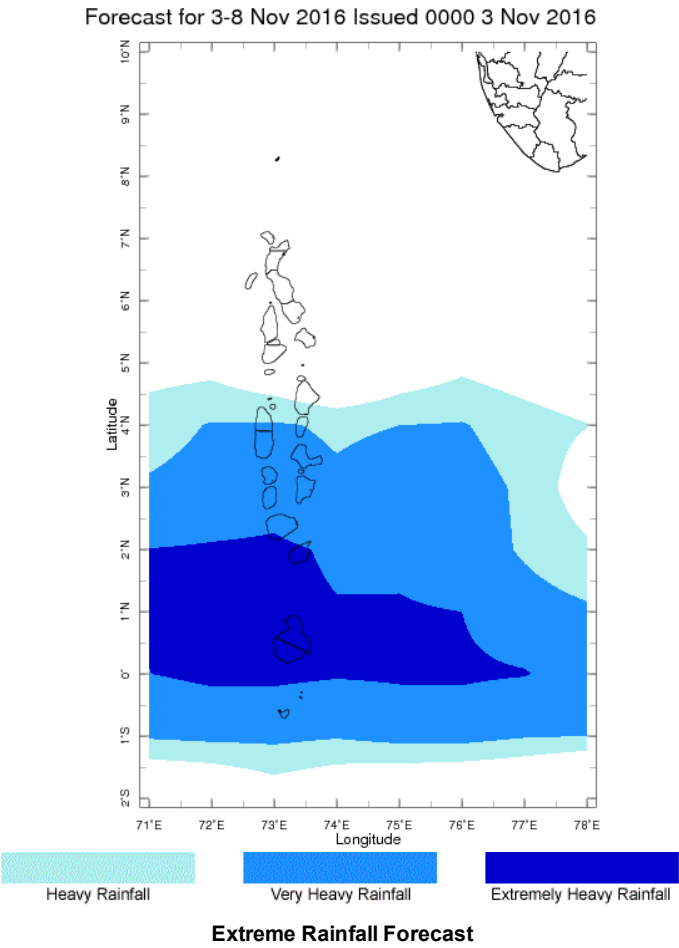
IMD GFS (T574) RAINFALL (mm) FORECAST (168 HR)
based on 12 UTC of 03-11-2016 valid for 12 UTC of 10-11-2016



(Background does not depict political boundary)

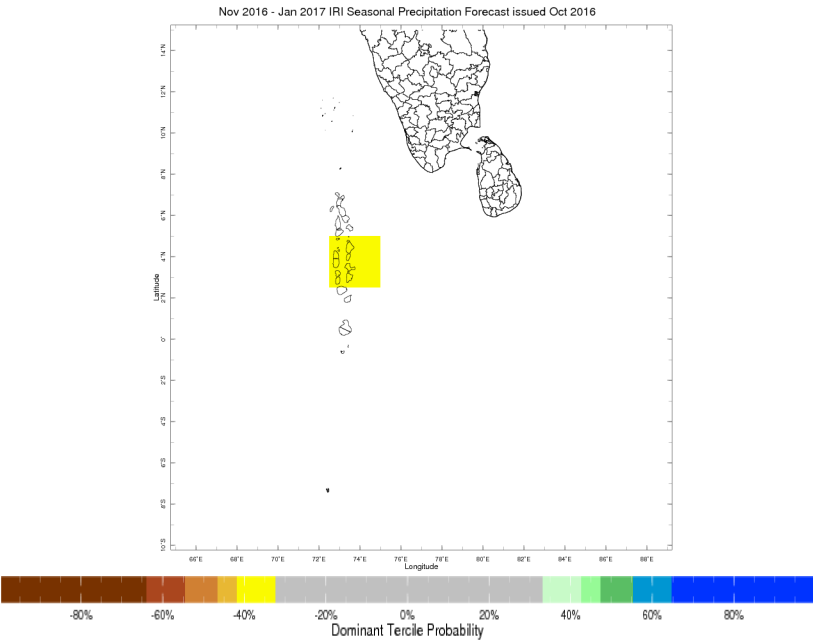
Weekly Rainfall Forecast

Total rainfall forecast from the IRI for next six days is provided in figures below. The figure to the left shows the expectancy of heavy rainfall events during these six days while the figure to the right is the prediction of total rainfall amount during this period.

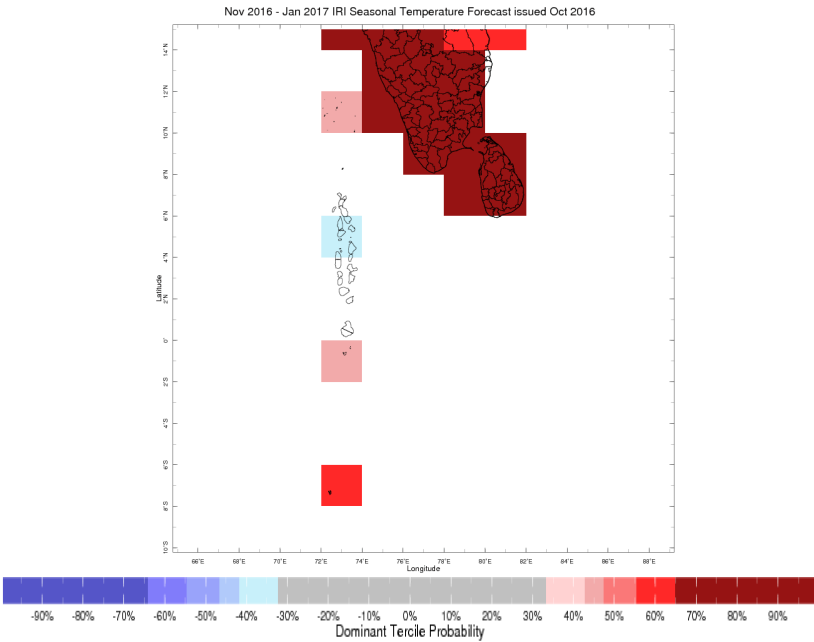


Seasonal Rainfall and Temperature Forecast

Following is the latest seasonal precipitation and temperature prediction for the next 3 months by the IRI. The color shading indicates the probability of the most dominant tercile -- that is, the tercile having the highest forecast probability. The color bar alongside the map defines these dominant tercile probability levels. The upper side of the color bar shows the colors used for increasingly strong probabilities when the dominant tercile is the above-normal tercile, while the lower side shows likewise for the below-normal tercile. The gray color indicates an enhanced probability for the near-normal tercile (nearly always limited to 40%).



Precipitation Forecast



Temperature Forecast

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