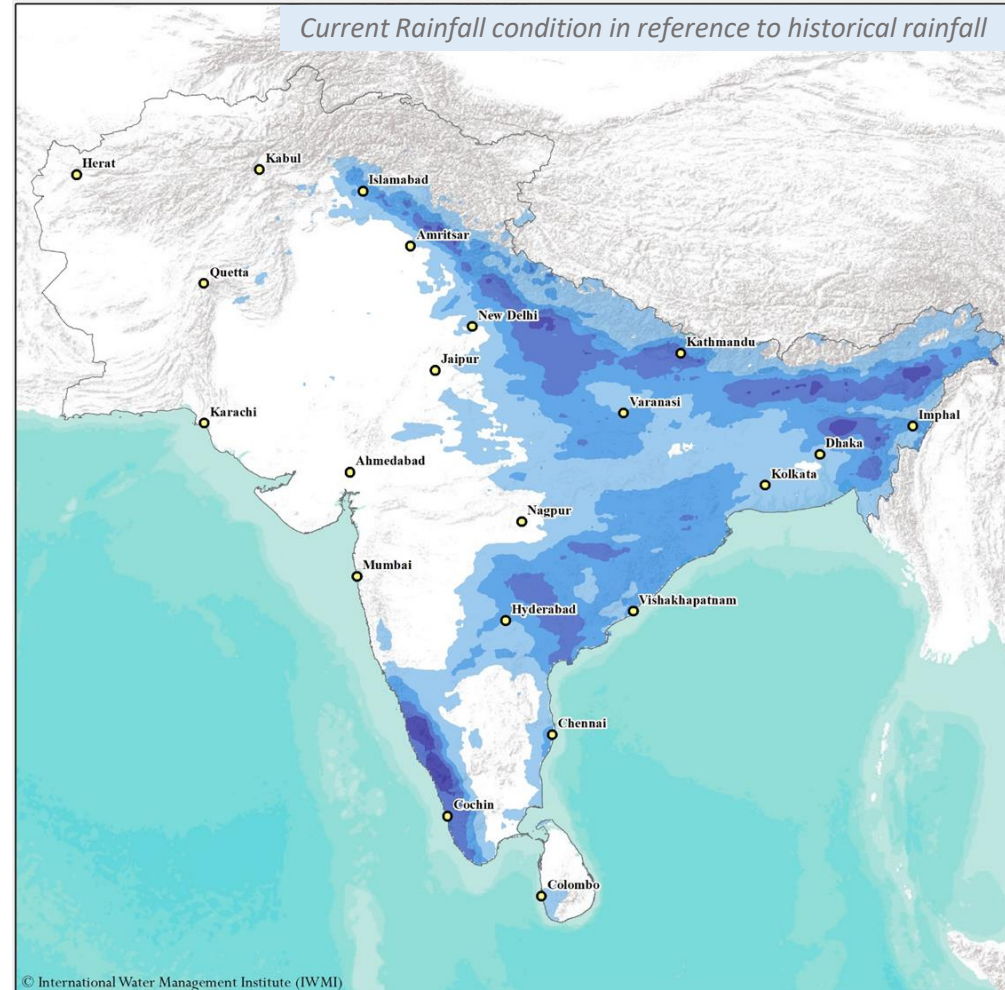
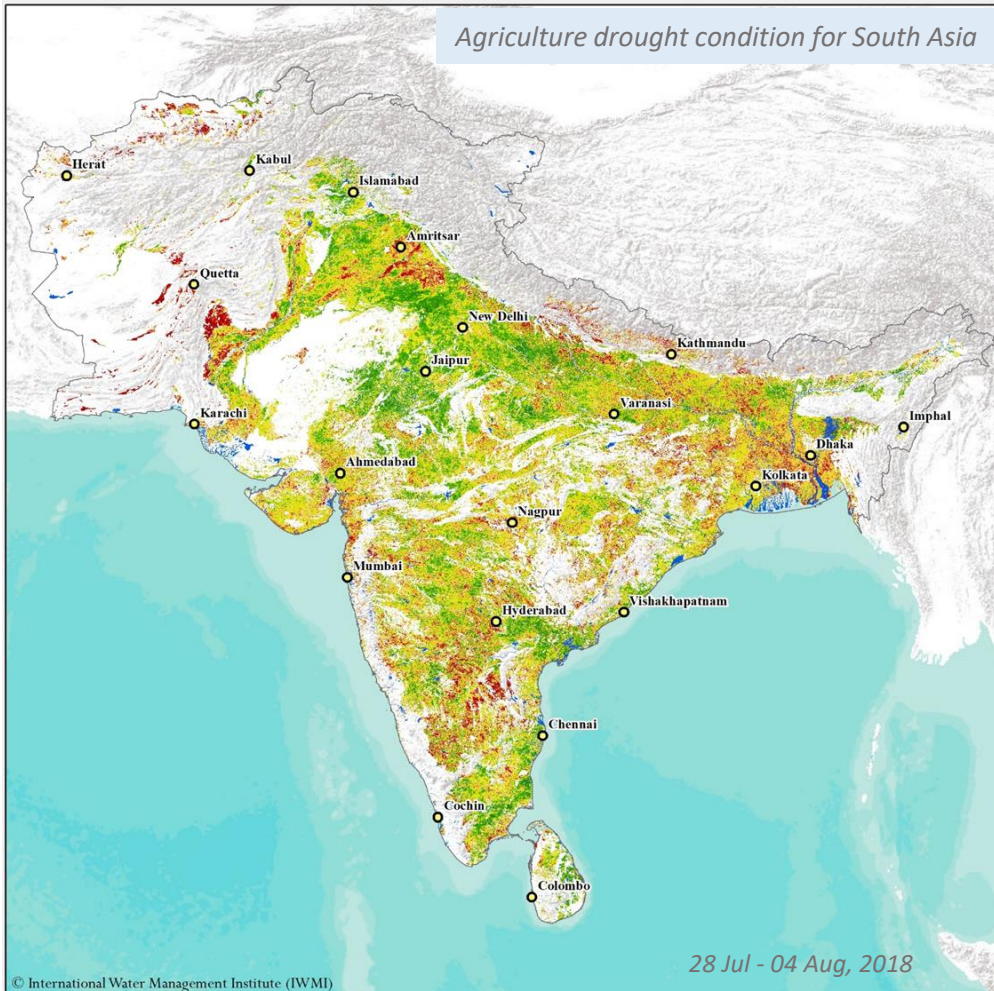


SADMS DROUGHT BULLETIN

17 Aug 2018 | ISSUE 5



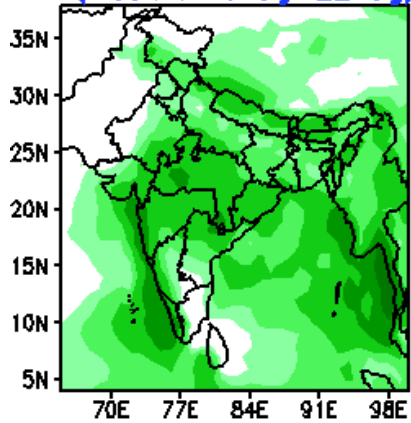
South Asia Drought Monitoring System (SADMS) drought weekly bulletin is produced by International Water Management Institute (IWMI) and is funded by the Indian Council of Agricultural Research (ICAR), the CGIAR Research Program on Water, Land and Ecosystems (WLE) and the Ministry of Agriculture, Forestry and Fisheries (MAFF), Japan. Development of the beta-monitoring system was made possible at this inception through IDMP supported by WMO/GWP. The bulletin supports the government and other users to strengthen the potential use of satellite technology and modeling tools to reduce the impacts on agriculture risks and support in drought contingency plans and mitigation efforts.

Rainfall Summary - Predicted week wise rainfall for South Asia

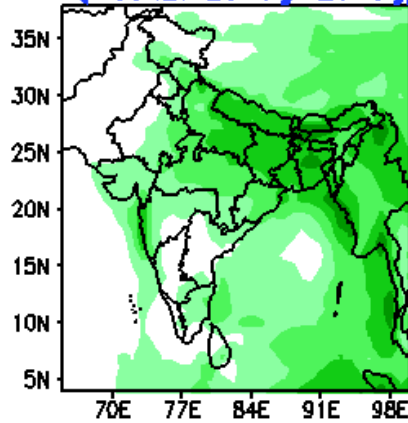
Multi Model Ensemble (MME) Seasonal Prediction System for 2018 Monsoon Season

MME Actual Rainfall (mm/day)

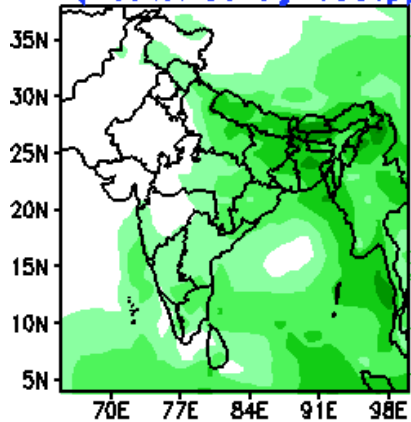
(Week1: 16Aug-22Aug)



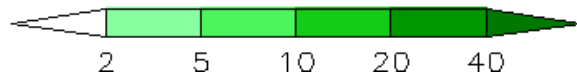
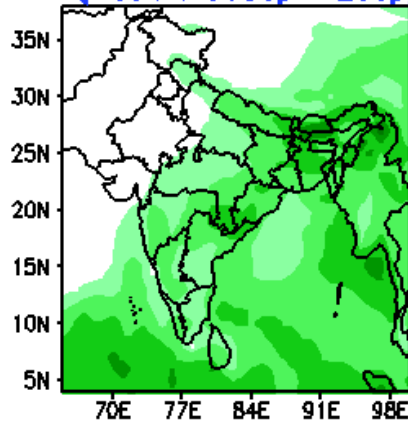
(Week2: 23Aug-29Aug)



(Week3: 30Aug-05Sep)

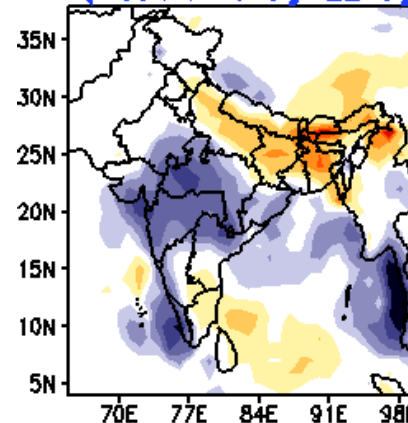


(Week4: 06Sep-12Sep)

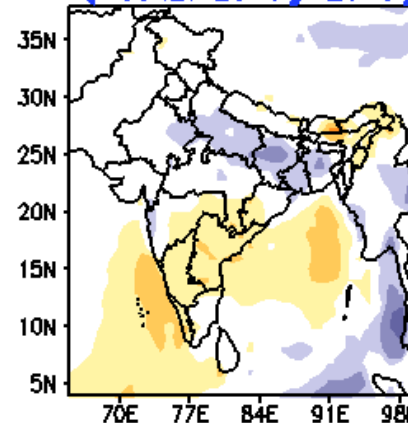


MME Rainfall Anomaly (mm/day)

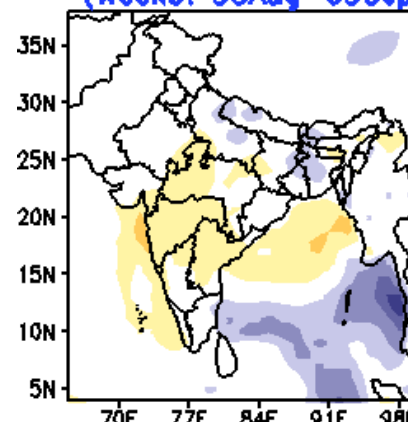
(Week1: 16Aug-22Aug)



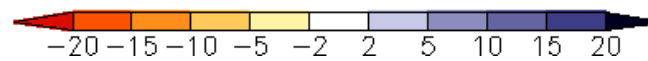
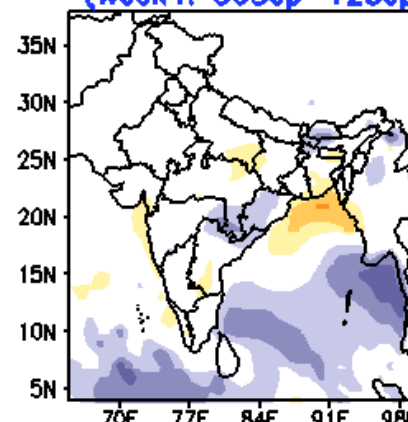
(Week2: 23Aug-29Aug)



(Week3: 30Aug-05Sep)



(Week4: 06Sep-12Sep)



- Rainfall condition for UP, Bihar and parts of MP might increase in the next week, however it is still below rainfall and expect the condition will improve by end of August.
- The North-eastern States of India might experience increase in rainfall, however the rainfall anomaly explains deficit rainfall.
- Madhya Pradesh and eastern Rajasthan, experience normal rainfall but Gujarat seems low rainfall going by the forecast till 12 Sept..
- Sri Lanka for Southern and Western Provinces explains low rainfall but the condition might improve from end of August to mid Sept.
- Nepal far west and mid-west rainfall anomaly explains deficit including Bhutan but situation might increase in end of August to Mid Sept.
- Overall Pakistan will not rainfall except northern region with isolated rainfall going by the extended prediction till 12 September

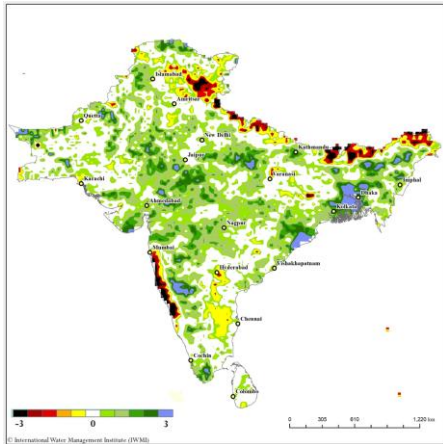
Note: The summary on country specific details described above based on the ERPAS MME information product do not imply the expression of any opinion whatsoever on the part of the IWMI and its partners as well the data provided by IITM.

SOUTH ASIA DROUGHT EARLY WARNING SYSTEM (SADEWS)

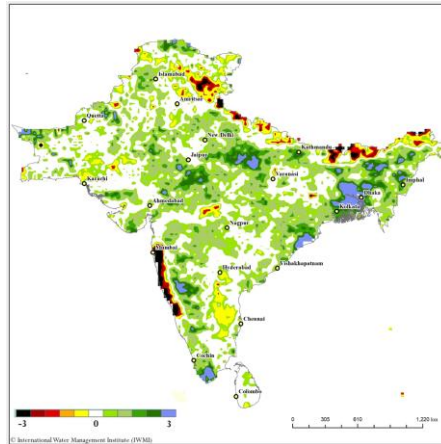
Current Condition: 16 Aug 2018
Forecast Period : 16 Aug and 31 Aug 2018
Standardized Soil Moisture and Runoff Index
for regional drought and early warning

SOIL MOISTURE PERCENTILE (SMP)

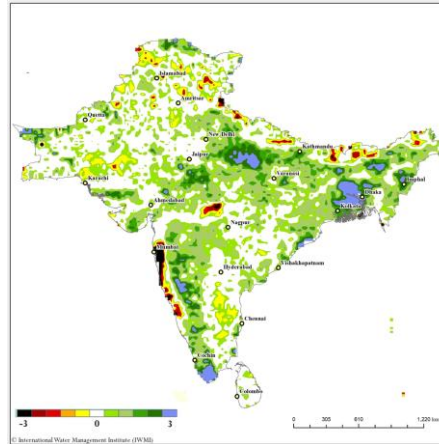
7-day Percentile 16th Aug 2018



7-day Forecast Percentile 23th Aug 2018

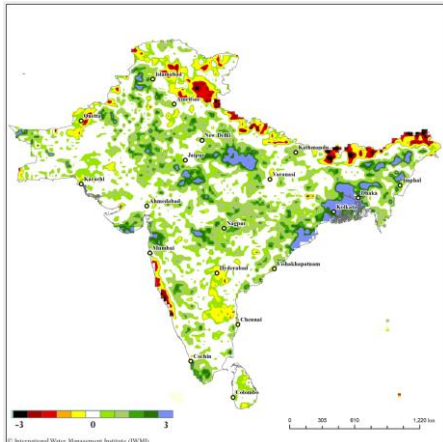


7-day Forecast Percentile 31st Aug 2018

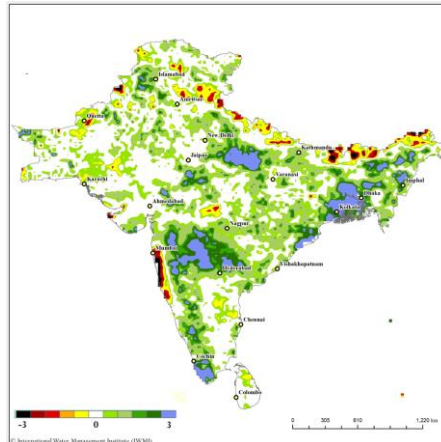


SOIL RUNOFF PERCENTILE (SRP)

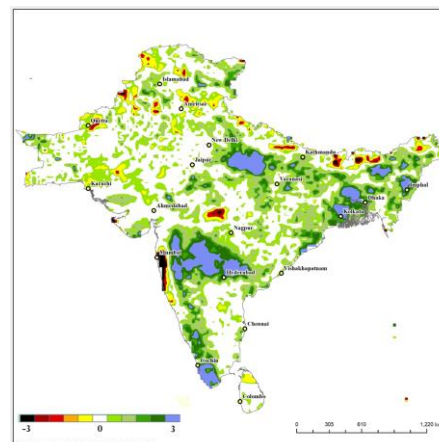
7-day Percentile 16th Aug 2018



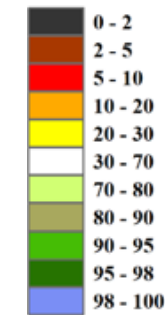
7-day Forecast Percentile 23th Aug 2018



7-day Forecast Percentile 31st Aug 2018



Percentile



SOIL RUNOFF PERCENTILE (SRP)

Summary:

The experimental drought forecast products for research/scientific use based on 16th August 2018 initial condition. These forecast products are based on the real time weekly operational forecast generated by Global ENSEMBLE (GENS), a weather forecast model made up of 21 separate forecasts, or ensemble members developed at The National Centers for Environmental Prediction (NCEP), NOAA.

Drought Forecast Outlook:

- The initial condition of SSI has improved over Maharashtra, Madhya Pradesh, Rajasthan, Uttar Pradesh and North-eastern states, particularly excess soil moisture in Maharashtra state.
- Initial condition on the Soil Runoff Index (SRI) explains similar trend to SSI.
- Some level of dryness is expected in the reduced following weeks over central parts of the region such as western Andhra Pradesh, Karnataka, Coastal Tamil Nadu.
- In reference to IMD actual rainfall for India, several northern states in eastern UP, Bihar are in deficit rainfall condition which is affecting the crop productivity and advance need for State and Local authorities for better planning and coordination on water resources management.

The SADEWS is regional scale early warning system developed as a collaborative project between International Water Management Institute (IWMI) and Indian Institute of Technology – Gandhinagar (IIT-GN).

Disclaimer: The designations employed and the presentation of material in this information product do not imply the expression of any opinion whatsoever on the part of the International Water Management Institute (IWMI) and its partners concerning the legal or development status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. The views expressed in this information product are those of the author(s) and do not necessarily reflect the views or policies of IWMI.

INDIA – Monthly Rainfall Condition (Actual vs. Anomaly)

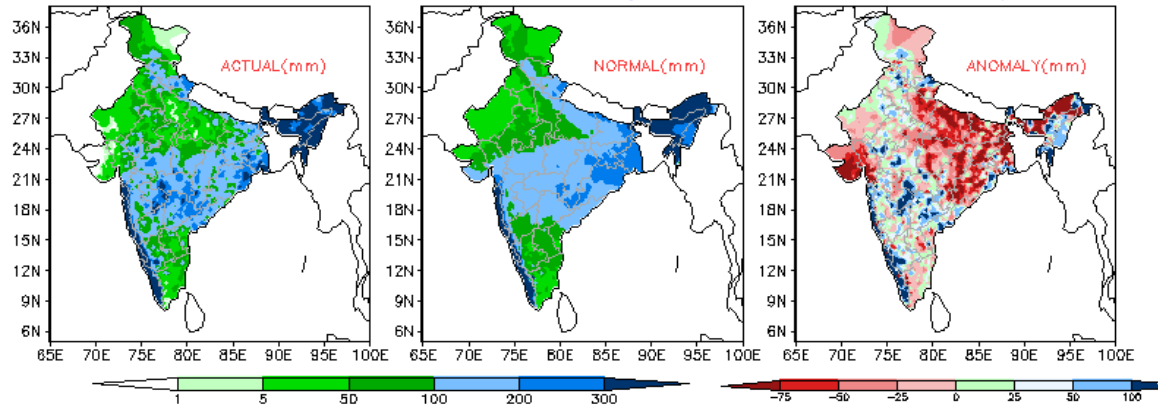
Actual Rainfall – June 2018

RAINFALL OVER THE COUNTRY FOR JUN 2018

ACTUAL – 155.3 mm NORMAL – 163.6 mm (95 % of Long Period Average)

(Based on real time data)

(CLIMATE MONITORING AND ANALYSIS GROUP)



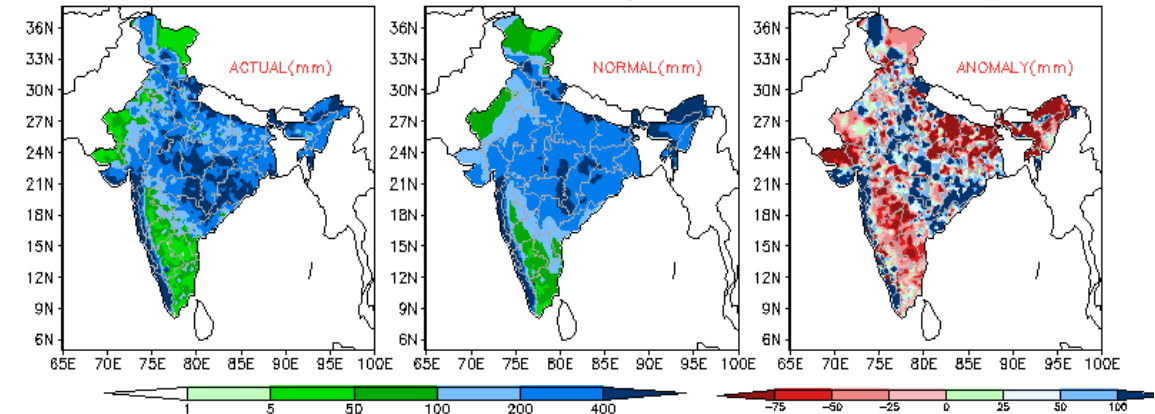
Actual Rainfall – Jul 2018

RAINFALL OVER THE COUNTRY FOR JUL 2018

ACTUAL – 272.4 mm NORMAL – 289.2 mm (94.2 % of Long Period Average)

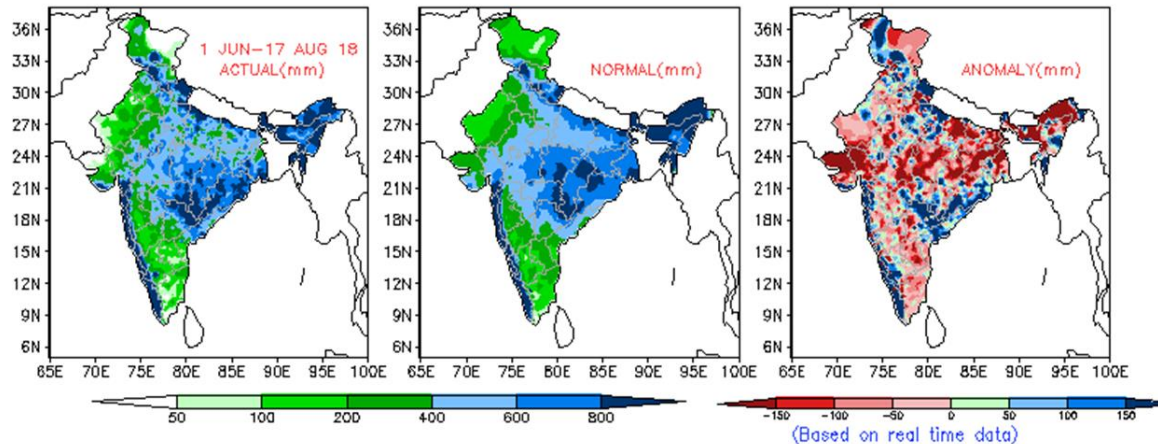
(Based on real time data)

(CLIMATE MONITORING AND ANALYSIS GROUP)



Actual Rainfall – Seasonal 2018

CLIMATE MONITORING AND ANALYSIS GROUP



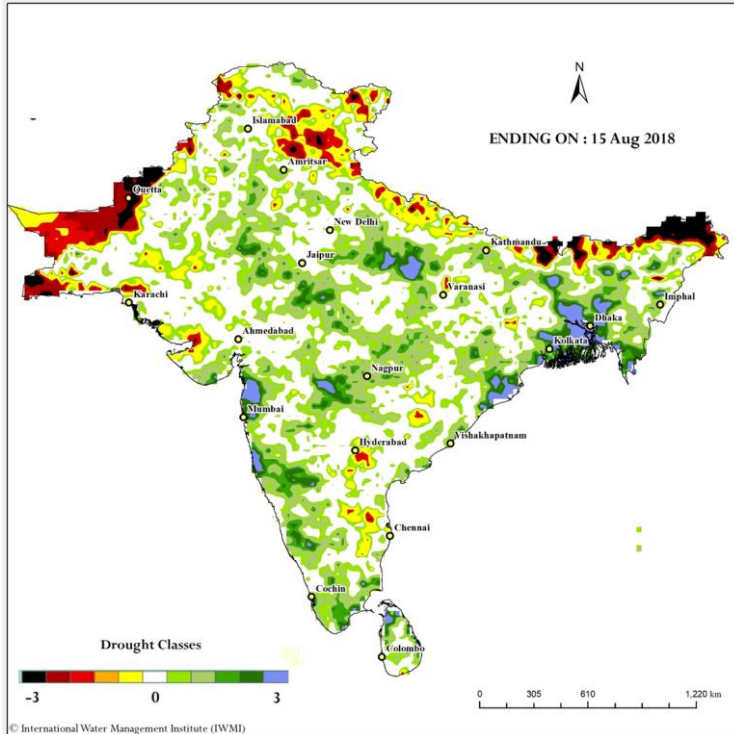
Data Source: IMD

- Overall there is an increase in rainfall for the month of July compared to the long-term anomaly, however some coastal areas in Kerala, Orissa and NE States had excess rainfall.
- Month of June has experienced normal rainfall over peninsular India and Chhattisgarh and Orissa experience higher rainfall.
- There has been a deficit of rainfall in the month of June over Bihar, Gujarat and UP.
- Overall there has been a excess rainfall along western coast of India.
- North Central and Western part of the region is facing serious deficit of rainfall including MP, Bihar and Gujarat. This might highly affect the crop productivity during this year's kharif season.

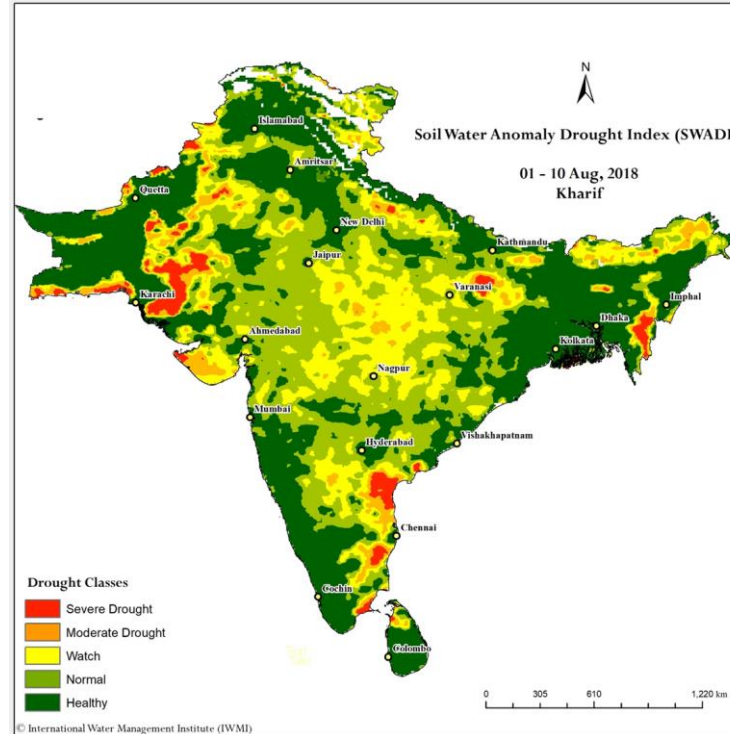
Note: Simple qualitative assessment on the performance on rainfall condition was described here to cross compare with SADMS – IDSI products for evaluation purpose only.

South Asia Drought Indices – A comparison & Assessment

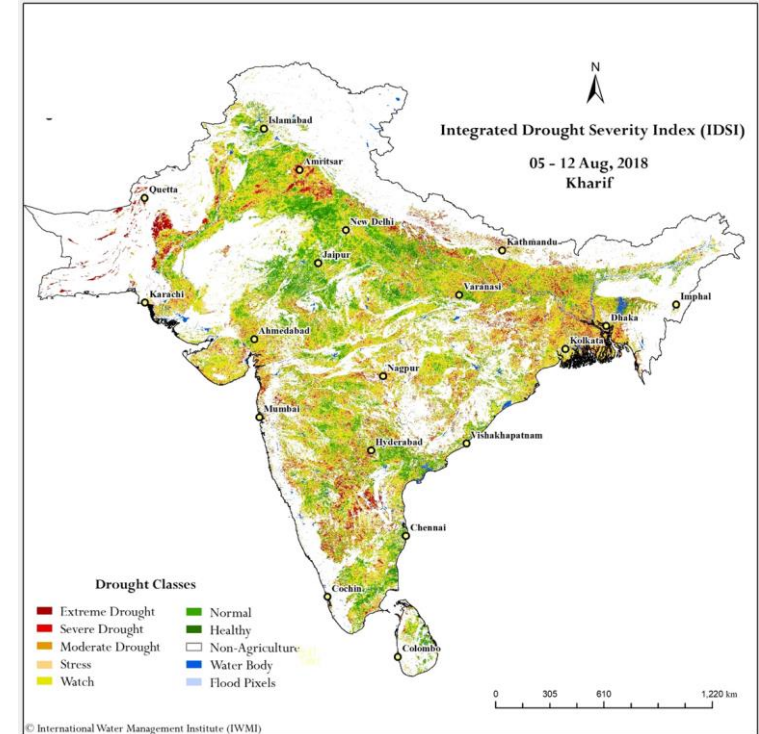
SA-DEWS



SWADI

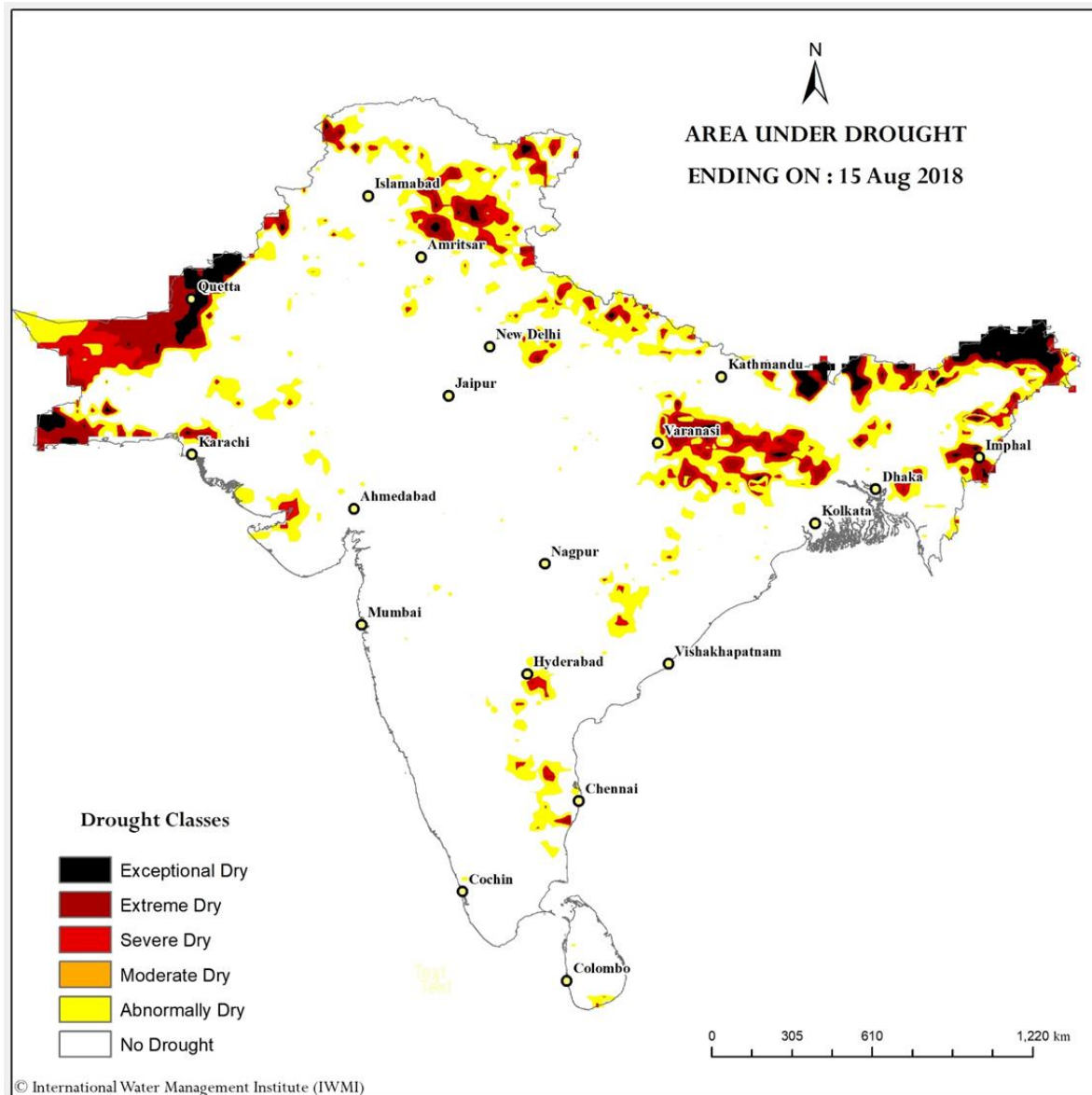


IDS



- South Asia-Drought Early Warning System (SA-DEWS) is an integrated approach based on satellite estimates of rainfall temperature, wind and soil type utilized in VIC model and the derived outputs namely Standardized Precipitation Index (3-Month), Standardized Soil Moisture Index (SSI) and Standardized Runoff Index (SRI).
- Soil Water Anomaly Drought Index (SWADI) is derived from satellite based decadal soil moisture product of ASCAT provided by EUMETSAT.
- Integrated Drought Severity Index (IDS) is an integrated index that has been formulated using VCI, TCI & PCI at 500m resolution for agricultural land-use over South Asia.
- It can be observed, that during this time period all the three indices shows a good relation with each other. The peninsular India has reviving well from the drought situation. Parts of Bihar, Jharkhand and Eastern UP is facing some scarcity of rainfall which is well reflected in all the three indices. Also, parts of Karnataka and Tamil Nadu is still facing moderate drought like scenario.

South Asia Drought Forecast



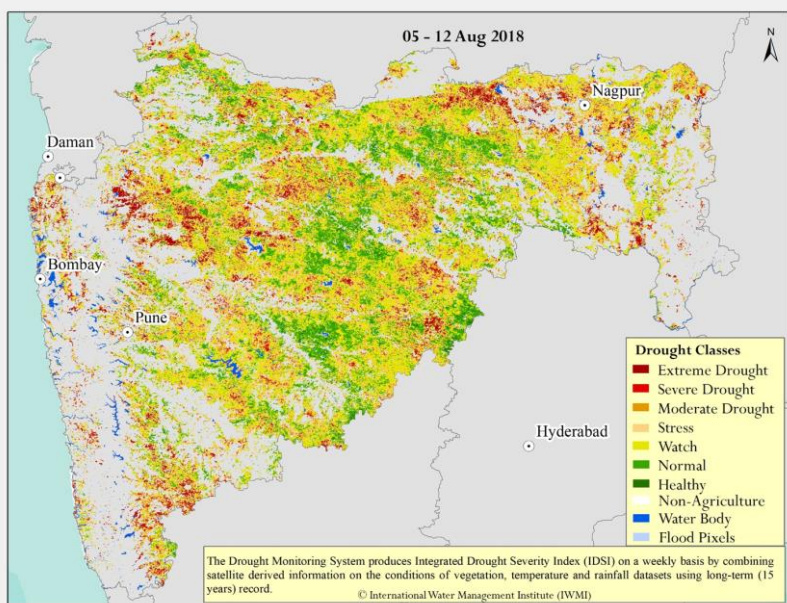
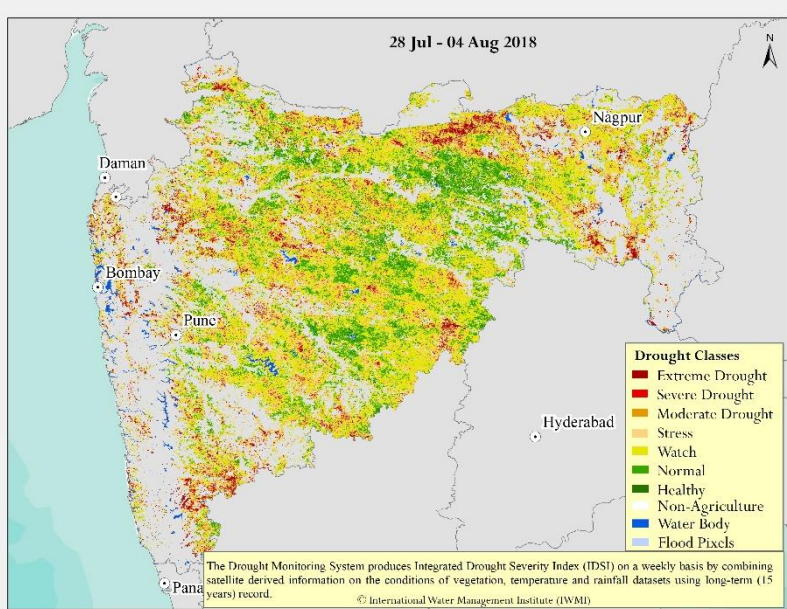
Summary:

- Using the initial condition i.e. 6th August 2018 based on satellite rainfall estimates of 3B42RT daily time-step integrates in the VIC model and the derived outputs namely Standardized Precipitation Index (3-Month), Standardized Soil Moisture Index (SSI) and Standardized Runoff Index (SRI)
- The extreme values of all three conditions are statistically combined to generated areas under drought for entire South Asia
- Northern Tamil Nadu, Western Andhra Pradesh, Telangana and northern Gujarat is observed to have Severe to Extreme dry condition. Few patches in eastern Uttar Pradesh and Jharkhand shows some level of stress condition which seems to be rising towards severity.
- *Reference to IMD SPI data is well correlated to the area under drought predicted by drought algorithm.*

India – State wise analysis



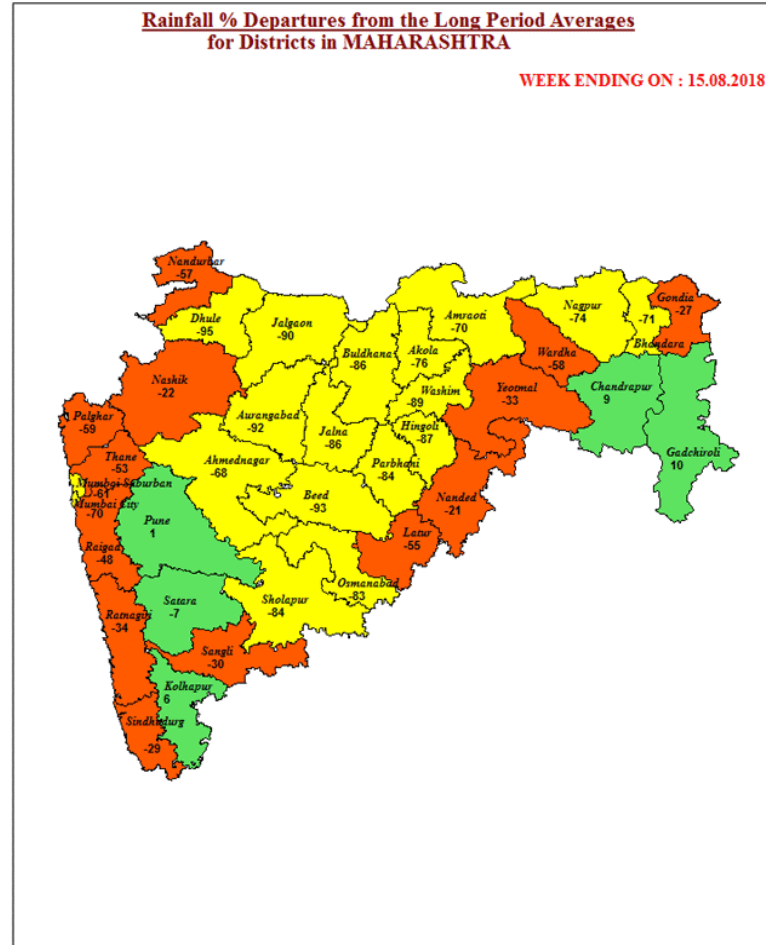
South Asia Drought Monitoring System (SADMS) – Agriculture Assessment (Maharashtra)



INDIA METEOROLOGICAL DEPARTMENT RMC MUMBAI

Rainfall % Departures from the Long Period Averages for Districts in MAHARASHTRA

WEEK ENDING ON : 15.08.2018

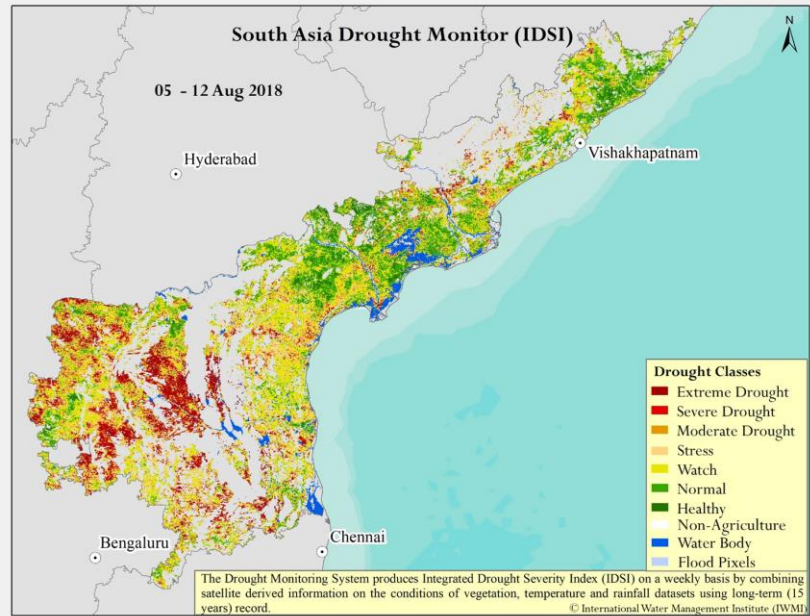
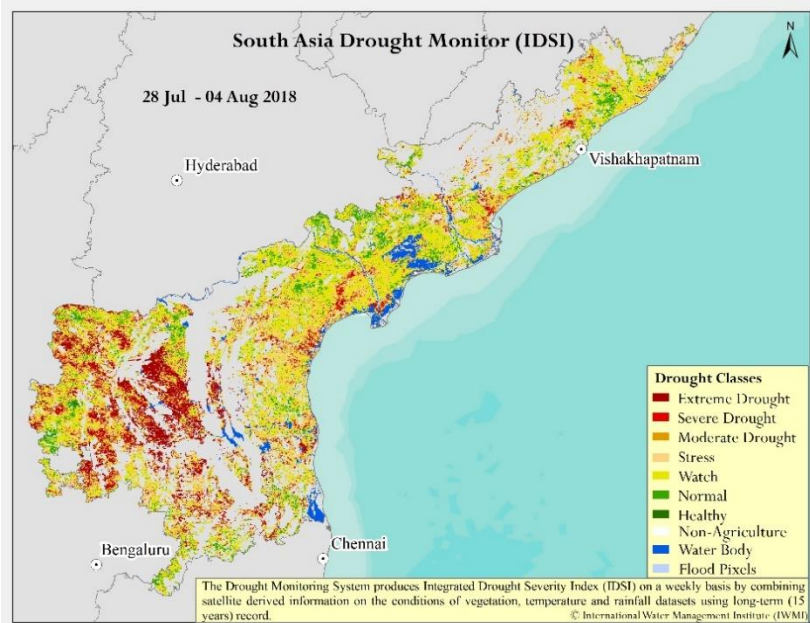


LEGEND: ■ L. EXCESS (+60% OR MORE) ■ EXCESS (+20% TO +59%) ■ NORMAL (+19% TO -19%)
 ■ DEFICIENT (-20% TO -59%) ■ L. DEFICIENT (-60% TO -99%) ■ NO RAIN (-100%) ■ NO DATA

Summary:

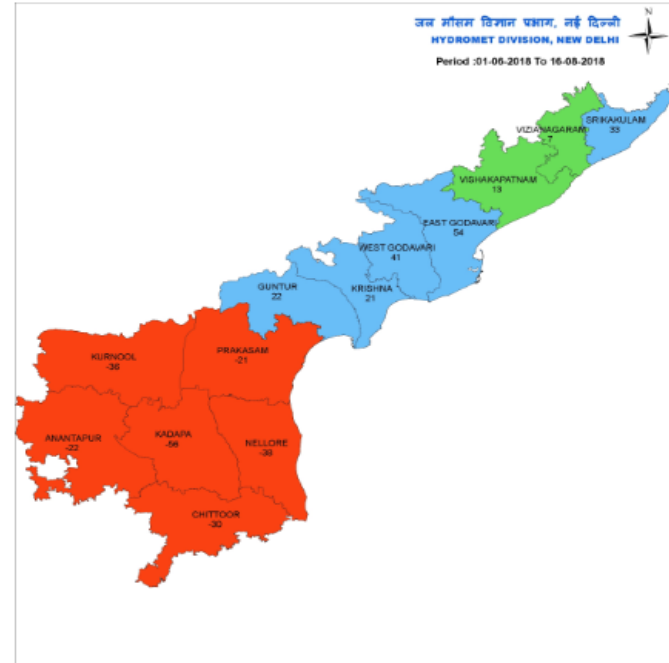
- SADMS framework was applied for the agriculture drought monitoring in Maharashtra for current obtained mainly from satellite remote sensing data. The index (Integrated Drought Severity Index – IDSI), Indian Meteorological Rainfall maps were analysed to understand rainfall deficit which could help in validating the drought maps with the absence of in-situ observations.
- Moderate rainfall in the month of July has reduced the vegetation stress in the agricultural land, which is clearly reflected in the IDSI. Most of state shows less stress, all other districts shows progress in the agricultural growth. Same has been revealed by seasonal rainfall report from IMD.
- In reference to SADEWS till mid July, both the SSI and SRI are favourable using the precipitation forecast data with initial condition from **20th July 2018**.

South Asia Drought Monitoring System (SADMS) – Agriculture Assessment (Andhra Pradesh)



भारत मौसम विज्ञान विभाग
INDIA METEOROLOGICAL DEPARTMENT

DISTRICT RAINFALL DEPARTURE MAP - ANDHRA PRADESH



Rainfall Status (Avg from 01-06-2018 to till date)
Actual **307.2mm**, Deviation **-9.1%**

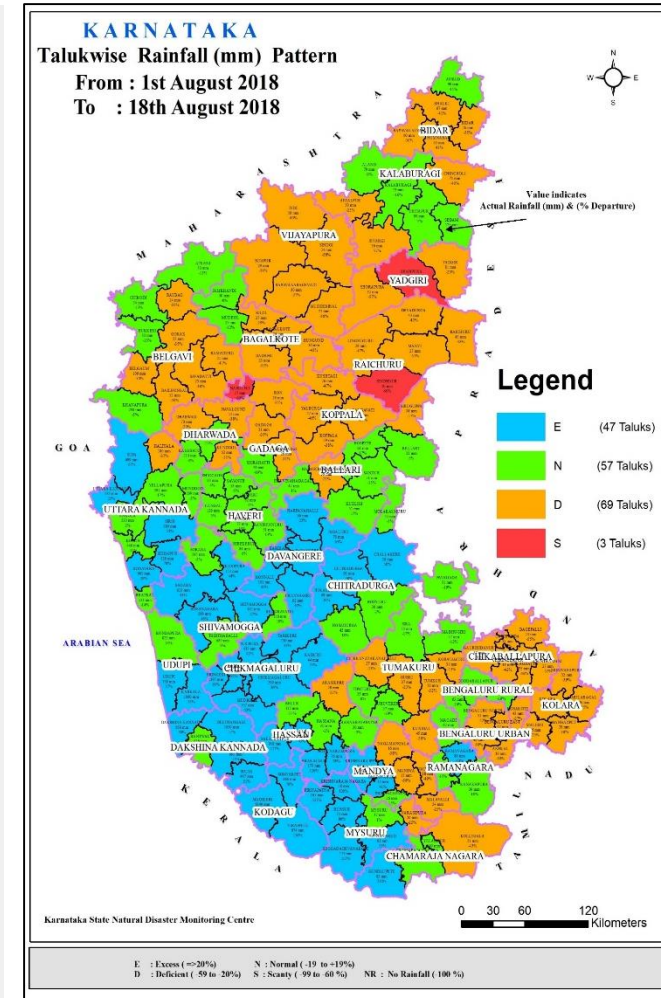
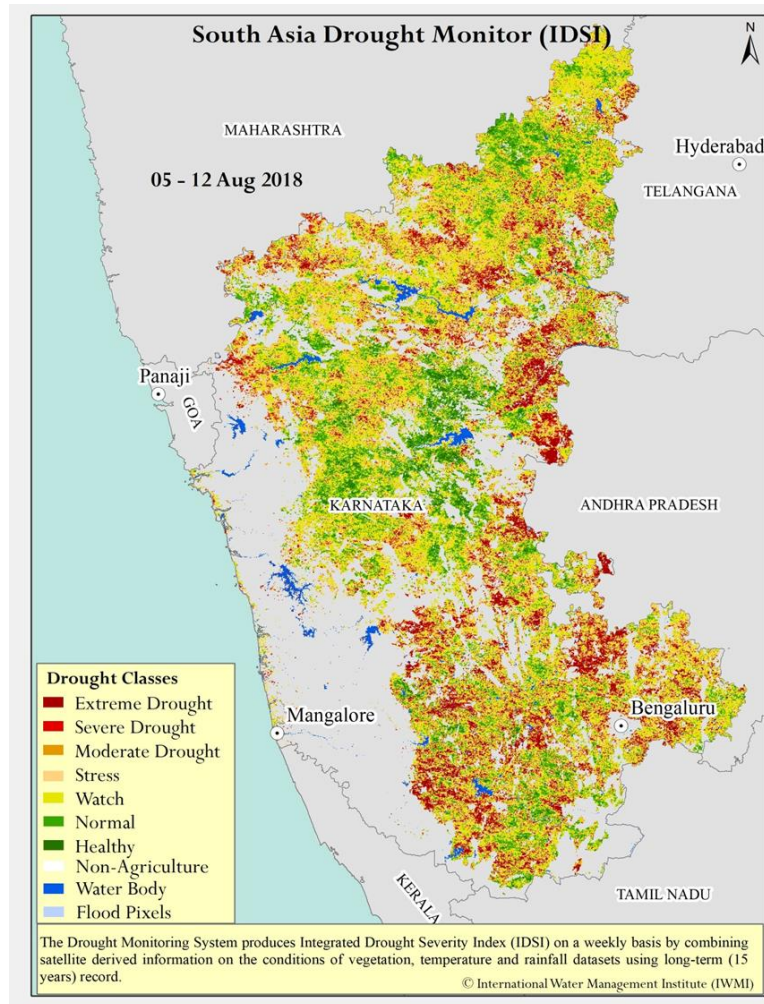
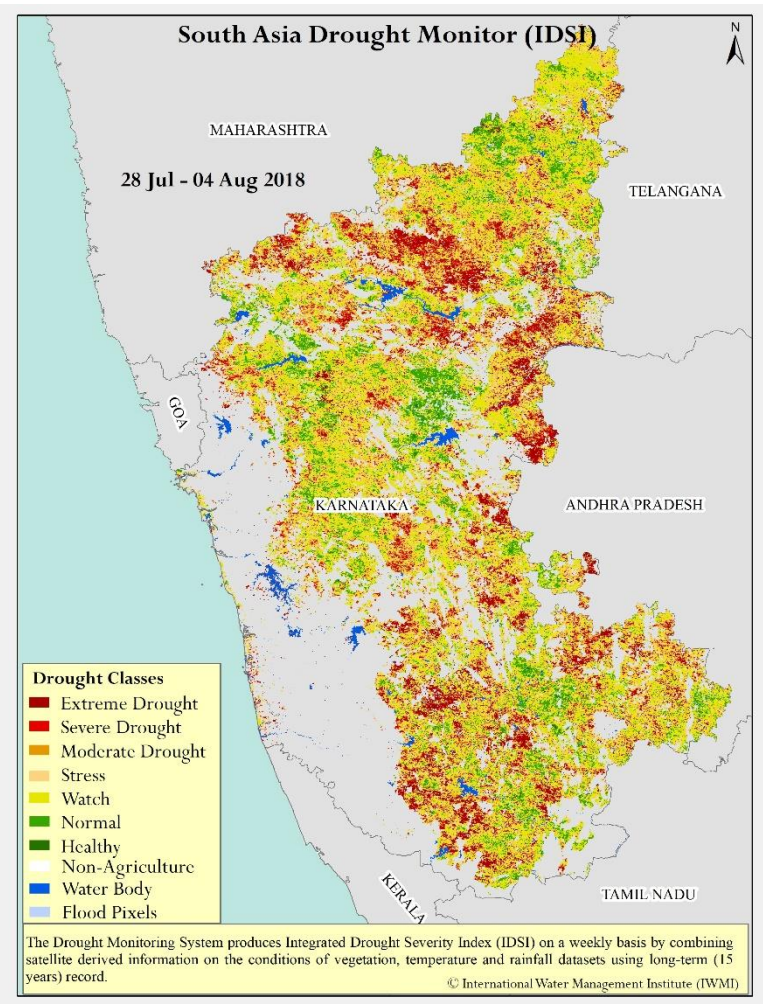
District-Wise, Month-Wise Rainfall Status from 01/06/2018				
District	Actual	Normal	Deviation(%)	Status
Srikakulam	517.5	435.8	18.7	Normal
Vizianagaram	382.5	426.1	-10.2	Normal
Vishakapatnam	456.6	441.8	3.3	Normal
East Godavari	614.9	498.1	23.4	Excess
West Godavari	643.5	513.2	25.4	Excess
Krishna	473.8	428.9	10.5	Normal
Guntur	298.2	317.4	-6.0	Normal
Prakasham	136.7	203.3	-32.8	Deficient
Nellore	96.8	196.6	-50.8	Deficient
Chittoor	148.7	254.6	-41.6	Deficient
Kadapa	104.8	230.5	-54.5	Deficient
Anantapur	106.7	176.7	-39.6	Deficient
Kurnool	159.6	272.4	-41.4	Deficient
State	307.2	338.1	-9.1	Normal

Data Source: APSDPS

Summary:

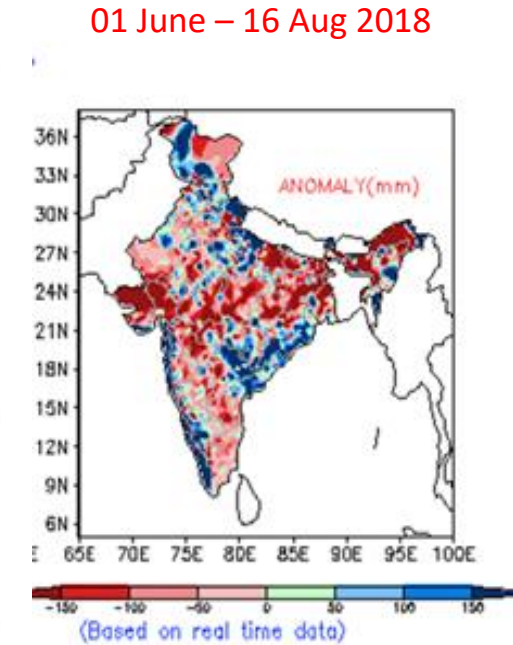
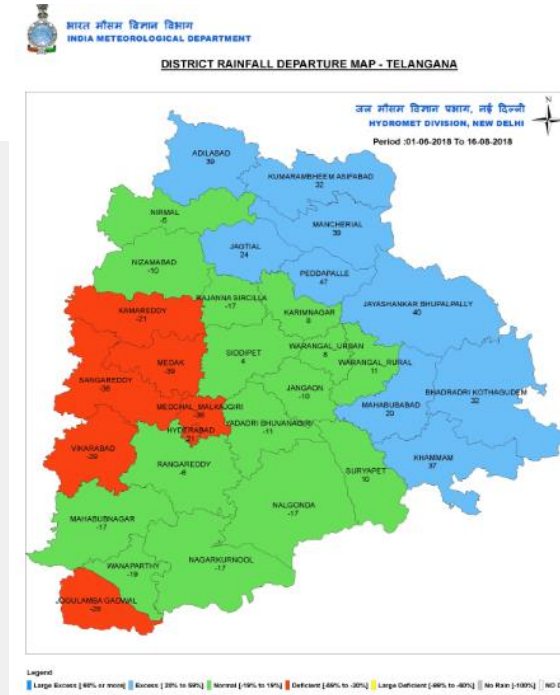
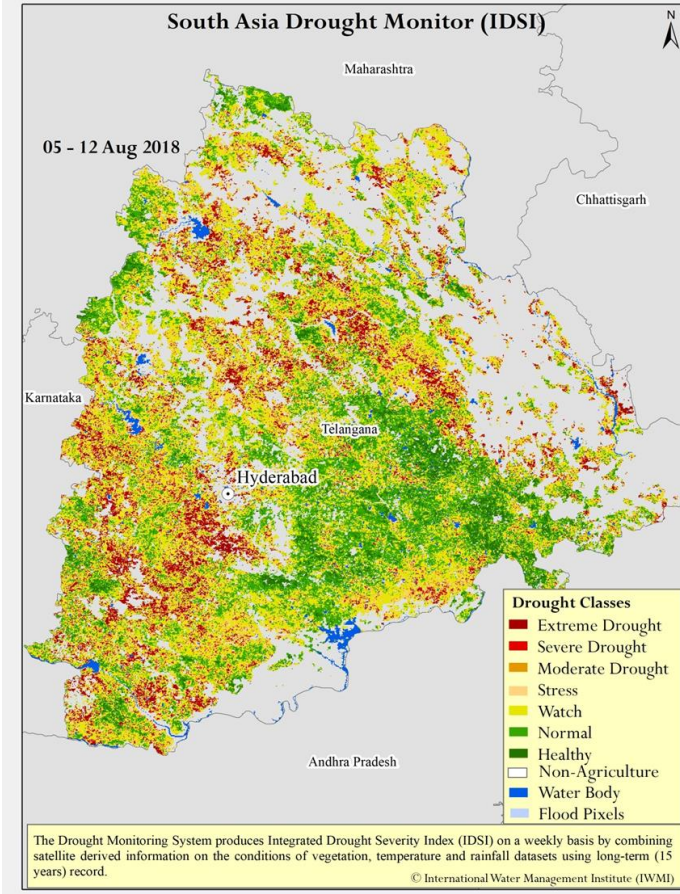
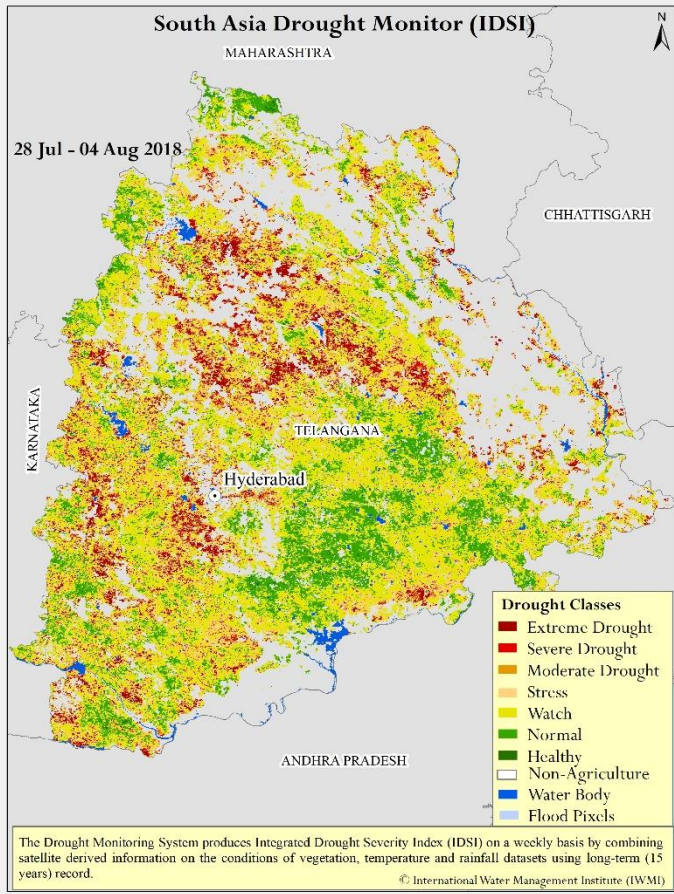
- Out of the 13 districts in A.P. 6 districts had low rainfall.
- From IDSI, Southern western districts are still in moderate to severe category and the northern districts shows normal to watch condition with new satellite observations determining the rainfall deviation last week.

South Asia Drought Monitoring System (SADMS) – Agriculture Assessment (Karnataka)



The Integrated Drought Severity Index (IDSI) for Karnataka were assessed at district level. The condition of vegetation has moved a level higher in severity in the northern and western districts. The Southern Karnataka now has moved from stress-moderate stress category to moderate to severe stress also it was observed to be same in case of Northern parts, which clearly correlates with the rainfall anomaly provided by IMD. However there has been some rainfall in the western parts of the district which might reduce the crop stress. The situation in the northern districts are still under stress.

South Asia Drought Monitoring System (SADMS) – Agriculture Assessment (Telangana)



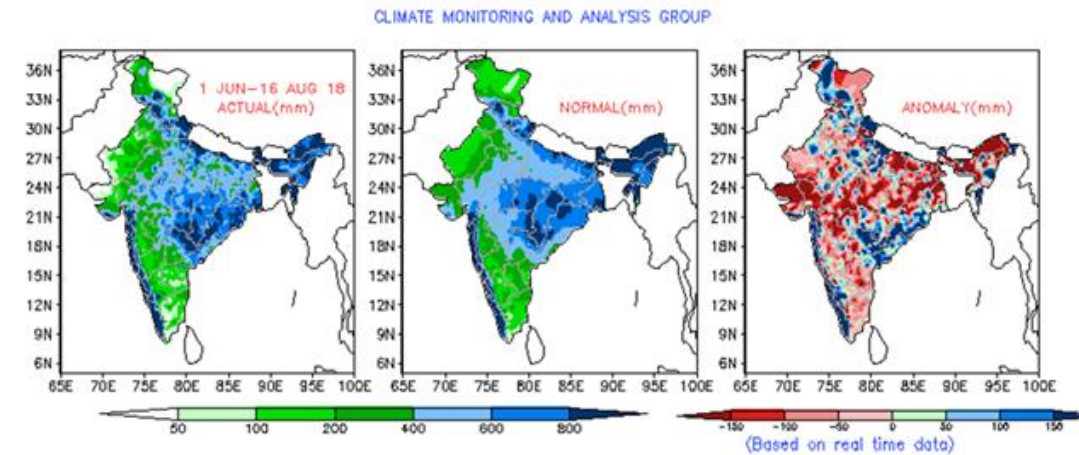
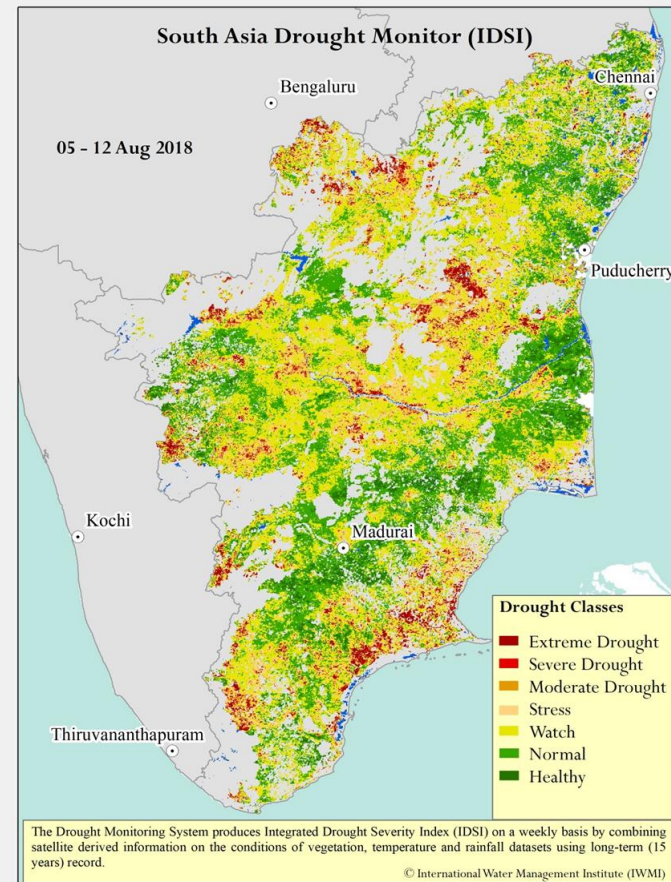
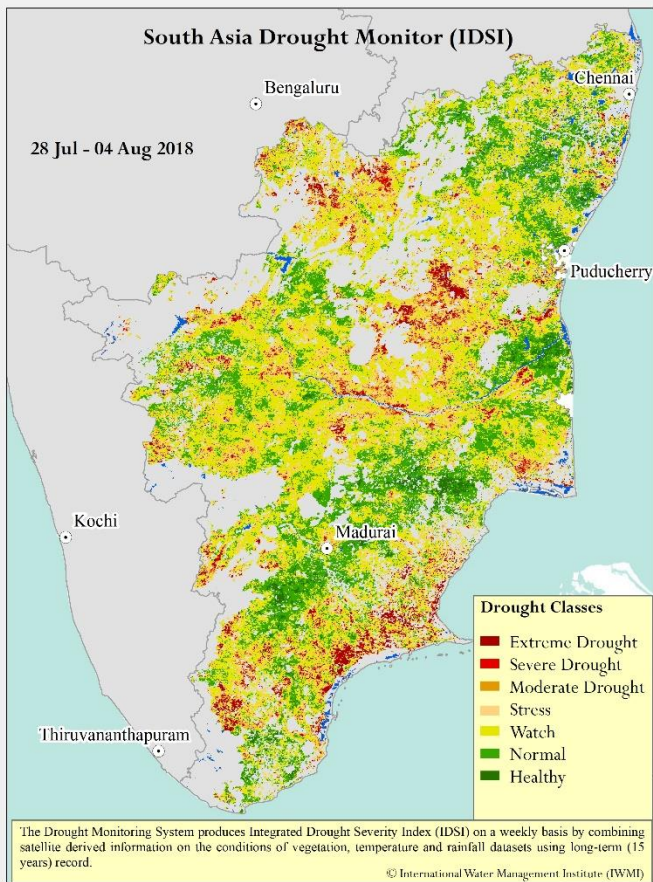
Summary:

The Integrated Drought Severity Index (IDSI) for Telangana were assessed at district level. *There seems to be an increase in stress levels in state though rainfall departure map is showing normal trend. Western States are observed to have moved from watch to under stress. Also intensity of in central districts can be noted to have increased.* Overall condition seems to go towards higher stress as compared to 28-04 Aug 2018.

IMD seasonal rainfall and rainfall anomaly over Telangana shows closer agreement to the IDSI product.

South Asia Drought Monitoring System (SADMS) – Agriculture Assessment (Tamil Nadu)

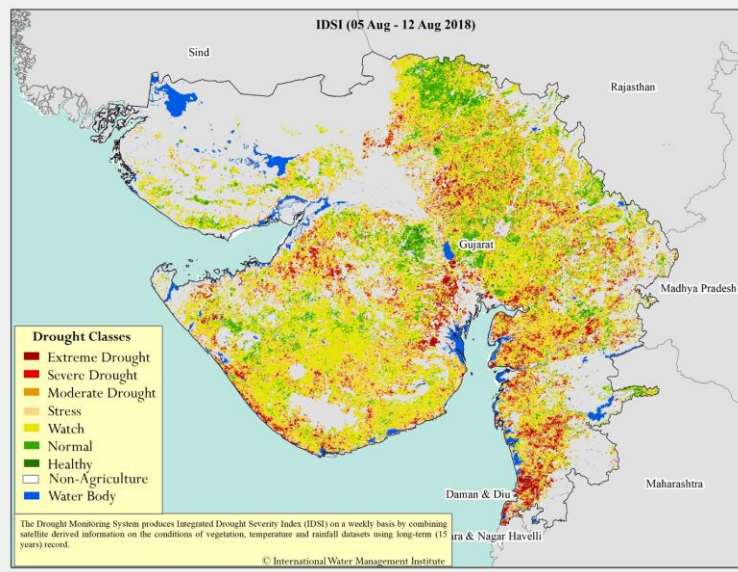
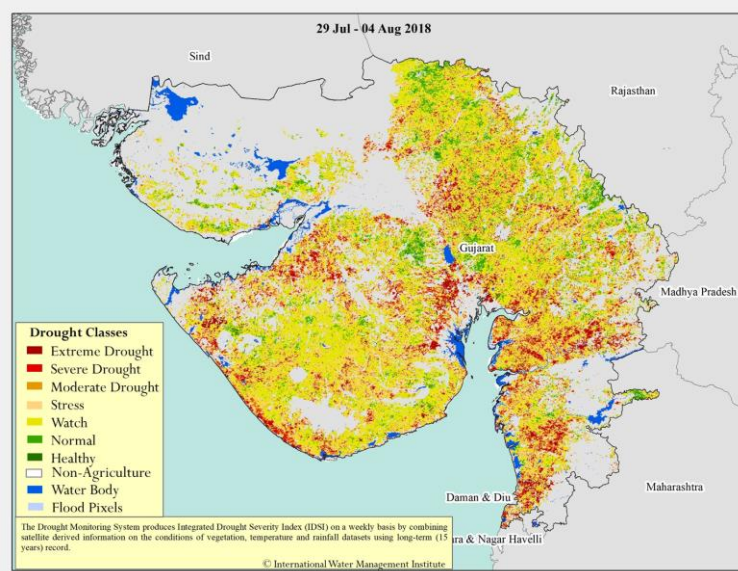
01 June – 16 Aug 2018



Summary:

- Overall condition of the stress is same as previous analysis cycle. Also Northern western parts of Tamil Nadu seems to have higher stress as compared to week ending on 4th of August. But in southern districts it can be observed that there is a reduction in intensity of stress condition in current assessment.
- Overall, it can be observed that all districts have moved towards higher drought classes as compared to the previous week.

South Asia Drought Monitoring System (SADMS) – Agriculture Assessment (Gujarat)



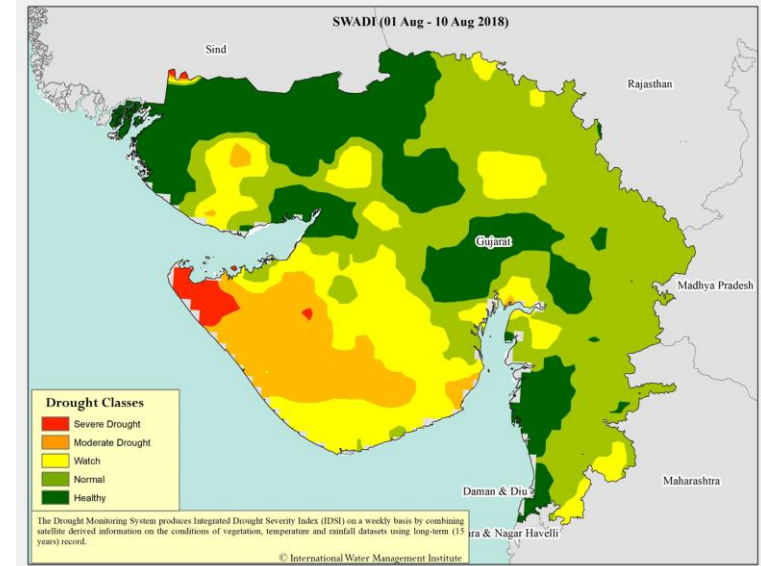
भारत मौसम विज्ञान विभाग
INDIA METEOROLOGICAL DEPARTMENT

DISTRICT RAINFALL DEPARTURE MAP - GUJARAT



Legend

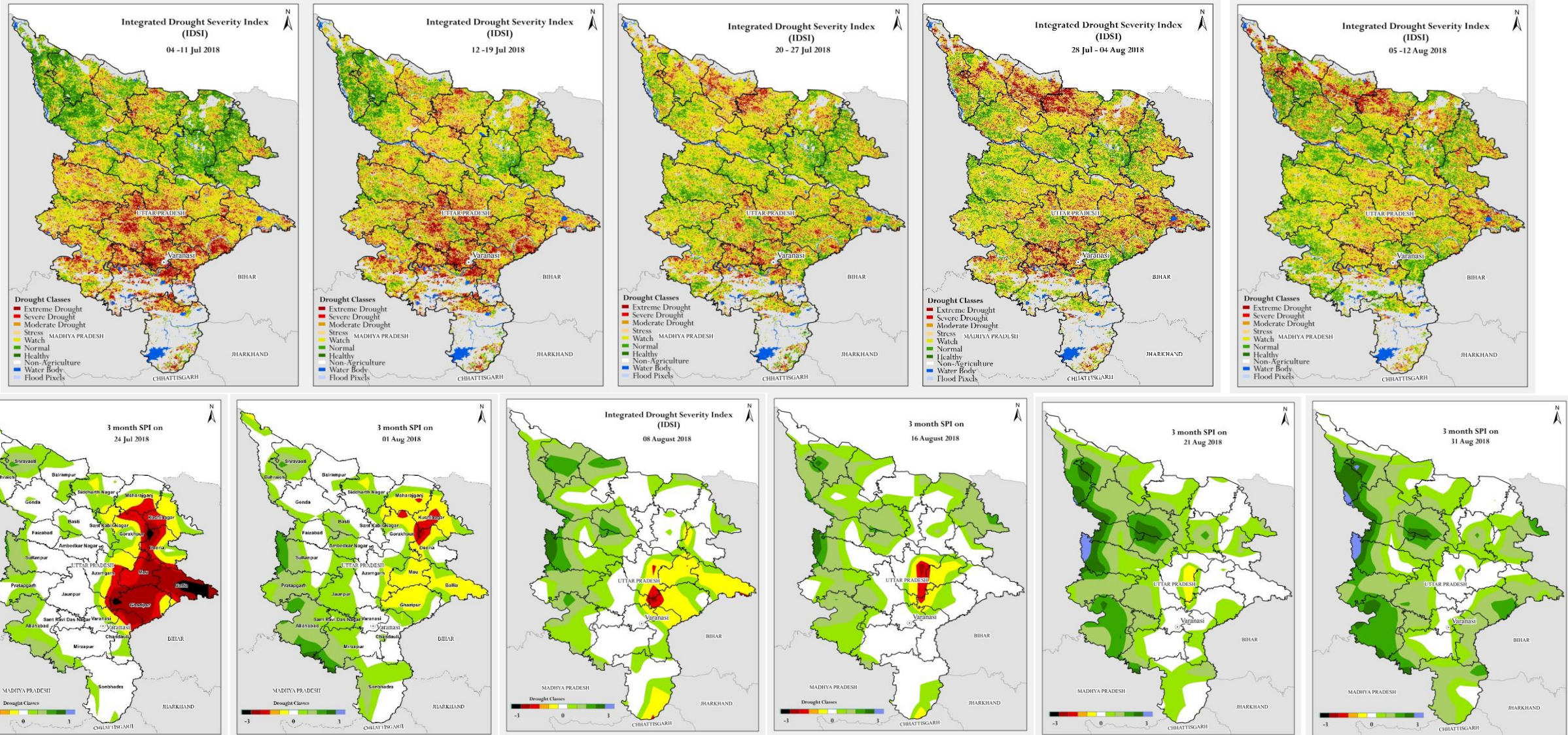
- Large Excess (≥ 60% or more)
- Excess (20% to 59%)
- Normal (-19% to 19%)
- Deficient (-60% to -20%)
- Large Deficient (-60% to -80%)
- No Rain (-100%)
- NO DATA



Summary:

- Overall condition of the stress is same as previous analysis cycle. Also most parts of Gujarat seems to have higher stress as compared to week ending on 04th of August. But in southern districts it can be observed that there is a reduction in intensity of stress condition in current assessment.
- Overall, it can be observed that all districts have moved towards higher drought classes as compared to the previous week.

South Asia Drought Monitoring System (SADMS) – Agriculture Assessment (Eastern UP)



Summary:

- There is great reduction in drought condition from 26th June to mid of August, Stress condition is expected to decrease further in coming fortnight. As per the forecast outputs, area might experience stress till mid of August and then condition would be normal.

Thanks.....

Disclaimer

All content within this bulletin is based upon the most current available data. As the drought is a dynamic situation, the current realities may differ from what is depicted in this document. The product has not been validated and used only the weather forecast and remote sensing observation. We welcome the feedback from the end-users and request you to provide field observations and any other details which can improve the product quality and prediction skills in the near future.

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Mr. Niranga Alahacoon

n.alahacoon@cgiar.org

Website: SADMS Drought Monitor ([Click here](#))

To subscribe to the newsletter, please submit a request to: a.giriraj@cgiar.org