Meterological Drought Situation Assessment of Kerala

June-August 2012

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Introduction

Indian Meteorological Department declared the onset of monsoon of 2012 on 5th June. IMD in its first stage forecast of the South-West monsoon issued on 26th April predicted 47% probability of the monsoon rainfall to be normal (96 to 104 % of long period average). In its press release dated 27 July 2012 IMD has reported that Kerala as a whole has a rainfall deficit of 39% from its long

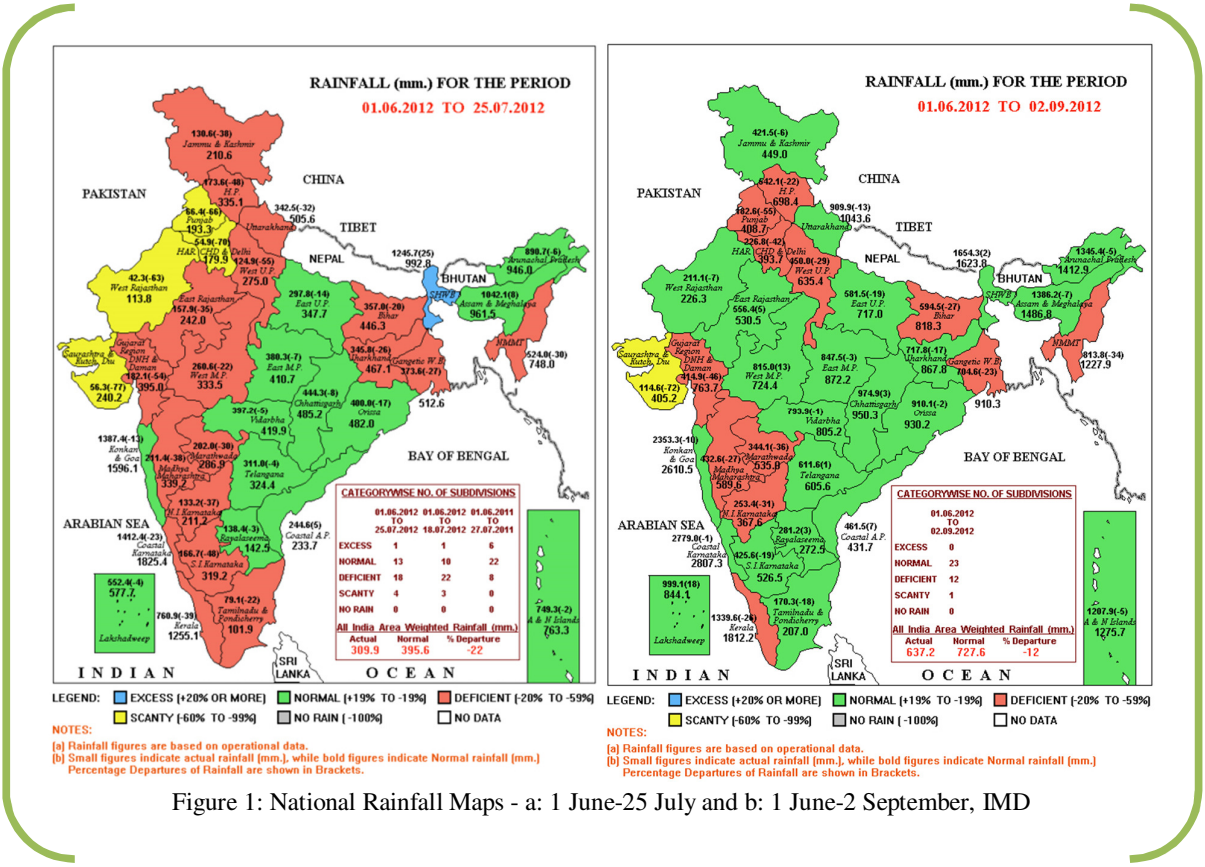


Figure 1: National Rainfall Maps - a: 1 June-25 July and b: 1 June-2 September, IMD

period average for the period of 1 June - 25 July. Figure 1 a & b shows the national rainfall map for the period from 1 June – 25 July and 1 June – 2 September, respectively, published by IMD (Weekly Press Release, IMD, 27 August & 3 September 2012).

Expected average rainfall from 1 June to 25 July for Kerala was 1255.1 mm while actual rainfall was only 760.9 mm (cf. Figure 1); expected rainfall from 1 June to 2 September was 1812.2 mm while actual rainfall was 1330.6 mm.

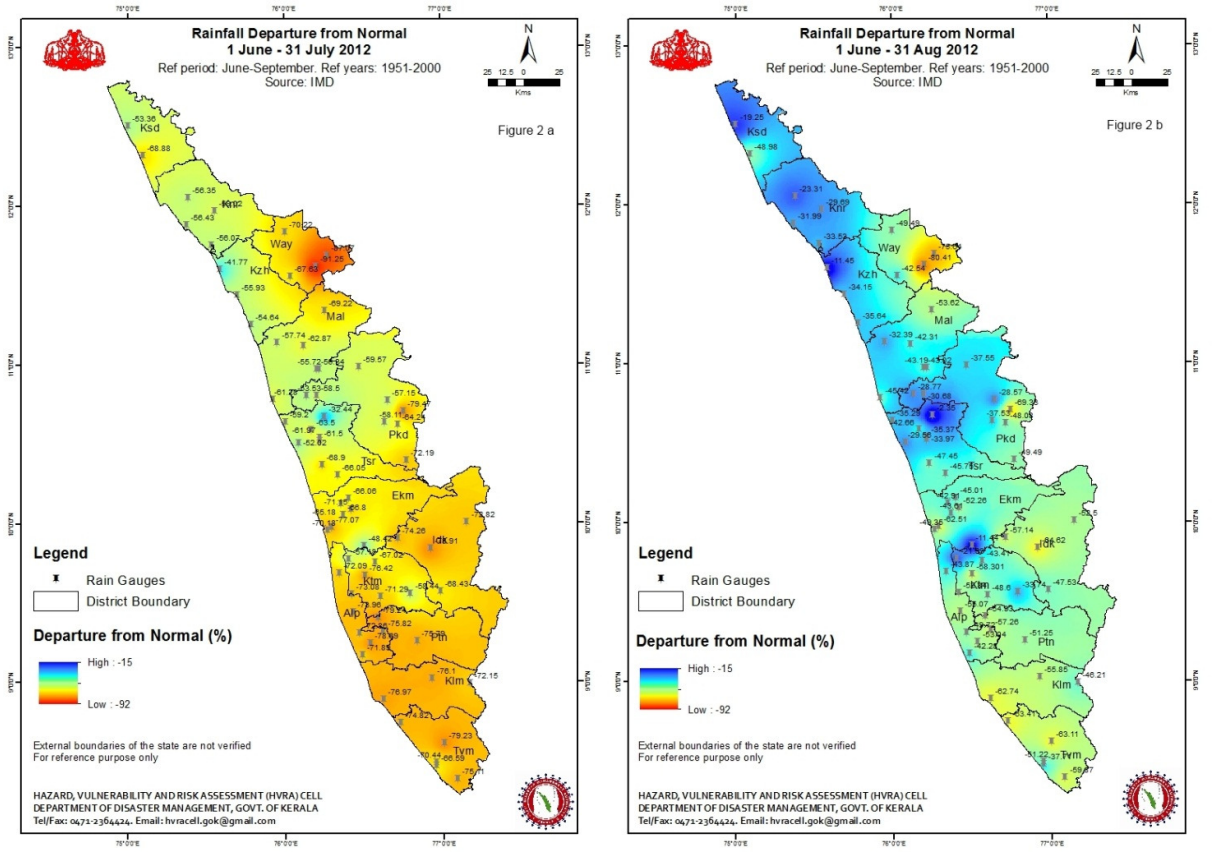
IMD follows the following criteria for meteorological drought classification.

- Severe Drought – >50% deficit from long period average rainfall.
- Moderate Drought – 26-50% deficient from long period average .
- Drought – 10-26% deficit from long period average.

Following IMD's drought classification and the daily rainfall data collected by IMD as part of its Integrated Agricultural Data Platform (IADP), the rainfall deficit from 1 June 2012 - 31 July and 1 June to 31 August 2012 were mapped. Data from 68 rain gauges were used for the analysis.

Situation Assessment

Table 1 shows the data from IMD rain gauges that were used for the assessment and the respective departure percentages. Figure 2 a & b shows the June-July and June-September rainfall departure from seasonal normal (June-September).



Based on the analysis it was evident that majority of the state had a deficit of rainfall by end of July; 492 villages were severely drought prone (>50% deficit), 1070 villages were moderately drought prone (26-50% deficit), and 22 villages were drought prone (10-26% deficit) as per IMD criteria. The monsoon intensified since then and the deficit has dropped to 26% from the 32% as per the figures till 2 Sep 2012 (cf. Figure 1b).

However, this does not assure that the state will recive the expected rainfall by the end of September (end of SW monsoon). The present rain spell may last for another 3 to 5 days as per IMD's medium range forecast and the intensity of cloud cover observable over the peninsula from the latest INSAT Satellite Images. It is reported that the reservoirs of the state has only about 35% of the total storage (which is also a proxy of the ground water status) considering which the situation may agrevate if the North East Monsoon does not perform enough to overcome this deficit. It may be noted that NE monsoon traditionally does not contribute more than 33% of the annual rainfall received by the state. Hence, the following are recommended.

Table 1: Station Name, District, June-September Normal Rainfall 1951-2000 (mm), Departure from normal (%),

ID	Station	District	Normal RF	Departure % (Jun-Jul)	Departure % (Jun-Aug)
1	Kannur	Kannur	2652.1	-56.44	-31.99
2	Taliparamba	Kannur	2669.6	-56.35	-23.31
3	Thalasserry	Kannur	2652.1	-56.08	-33.54
4	Irikkur	Kannur	2669.6	-59.02	-29.69
5	Hosdurg	Kasaragod	2979.9	-68.88	-48.98
6	Kudulu	Kasaragod	2979.9	-53.36	-19.25
7	Kozhikode	Kozhikode	2363.1	-54.64	-35.64
8	Vadakara	Kozhikode	2832.3	-41.78	-11.45
9	Quilandy	Kozhikode	2612.9	-55.94	-34.15
10	Mananthavady	Wayanad	2091	-70.22	-49.50
11	Vythiri	Wayanad	3172.7	-67.63	-42.54
12	Ambalavayal	Wayanad	3172.7	-91.26	-80.41
13	Kuppady	Wayanad	2091	-87.07	-75.64
14	Nilambur	Malappuram	2005.6	-69.22	-53.62
15	Manjeri	Malappuram	2130.4	-62.87	-42.31
16	Perinthalmanna	Malappuram	2130.4	-55.73	-43.19
17	Ponnani	Malappuram	2046.1	-61.29	-45.42
18	Angadippuram	Malappuram	2130.4	-56.35	-43.02
19	Karipur AP	Malappuram	2130.4	-57.75	-32.39
20	Palakkad	Palakkad	1394.4	-57.16	-28.57
21	Mannarkad	Palakkad	1698.9	-59.58	-37.56
22	Ottappalam	Palakkad	1758.8	-32.44	-2.36
23	Alathur	Palakkad	1435.8	-58.11	-37.53
24	Chittur	Palakkad	1394.4	-79.48	-69.33
25	Kollengode	Palakkad	1435.8	-64.24	-48.08
26	Pattambi	Palakkad	1758.8	-58.50	-30.68
27	Thrithala	Palakkad	1758.8	-53.53	-28.77
28	Parambikulam	Palakkad	1435.8	-72.20	-49.49
29	Thrissur	Thrissur	2249.1	-61.50	-33.97
30	Kodungallur	Thrissur	2224.6	-66.86	-43.61
31	Irinjalakuda	Thrissur	2218.7	-68.93	-47.45
32	Vadakkancherry	Thrissur	1995	-63.51	-42.66
33	Kunnamkulam	Thrissur	2046.1	-59.22	-35.30
34	Chalakudy	Thrissur	2300.2	-66.06	-45.75
35	Enamackel	Thrissur	2218.7	-52.03	-29.56
36	Vellanikkara	Thrissur	2224.6	-61.98	-35.37
37	Kochi AP	Ernakulam	2074	-70.18	-49.35
38	Aluva	Ernakulam	2141.9	-65.19	-42.91
39	Piravom	Ernakulam	2074	-48.42	-11.44
40	Perumbavur	Ernakulam	1987.1	-71.16	-52.26
41	CIAL Kochi	Ernakulam	2074	-66.06	-45.01
42	Ernakulam South	Ernakulam	2074	-77.07	-62.51
43	Alappuzha	Alappuzha	1830.5	-73.09	-52.84
44	Kayamkulam	Alappuzha	1391.8	-71.90	-42.28

45	Mavelikkara	Alappuzha	1731.2	-78.70	-53.04
46	Cherthala	Alappuzha	1764.3	-72.10	-43.87
47	Mancompu	Alappuzha	1830.5	-73.97	-55.08
48	Haripad	Alappuzha	1837	-72.86	-49.72
49	Chengannur	Alappuzha	1920.8	-75.83	-57.27
50	Kottayam	Kottayam	1830.5	-71.30	-48.60
51	Vaikom	Kottayam	1830.5	-57.18	-21.99
52	Kumarakom	Kottayam	1830.5	-76.42	-58.30
53	Kozha	Kottayam	1830.5	-67.03	-43.41
54	Kanjirappally	Kottayam	1830.5	-58.45	-33.74
55	Peermade	Idukki	3104.5	-68.43	-47.53
56	Thodupuzha	Idukki	3104.5	-74.27	-57.14
57	Munnar	Idukki	2771.8	-72.83	-52.50
58	Idukki	Idukki	3104.5	-78.91	-64.63
59	Thiruvalla	Pathanamthitta	1713.8	-79.24	-54.93
60	Konni	Pathanamthitta	1716.2	-75.80	-51.25
61	Kollam	Kollam	1266.5	-76.98	-62.74
62	Aryankavu	Kollam	1271.5	-72.16	-46.21
63	Punalur	Kollam	1458.3	-76.11	-55.85
64	Trv City	Thiruvananthapruam	855.7	-70.45	-51.22
65	Trv AP	Thiruvananthapruam	818.1	-66.59	-37.71
66	Nedumangad	Thiruvananthapruam	830.1	-79.23	-63.11
67	Neyyattinkara	Thiruvananthapruam	715.2	-75.11	-59.87
68	Varkala	Thiruvananthapruam	1137.9	-74.82	-63.41

Recommendations

1. KSDMA may move to declare drought condition in the state based on the rainfall status until July 2012 if the provisions of DM Act 2005 permit.
2. Alternatively, the districts that still face siginificant deficit (>50%), they being Wayanad, Kollam, Thiruvananthapuram and Idukki (cf. Figure 2b) may be decleared as drought affected.
3. Further:
    a. Public should be made aware and motivated to avoid directly using perennial and natural water sources such as ponds, fresh water lakes, community wells and open wells for swimming, bathing, bathing animals etc.
    b. Local Self Governments should ensure that community owned ponds, wells and fresh water lakes are kept clean and no sewerage systems or drainages should be allowed to drain into such water bodies.
    c. Establishments and houses on the banks of ponds, wells and fresh lakes should collect their sewerage and drain it further away from such water bodies.
    d. Attempt has to be made by every household and office to conserve every drop of water.
    e. Fresh water shall not be used for washing motor vehicles, especially water supplied through public water supply system.

f. Public may be promoted to recycle water, for example water used in kitchen may be used for watering garden plants.
g. Public may be recommended to reduce the number of bathing in a day to one and they shall be sensitised of the ways of judicious use of toilet flush.
h. Public offices and individuals who can afford may establish a simple rain water harvesting system were in water trapped in the roof top may be transferred to large PVC tanks or drums after simple cloth filtering. This water may be used for washing cloths and gardening if not for drinking and cooking.
i. Those households with open well shall ensure that excess water from roof and rainwater flowing within their compound is allowed to percolate in and around the open well.
j. Agriculturists may ensure judicious use of water for irrigating crops. Whereever possible they shall attempt to reduce the usage of water to the half of what they are currently extracting from the ground water or open wells until the situation improves.
k. Water resources department may ensure rationing of water to BPL communities.
l. Ground water extracting industries should be prevented from extracting ground water until the situation improves.
m. Forest department should ensure that sufficient water is available to animals in the sanctuaries, devoid of which, human-animal conflict cases may significantly increase.
n. Possibility of using SDRF for addressing the prevailing drought condition shall be explored in a meeting of the KSDMA under the Chairmanship of the Honb'le Chief Minister.
o. KSDMA shall attempt to rope in the support of all print and electronic media for communicating the above said points.

Conclusion

This report is submitted to Secretary KSDMA for further necessary action and is a followup of the previous report submitted on 04 August 2012.

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Submitted on: 03 September 2012