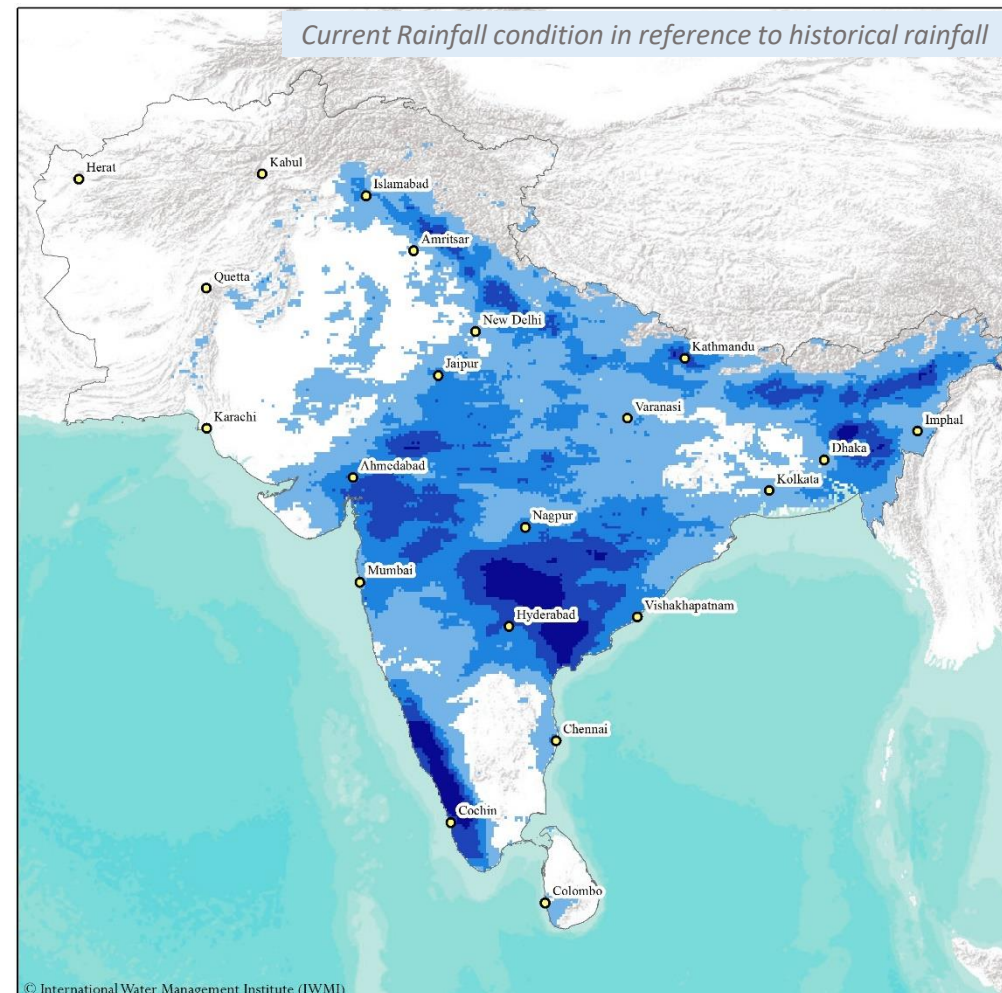
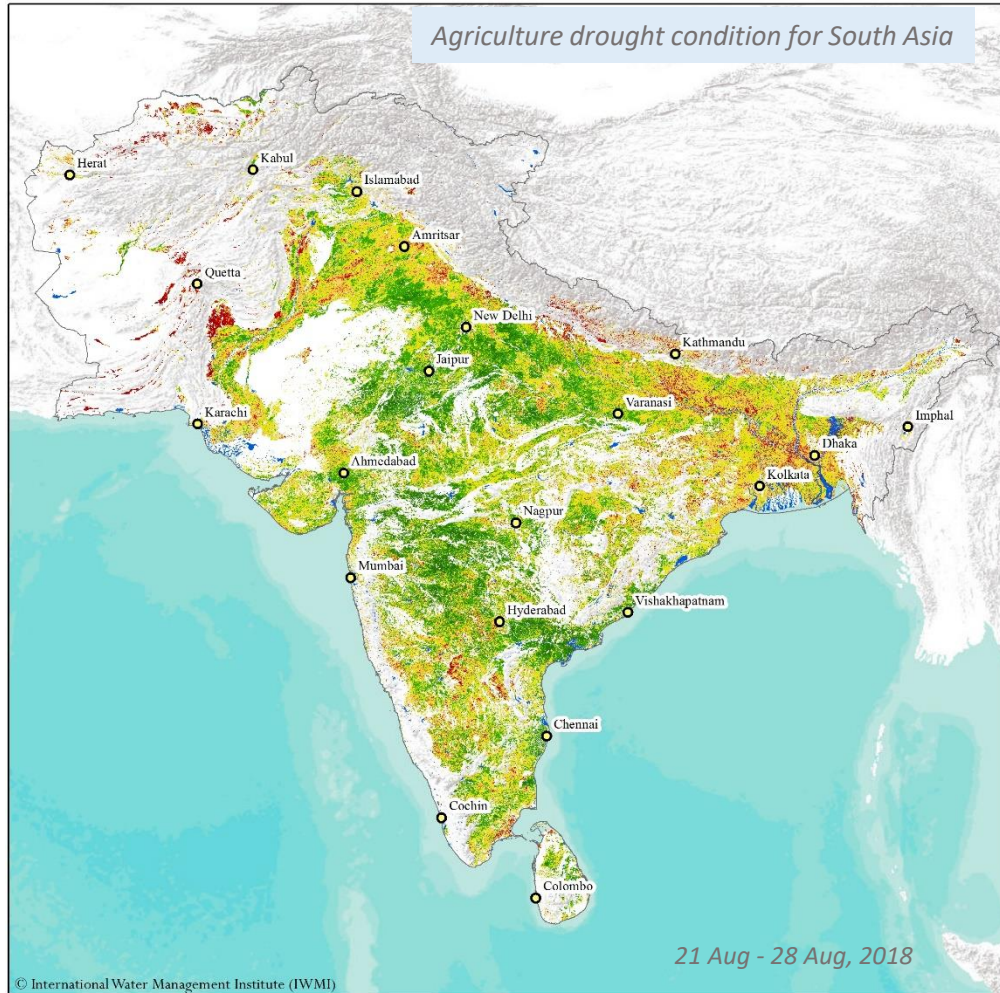


SADMS DROUGHT BULLETIN

03 Sep 2018 | ISSUE 7



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.

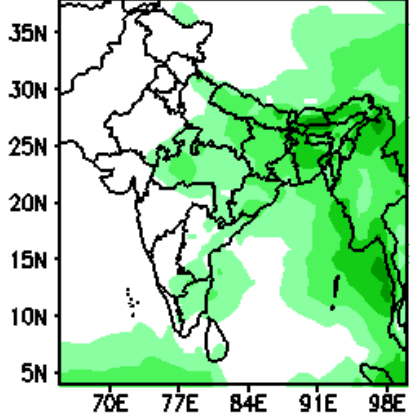
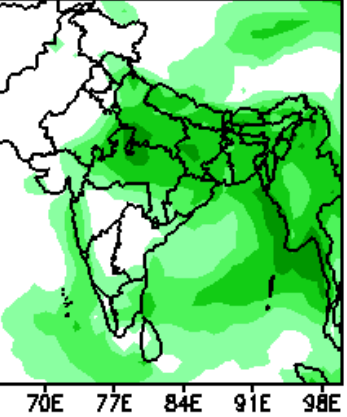
Rainfall Summary - Predicted week wise rainfall for South Asia

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

MME Actual Rainfall (mm/day)

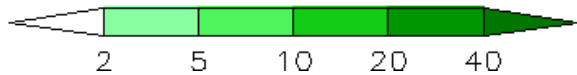
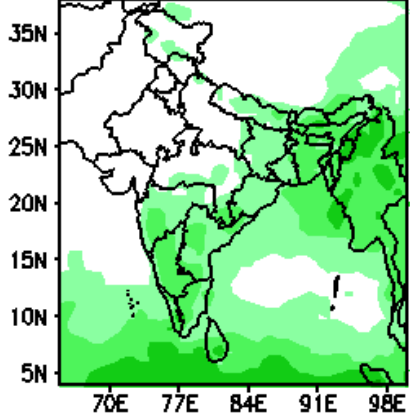
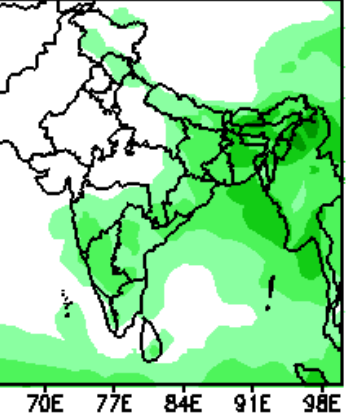
(Week1: 30Aug-05Sep)

(Week2: 06Sep-12Sep)



(Week3: 13Sep-19Sep)

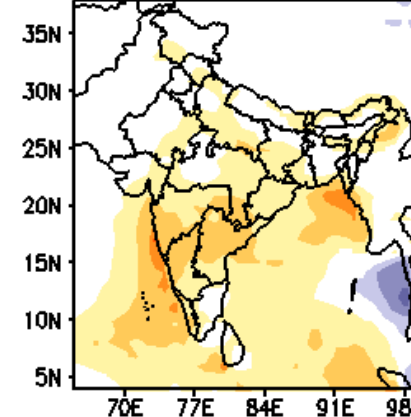
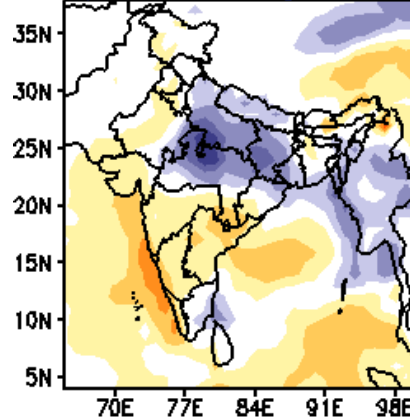
(Week4: 20Sep-26Sep)



MME Rainfall Anomaly (mm/day)

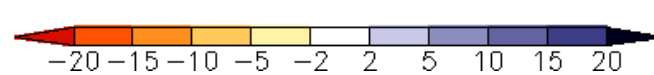
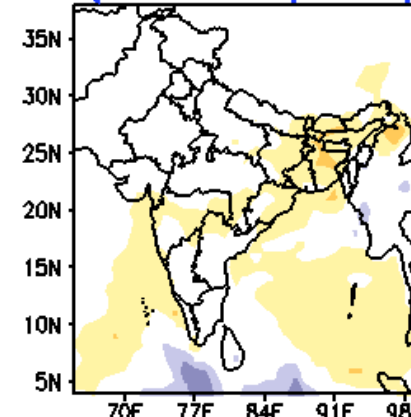
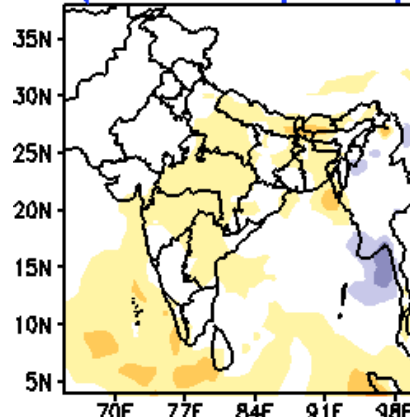
(Week1: 30Aug-05Sep)

(Week2: 06Sep-12Sep)



(Week3: 13Sep-19Sep)

(Week4: 20Sep-26Sep)



- Rainfall condition for UP, Bihar, Sikkim, Andaman & Nicobar islands and parts of MP and Rajasthan might increase in the next week; currently, the rainfall is higher in these regions. The North-eastern States of India might experience increase in rainfall.
- Central and eastern parts of Maharashtra, MP, South-west of Odisha, AP and Telangana experience deficit rainfall going by the forecast till 12 Sep but later the rainfall condition will improve as per forecast till 26 Sep.
- In general Southern States in India experience deficit rainfall as well as Bihar and UP and eastern MP.
- Sri Lanka for Southern and Western Provinces explains low rainfall but the condition might improve from end of August to first week of Sep.
- Nepal far west and south-east rainfall anomaly explains increase in rainfall including Bhutan but situation might increase by early Sep.
- Overall Pakistan shows no anomaly in rainfall except northern region with isolated rainfall going by the extended prediction till 26 Sep.

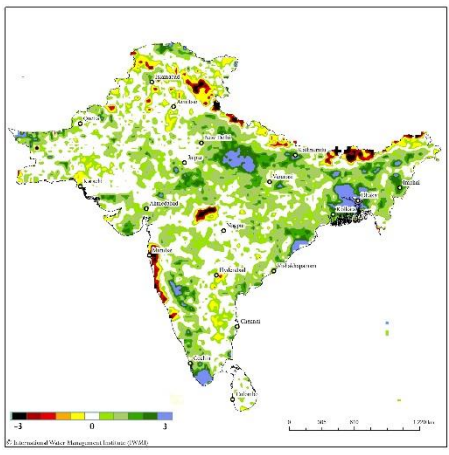
Note: The summary on country specific details described above based on the ERPAS MME information product do not imply the expression of any opinion whatsoever on the part of the IWMI and its partners as well the data provided by IITM.

SOUTH ASIA DROUGHT EARLY WARNING SYTEM (SADEWS)

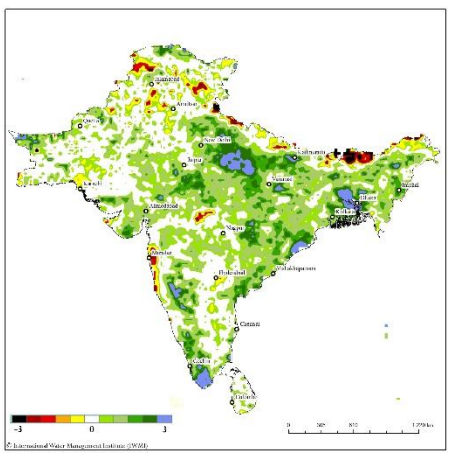
Current Condition: 02 Sep 2018
Forecast Period : 09 Sep and 17 Sep 2018
Standardized Soil Moisture and Runoff Index for regional drought and early warning

SOIL MOISTURE PERCENTILE (SMP)

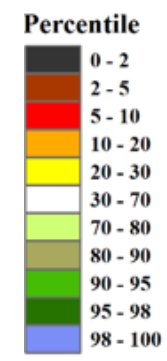
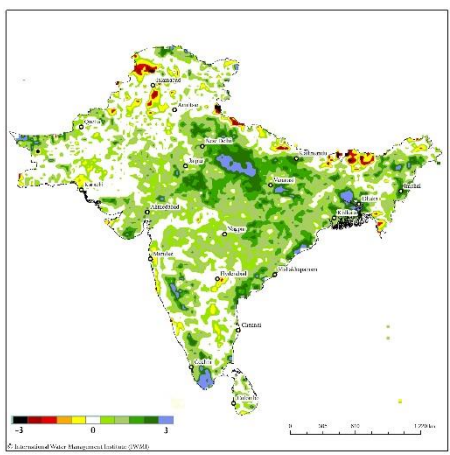
7-day Percentile 02ND Sep 2018



7-day Forecast Percentile 9th Sep 2018



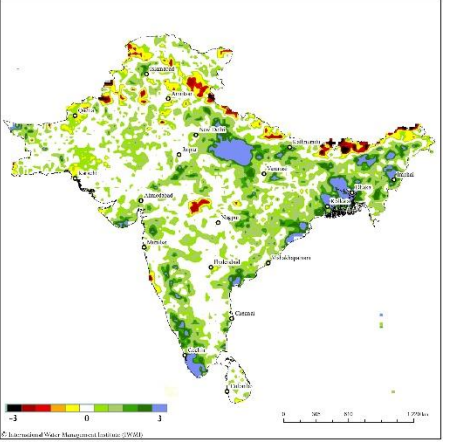
7-day Forecast Percentile 17th Sep 2018



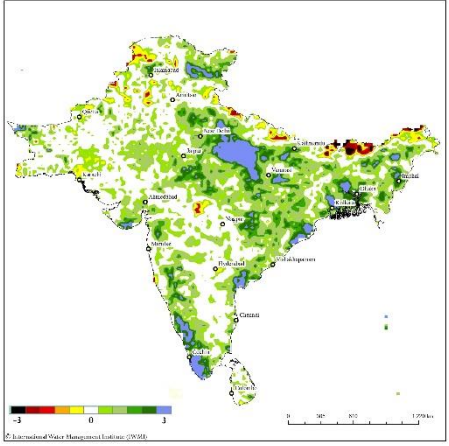
SOIL RUNOFF PERCENTILE (SRP)

SOIL RUNOFF PERCENTILE (SRP)

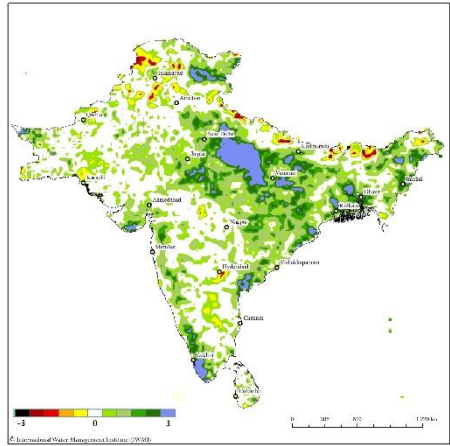
7-day Percentile 02nd Sep 2018



7-day Forecast Percentile 9th Sep 2018



7-day Forecast Percentile 17th Sep 2018



Summary:

The experimental drought forecast products for research/scientific use based on 2nd September 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 shows slight deficit compared to last week over Maharashtra, Madhya Pradesh, Rajasthan, Uttar Pradesh and North-eastern states, particularly excess soil moisture in north-eastern parts of UP.
- Initial condition on the Soil Runoff Index (SRI) explains similar trend to SSI.
- Dryness is decreasing in the following weeks over central parts of the regions such as western Andhra Pradesh, western belt of Karnataka, and middle parts of Tamil Nadu. South MP also shows continuous trend of decrease dryness.
- 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)

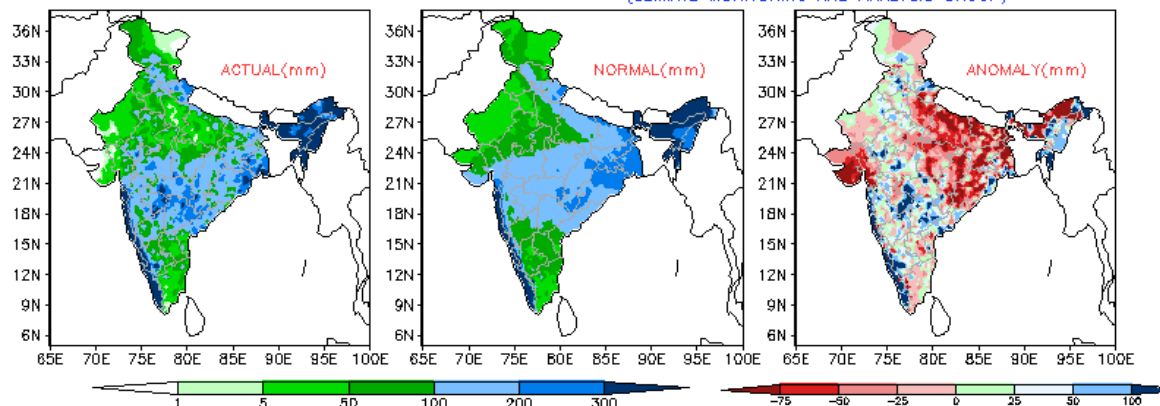
Actual Rainfall – June 2018

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)



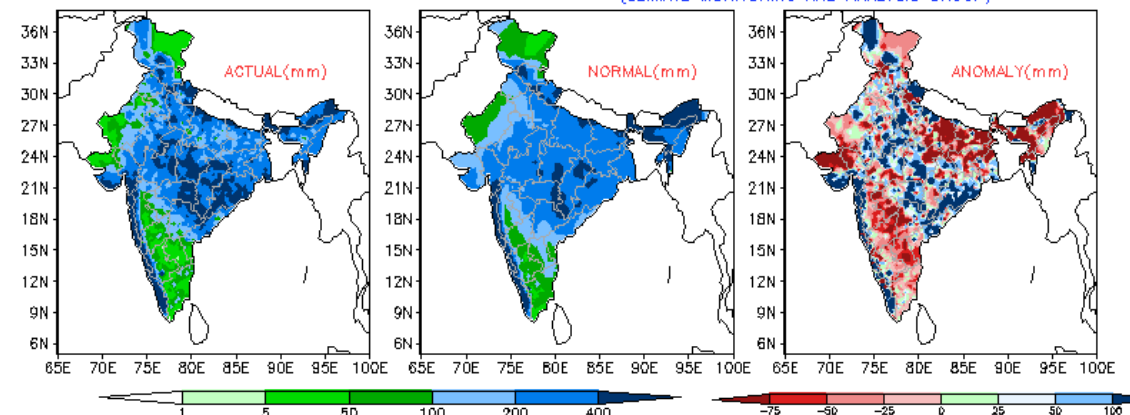
Actual Rainfall – Jul 2018

RAINFALL OVER THE COUNTRY FOR JUL 2018

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

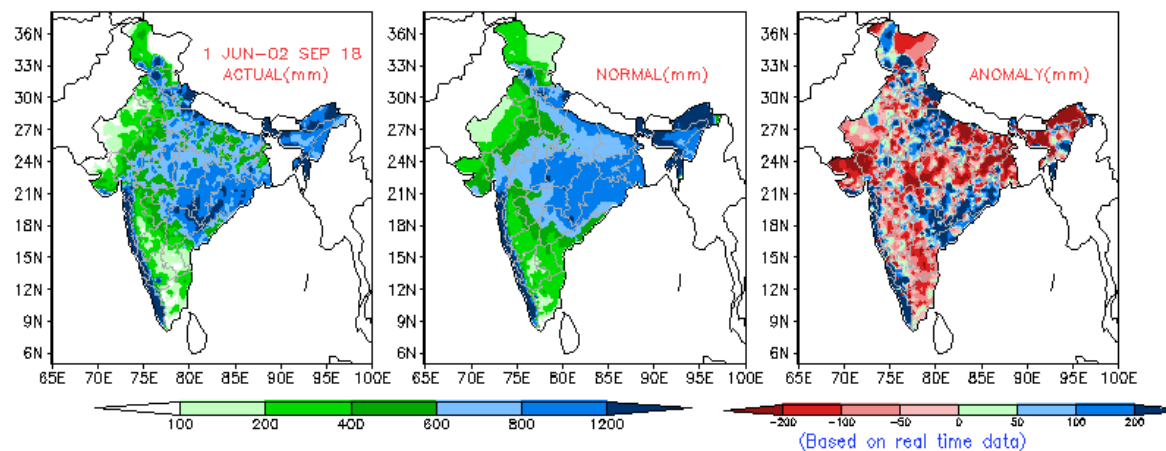
(Based on real time data)

(CLIMATE MONITORING AND ANALYSIS GROUP)



Actual Rainfall – Seasonal 2018

CLIMATE MONITORING AND ANALYSIS GROUP



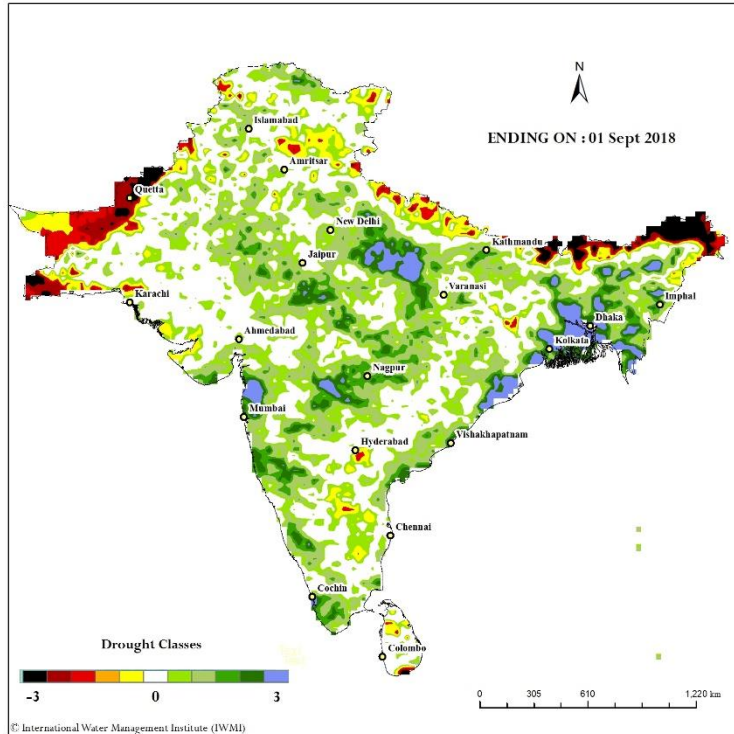
Data Source: IMD

- Overall there is an increase in rainfall for the month of July compared to the long-term anomaly, however some coastal areas in Kerala, southern Gujarat, Orissa, West Bengal, along with north of Jammu & Kashmir, and some 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 slightly incensement of rainfall in the month of July 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.

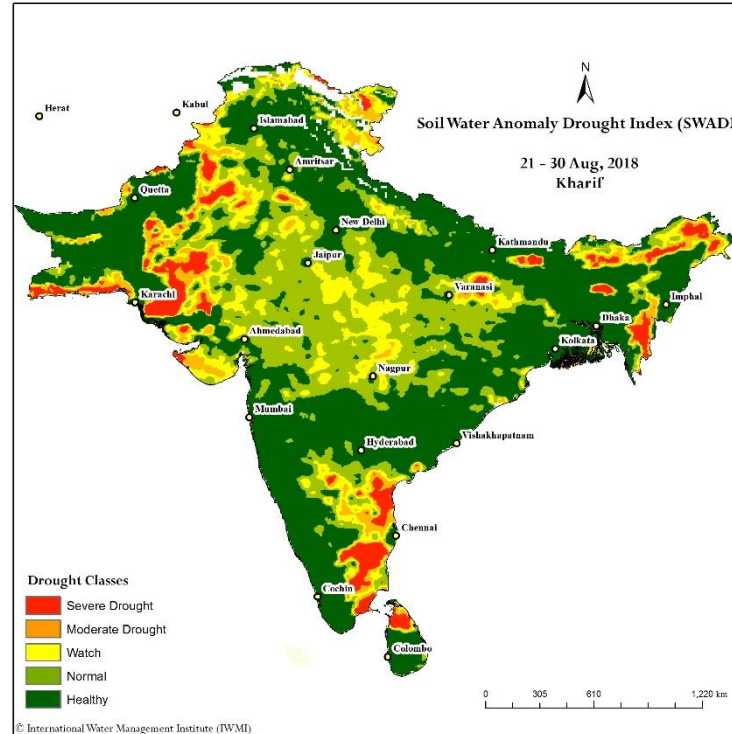
Note: Simple qualitative assessment on the performance on rainfall condition was described here to cross compare with SADMS – IDSI products for evaluation purpose only.

South Asia Drought Indices – A comparison & Assessment

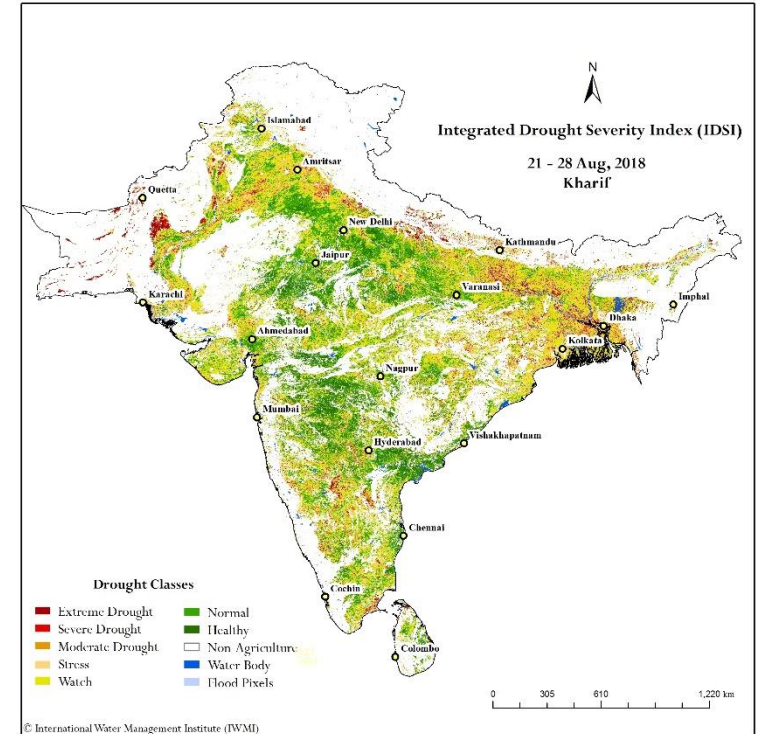
SA-DEWS



SWADI

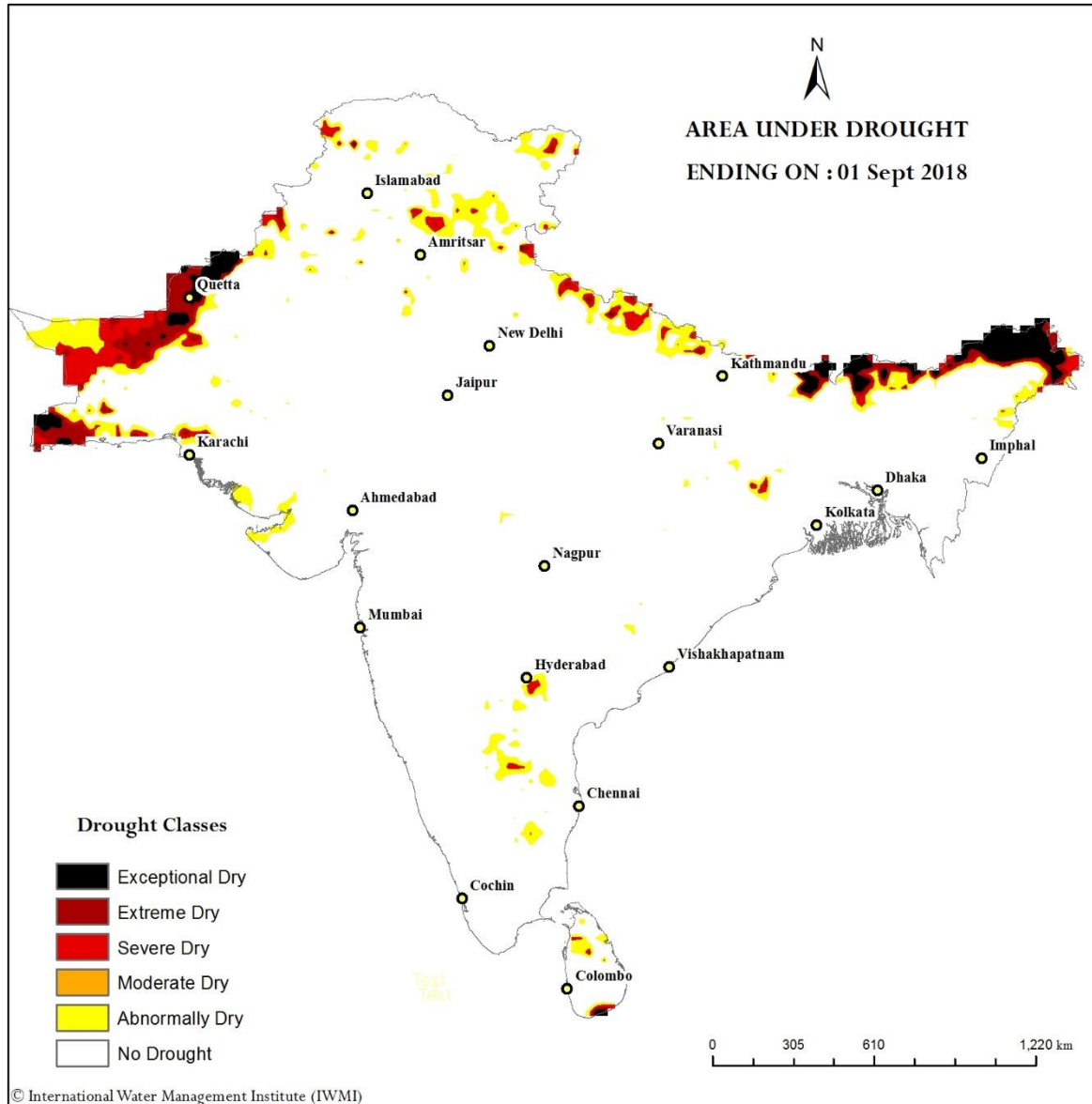


IDSI



- 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 (IDSI) 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. Especially middle part of Indian peninsular has been converted from moderate to normal. Also, parts of Karnataka and Tamil Nadu is still facing moderate drought like scenario.

South Asia Drought Forecast



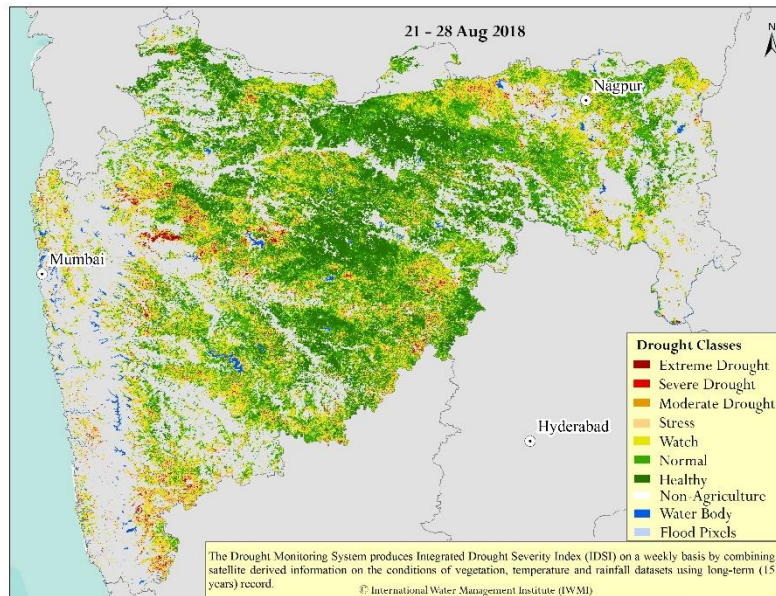
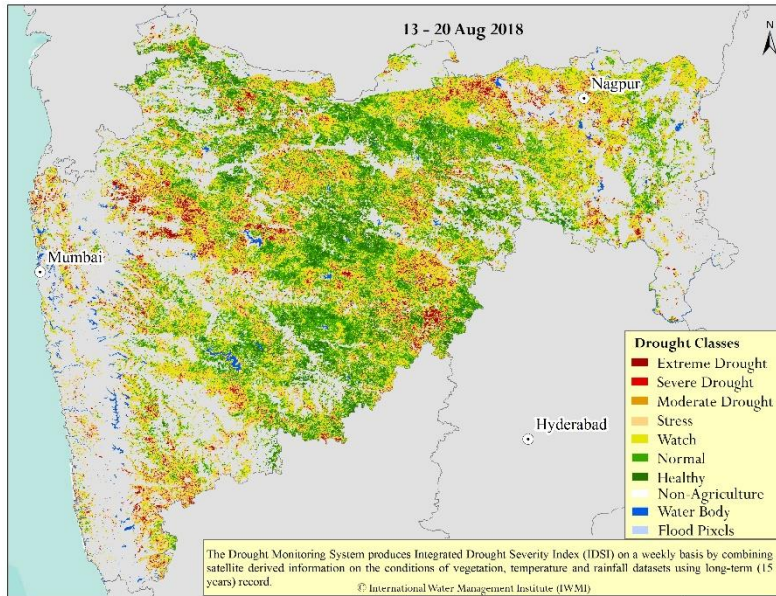
Summary:

- Using the initial condition i.e. 01st September 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, isolated patches of Western AP and Telangana, Jammu & Kashmir, and parts of states along the northeastern belt 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



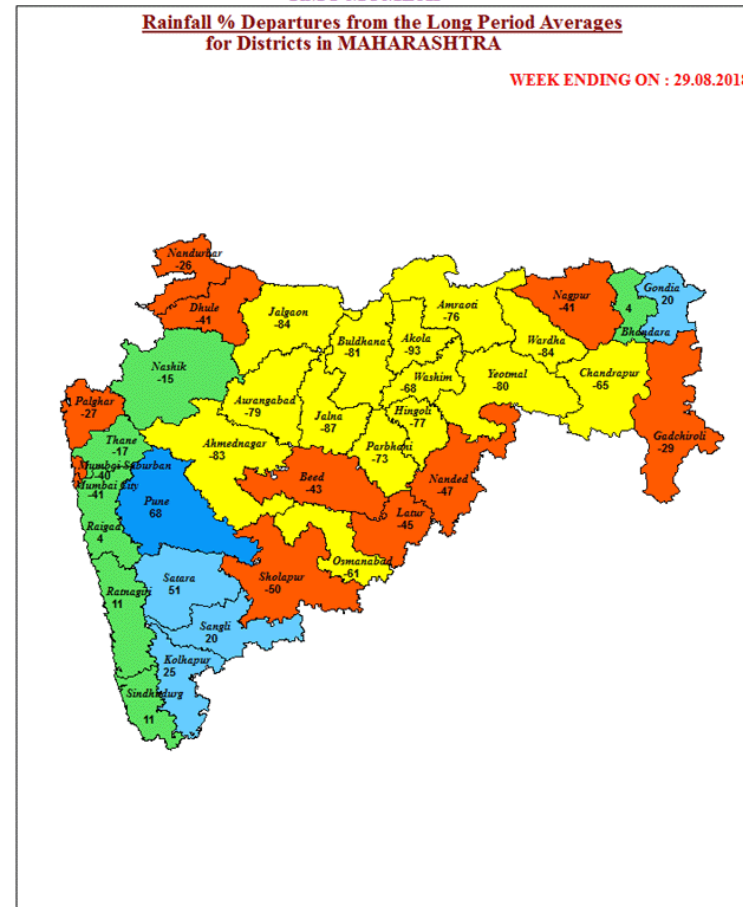
South Asia Drought Monitoring System (SADMS) – Agriculture Assessment (Maharashtra)



INDIA METEOROLOGICAL DEPARTMENT RMC MUMBAI

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

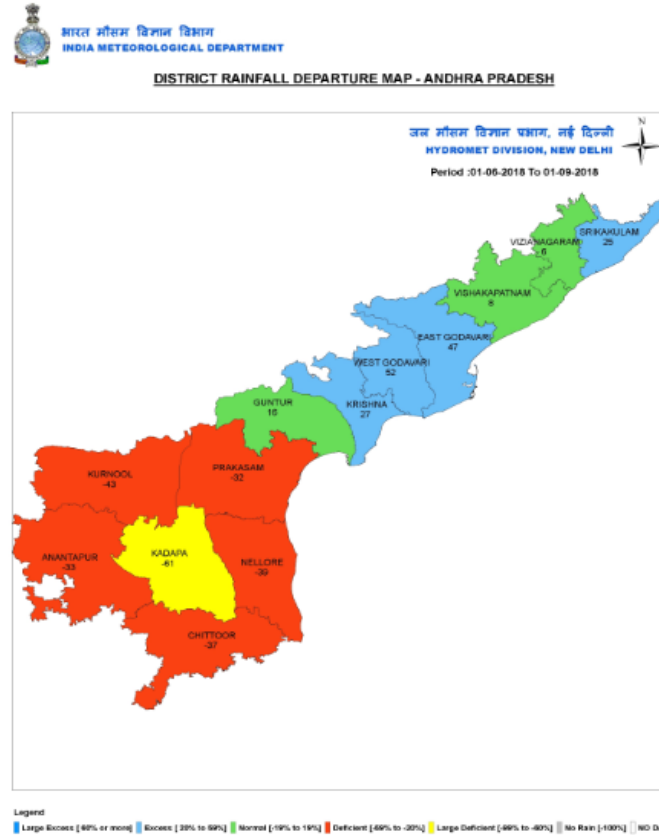
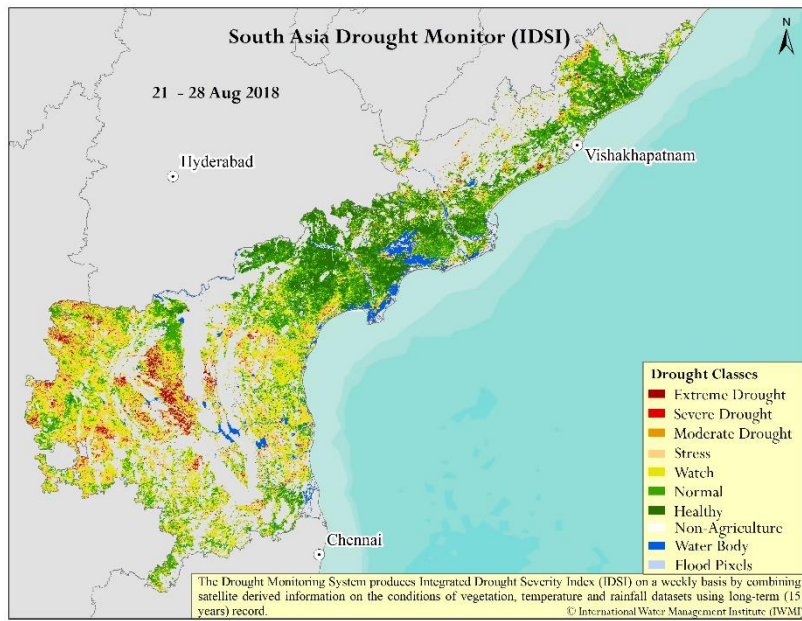
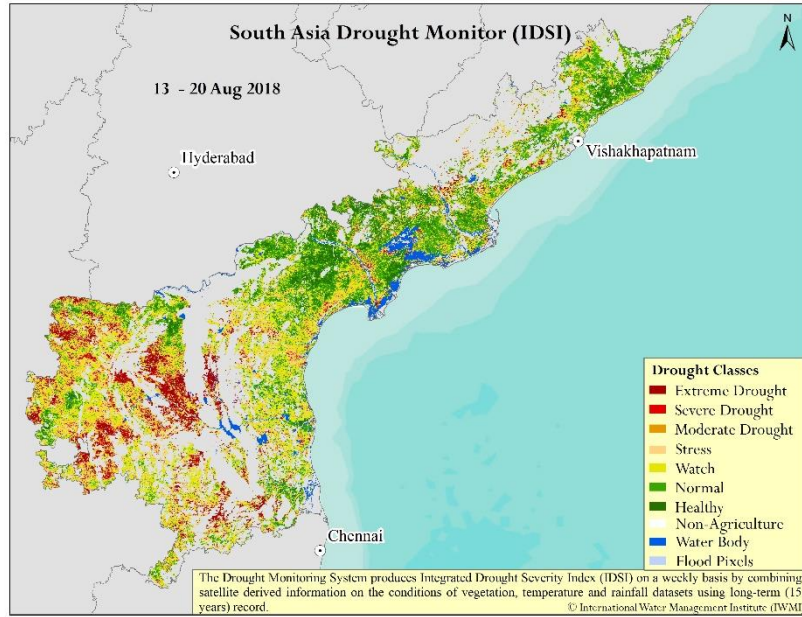
WEEK ENDING ON : 29.08.2018



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 August has reduced the vegetation stress in the agricultural land, which is clearly reflected in the IDSI. Most of the State shows less stress, all districts show progress in the agricultural growth. Same has been revealed by seasonal rainfall report from IMD.
- In reference to SADEWS till end Aug, both the SSI and SRI are favourable using the precipitation forecast data.

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



Rainfall Status (Avg from 01-06-2018 to till date)
Actual **364.6mm**, Deviation **-10.9%**

District-Wise, Month-Wise Rainfall Status from 01/06/2018

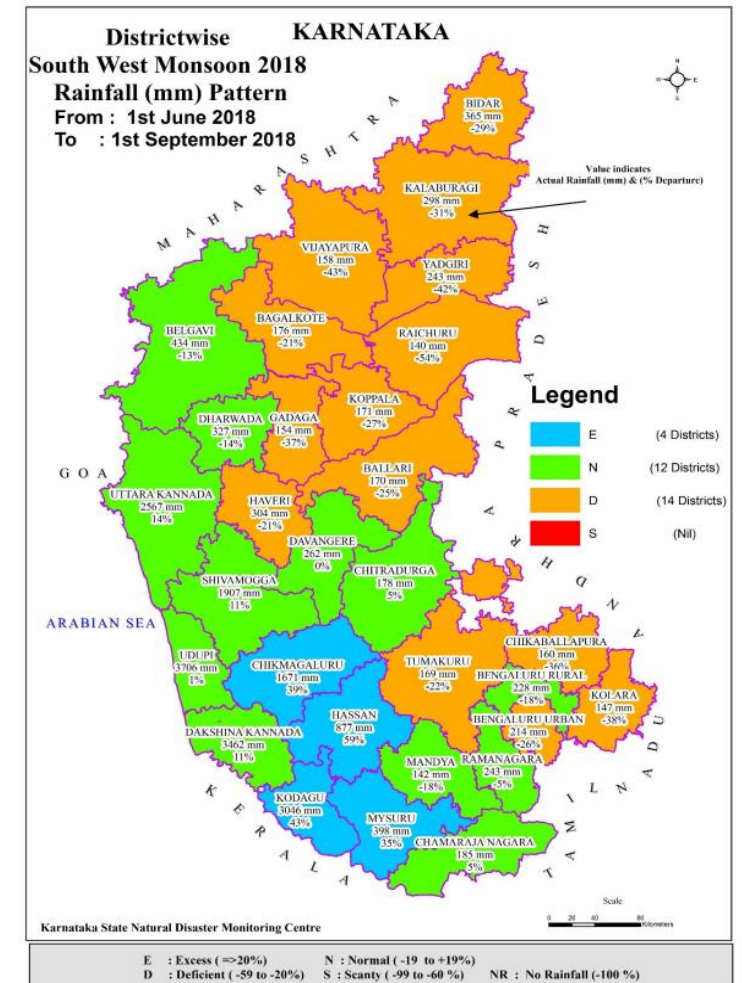
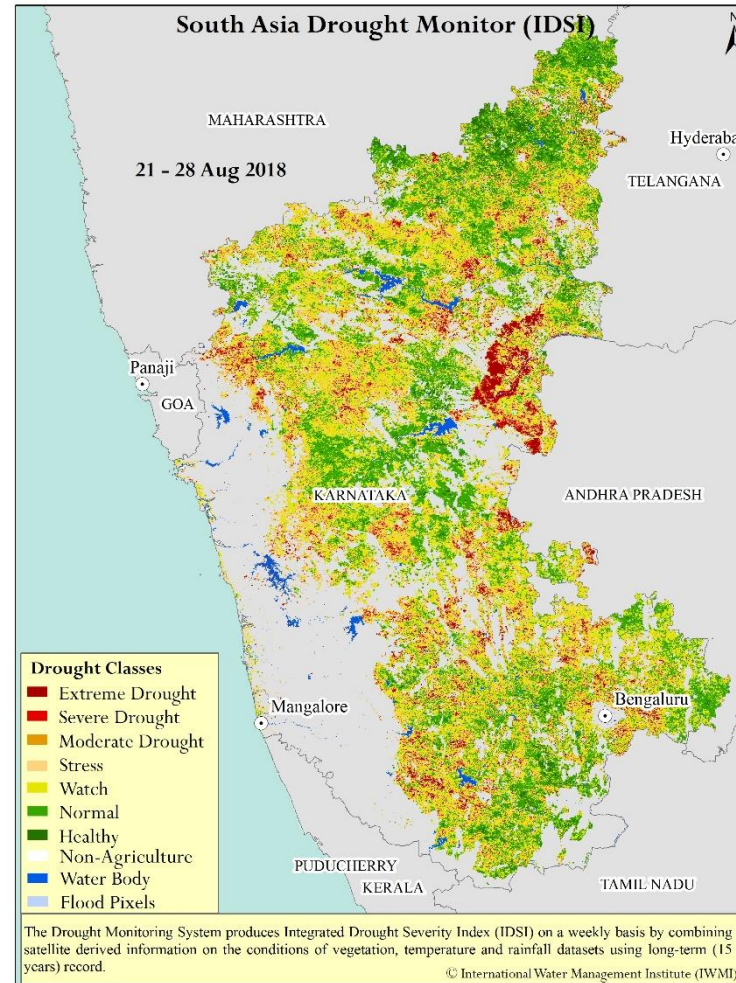
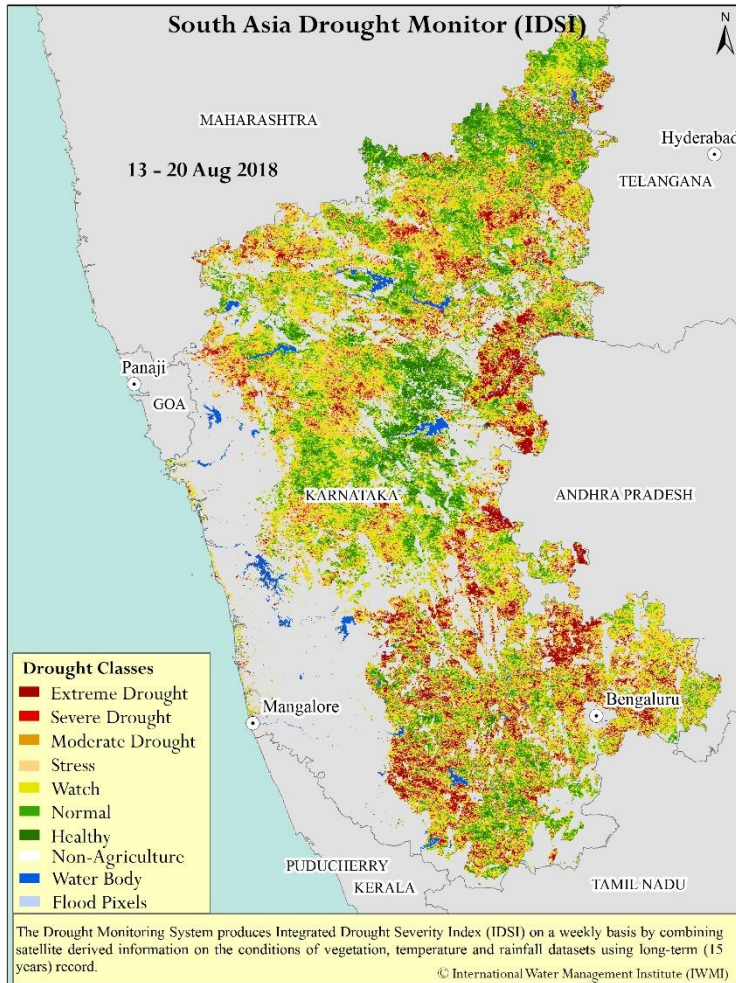
District	Actual	Normal	Deviation(%)	Status
Srikakulam	612.9	521.8	17.5	Normal
Vizianagaram	489.6	509.1	-3.8	Normal
Vishakapatnam	536.7	529.6	1.3	Normal
East Godavari	693.8	590.3	17.5	Normal
West Godavari	812.4	623.2	30.4	Excess
Krishna	598.0	528.4	13.2	Normal
Guntur	351.7	385.9	-8.9	Normal
Prakasham	151.6	258.7	-41.4	Deficient
Nellore	124.6	232.8	-46.5	Deficient
Chittoor	168.5	304.3	-44.6	Deficient
Kadapa	112.3	282.3	-60.2	Scanty
Anantapur	117.4	222.4	-47.2	Deficient
Kurnool	174.7	333.7	-47.6	Deficient
State	364.6	409.4	-10.9	Normal

Data Source: APSDPS

Summary:

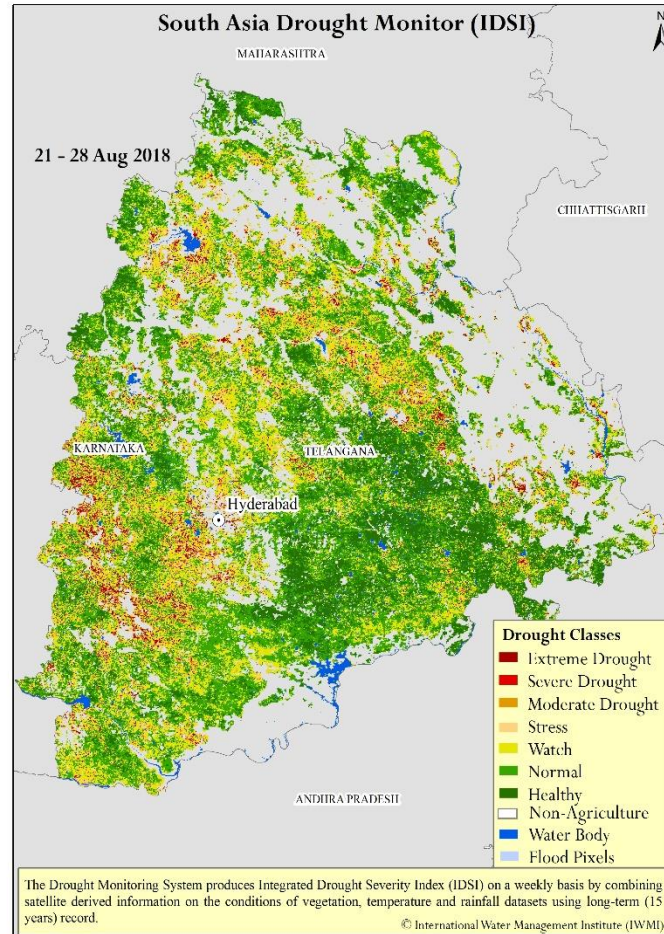
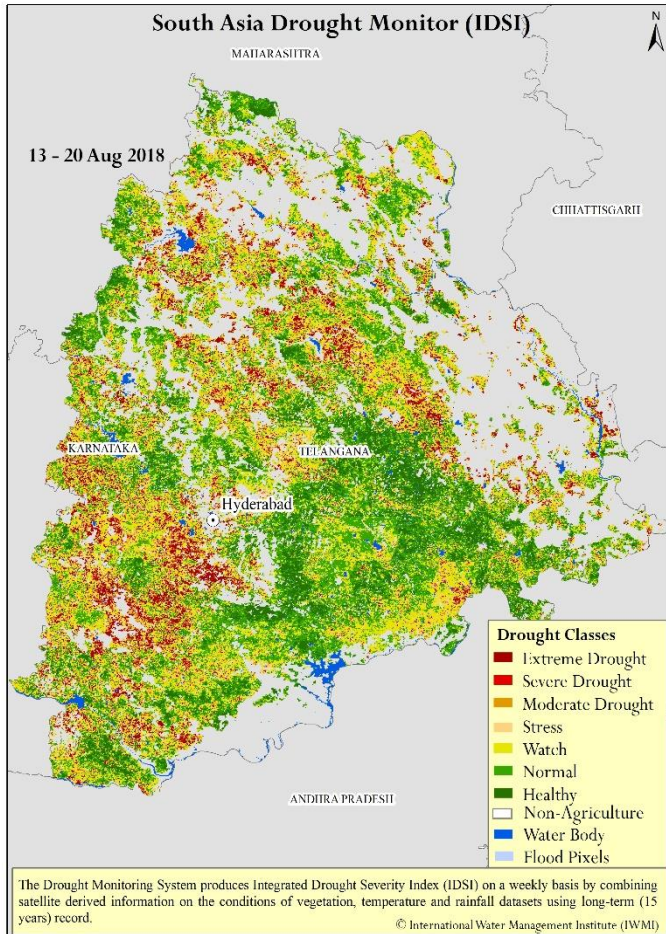
- Out of the 13 districts in A.P., 6 districts had low rainfall (Prakasham, Nellore, Chittoor, Kadapa, Anantapur and Kurnool) from June 1 to 1 Sep 2018;
- From IDSI, South-west districts are in stress category from extreme category and the northern districts shows again watch to normal condition with new satellite observations determining the rainfall deviation last week. Stress of the drought condition seems decreasing .

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 all across the State, except normal category for a few patches at the central region, which clearly correlates with the rainfall anomaly provided by KSNDMC. However there has been some rainfall in the southern parts of the district which might reduce the crop stress. The situation in the east districts are still under stress. There can be seen severe drought condition over the Karnataka district except North and some parts of middle and south.

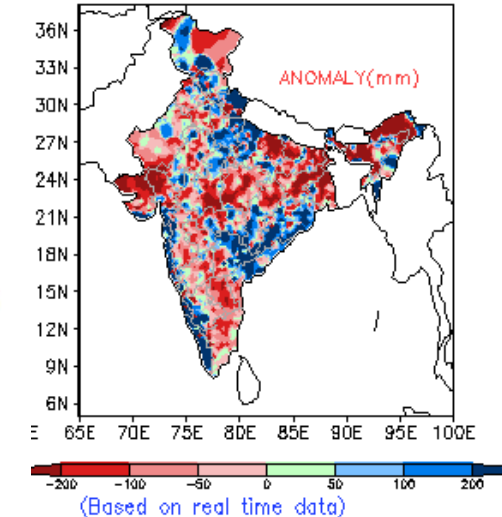
South Asia Drought Monitoring System (SADMS) – Agriculture Assessment (Telangana)



DISTRICT RAINFALL DEPARTURE MAP - TELANGANA



01 June – 02 Sep 2018



Summary:

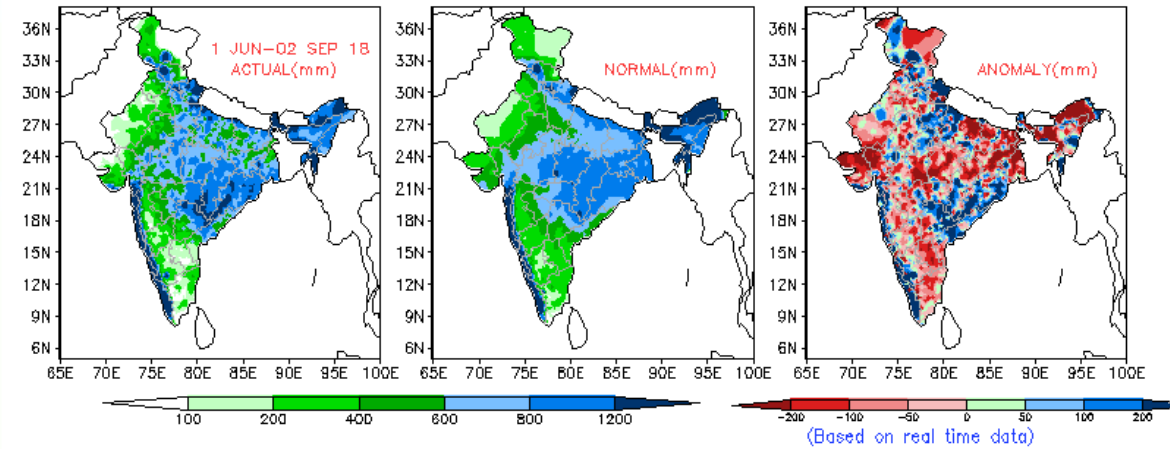
The Integrated Drought Severity Index (IDSI) for Telangana was assessed at district level. *There seems to be a slight decrease in stress levels in the State except for a few patches in the western region, as shown by the rainfall departure map. Western States are also observed to have moved from severe drought category to moderate or stress category.*

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)

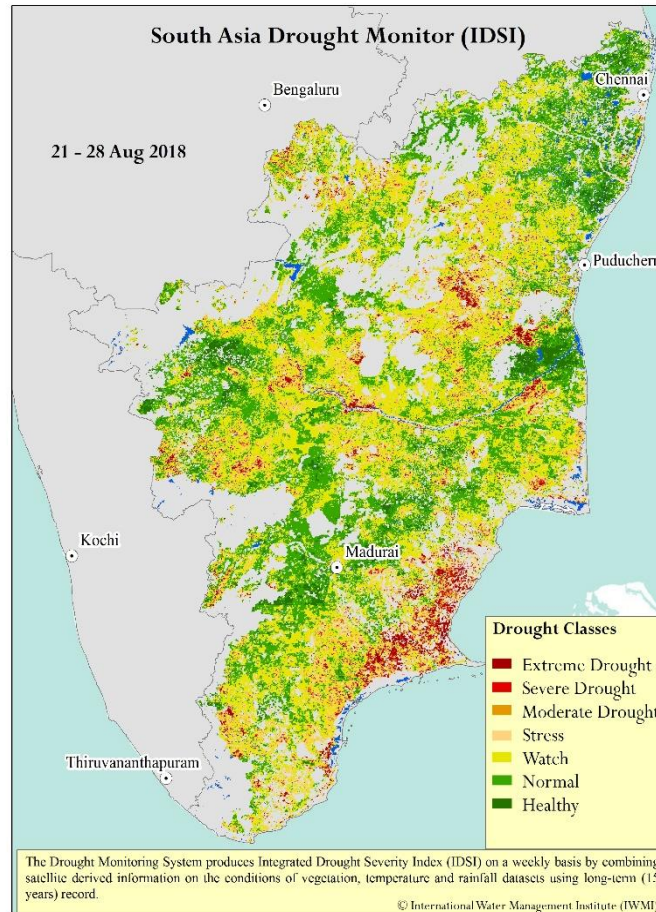
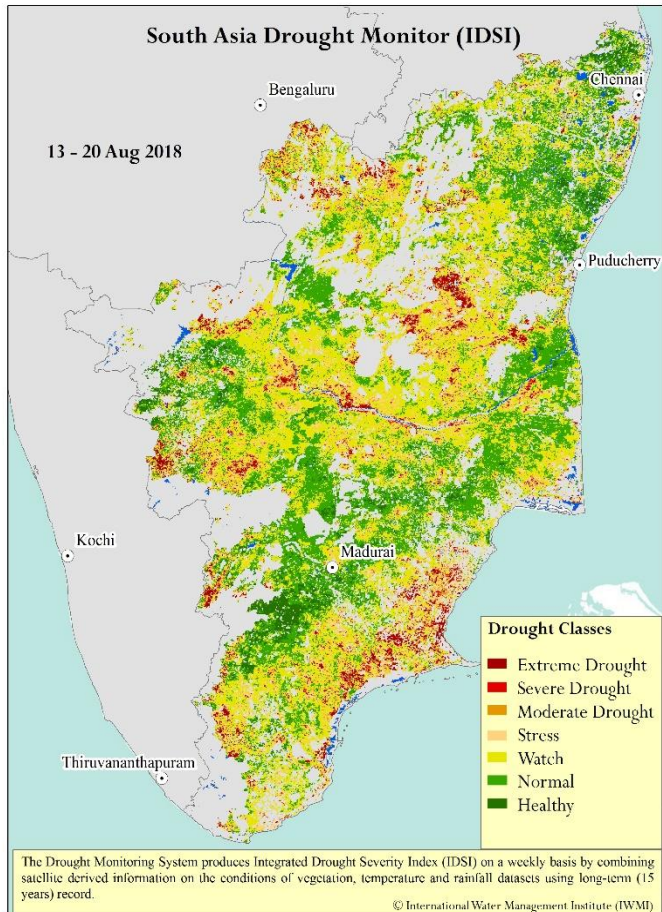
01 June – 02 Sep 2018

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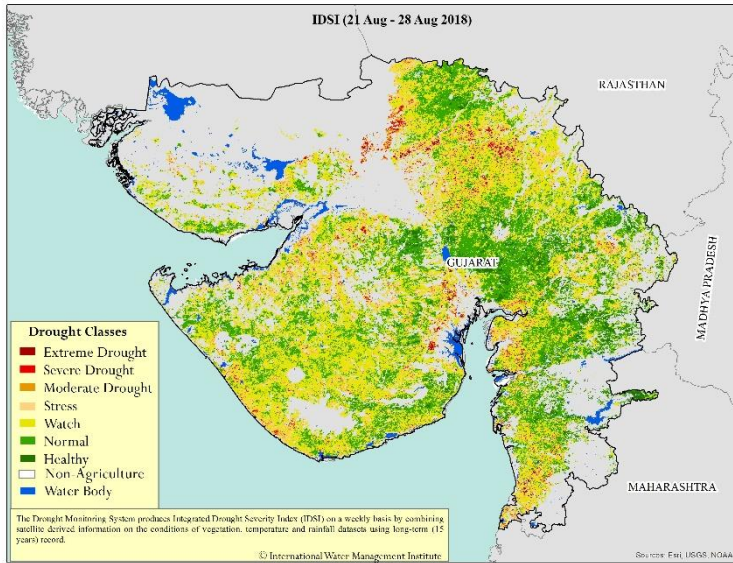
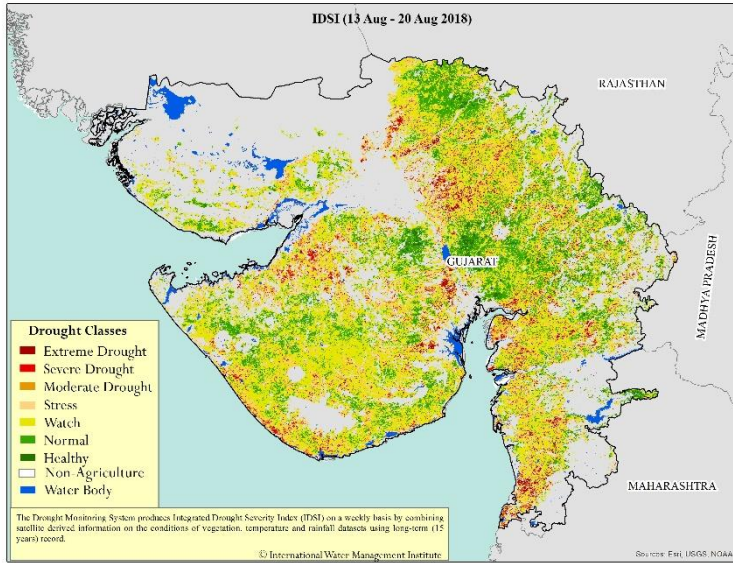


Summary:

- Overall condition of the stress has decreased from previous analysis cycle. Also south-east parts of Tamil Nadu seem to have higher stress similar to the week ending on 20th of August. South-west part of Tamil Nadu has slightly moved from normal to watch category.
- Overall, it can be observed that all districts have similar drought classes as compared to the previous week except north west part of Tamil Nadu.

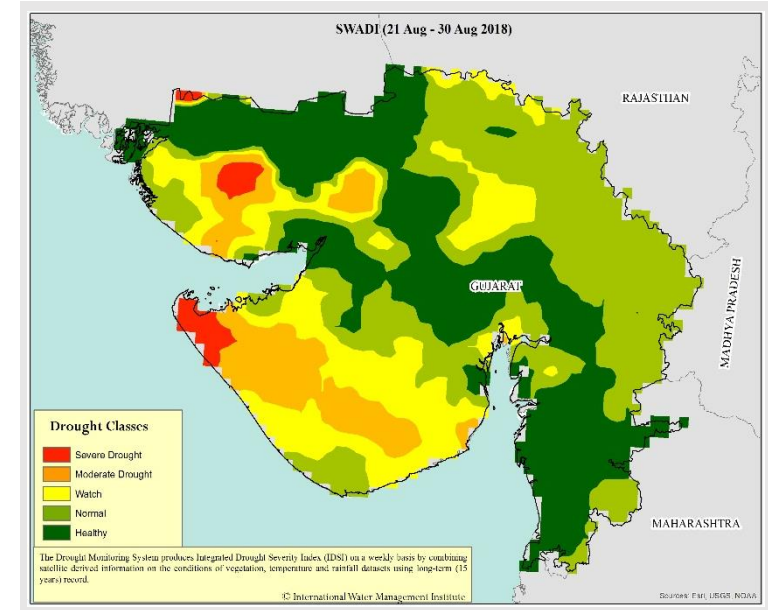
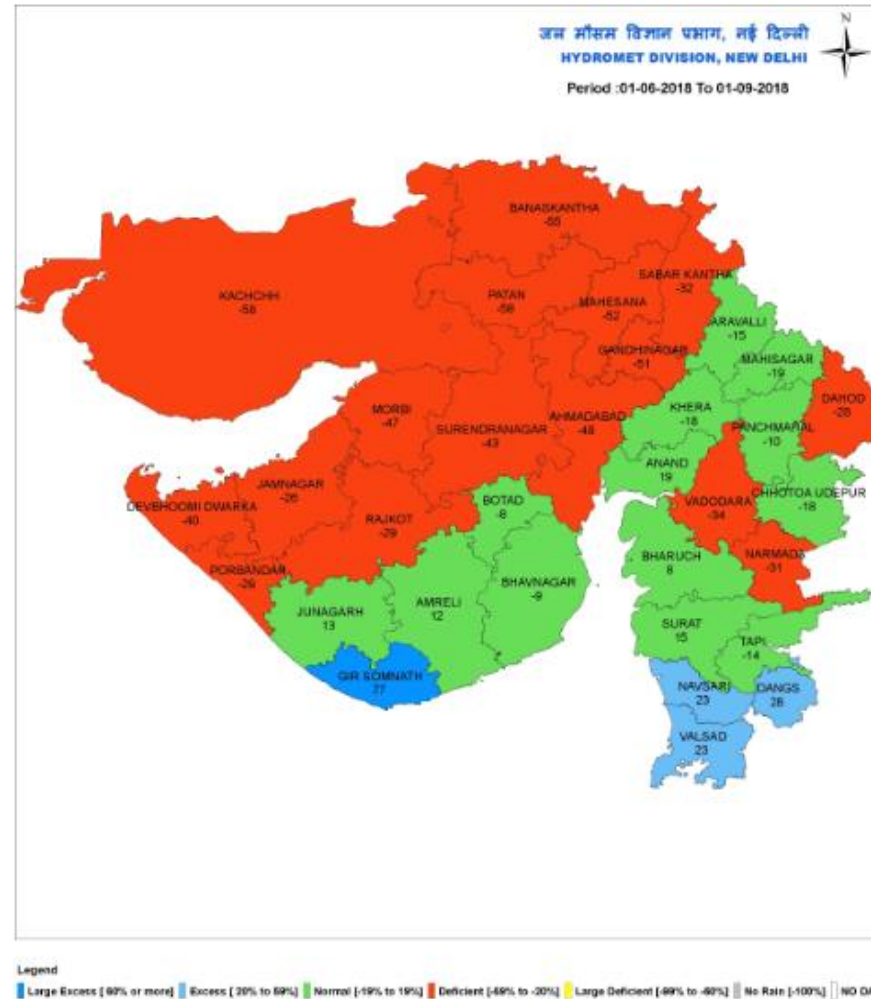


South Asia Drought Monitoring System (SADMS) – Agriculture Assessment (Gujarat)



भारत मौसम विज्ञान विभाग
INDIA METEOROLOGICAL DEPARTMENT

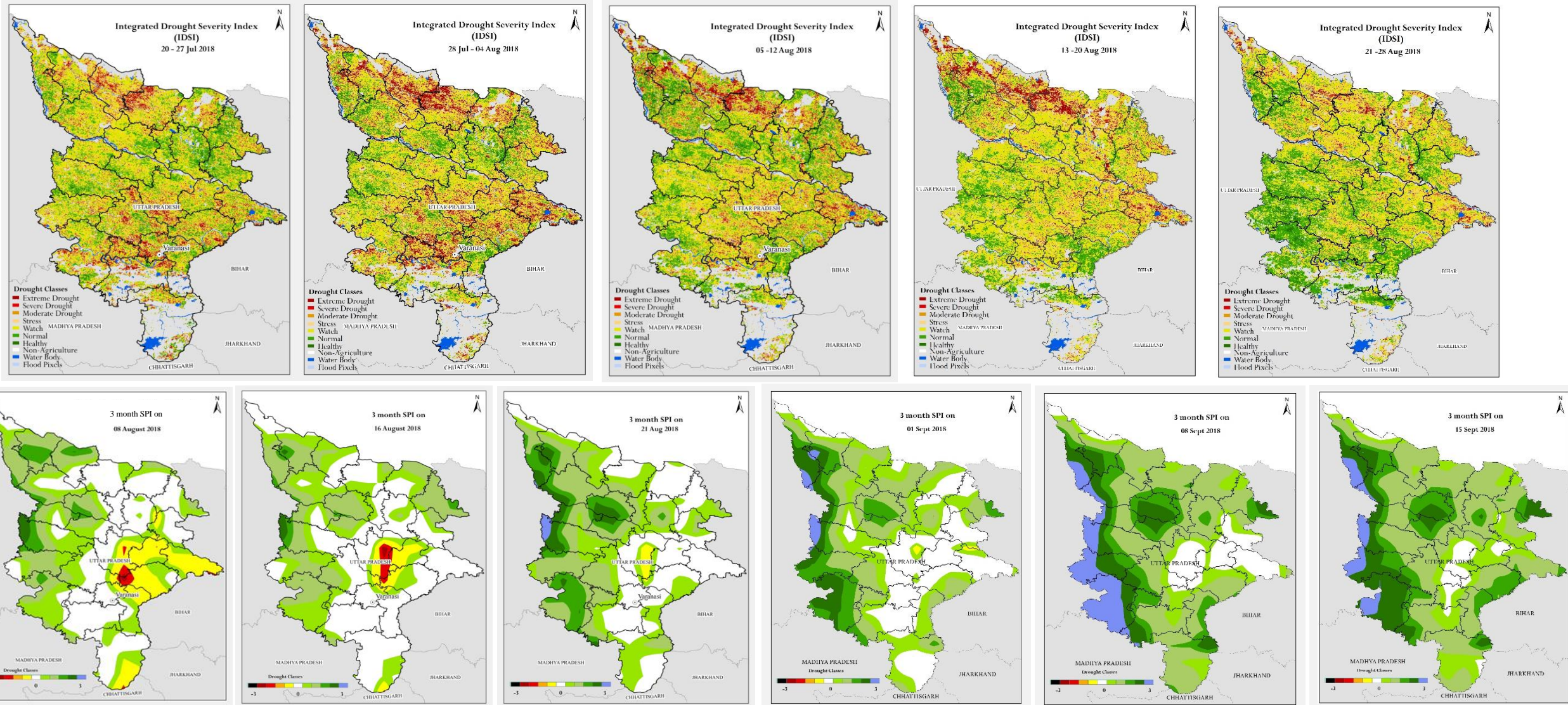
DISTRICT RAINFALL DEPARTURE MAP - GUJARAT



Summary:

- Overall condition of the stress is lower compared to previous analysis cycle. Also most parts of Gujarat seems to have stress to watch as compared to week ending on 20th 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 lower 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 27th Jul to end of August, Stress condition is expected to decrease further in coming fortnight. Area was experienced stress till mid of August and as per the forecast outputs, 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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