



INDIAN INSTITUTE OF REMOTE SENSING
Indian Space Research Organisation
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PRACTICAL REPORT

Topic: Drought Monitoring

Submitted to:

Abhishek Danodia Scientist SD
Agriculture & Soils Department

Submitted by:

Waquar Ul Islam
IRS20201011912345
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AIM

- To find Vegetation Condition Index (VCI) for July, August and, September months in Rajasthan on 2002 and 2003.
- To find district mean for VCI.
- To map VCI and district mean VCI for the study area.

SOFTWARE USED

- ERDAS IMAGINE
- Arc Map

DATA

- NDVI images of 20 years.

PROCEDURE

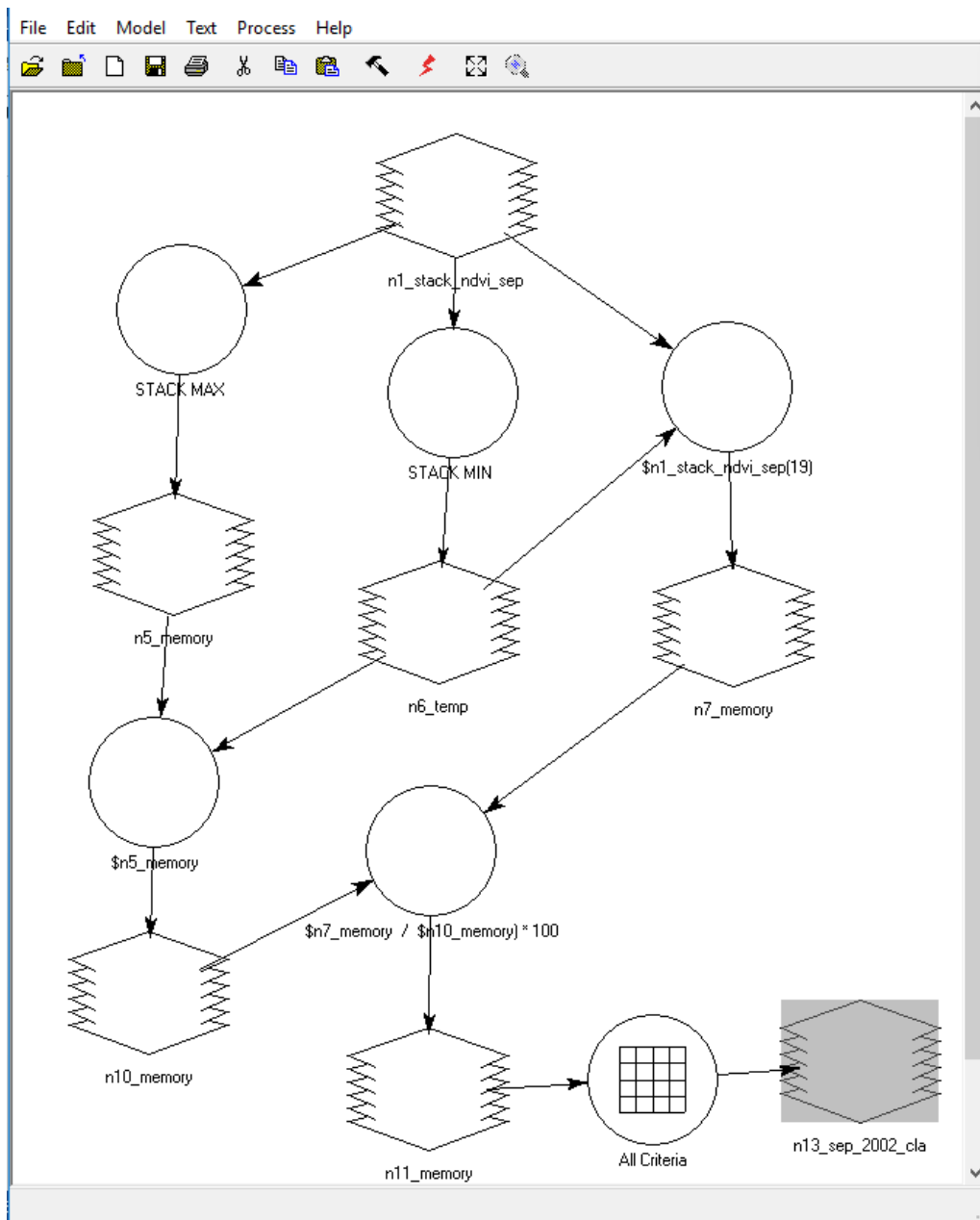
Drought is a prolonged dry period in the natural climate cycle that can occur anywhere in the world. Drought affects vegetation health and condition present in that area and it may cause the death of the plants. Due to this the spectral reflectance of the plants also changes according to the drought intensity. This can be used for the drought assessment. VCI is an indicator of the status of the vegetation cover as a function of the NDVI minimum and maximum encountered for a given ecosystem over many years. VCI values indicate how much the vegetation has changed in response to weather.

$$VCI_j = (NDVI_j - NDVI_{min}) / (NDVI_{max} - NDVI_{min}) * 100$$

Where, $NDVI_{max}$ $NDVI_{min}$ is calculated from long-term record for a particular month and j is the index of the current month.

Steps:

1. Open ERDAS IMAGINE
2. Open new Model Maker from Toolbox
3. Create model for VCI analysis.
4. Run model for July, August, and September of 2002 and 2003. Below image shows the model for VCI and for the classification of VCI image obtained



5. Open the classified images in Arc Map.

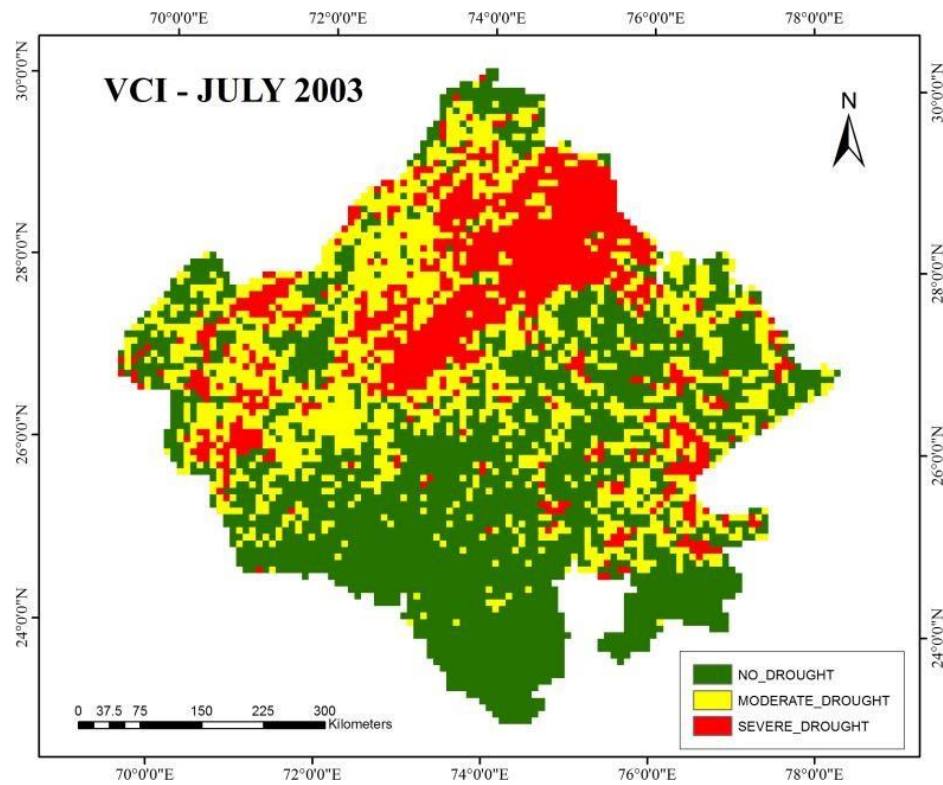
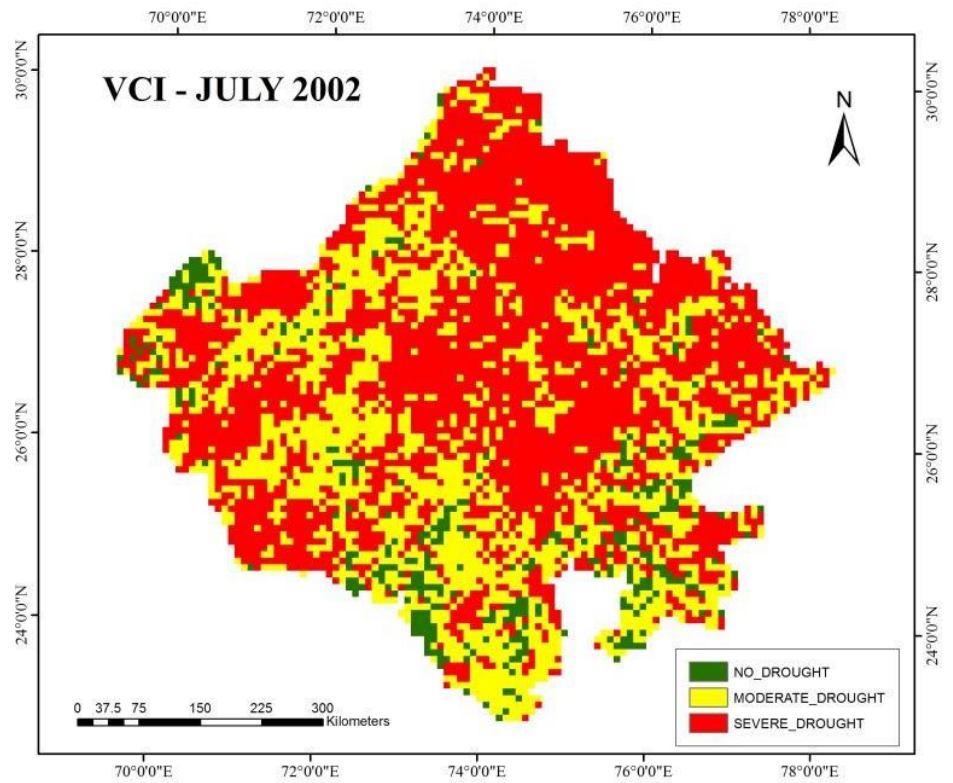
6. Map all VCI images.

7. To find district mean, Rajasthan district boundary shape file is added and Zonal Statistics(Spatial Analyst) tool is used to find the district mean for each month of both years

- VCI Maps for July, August, and September of 2002 and 2003.

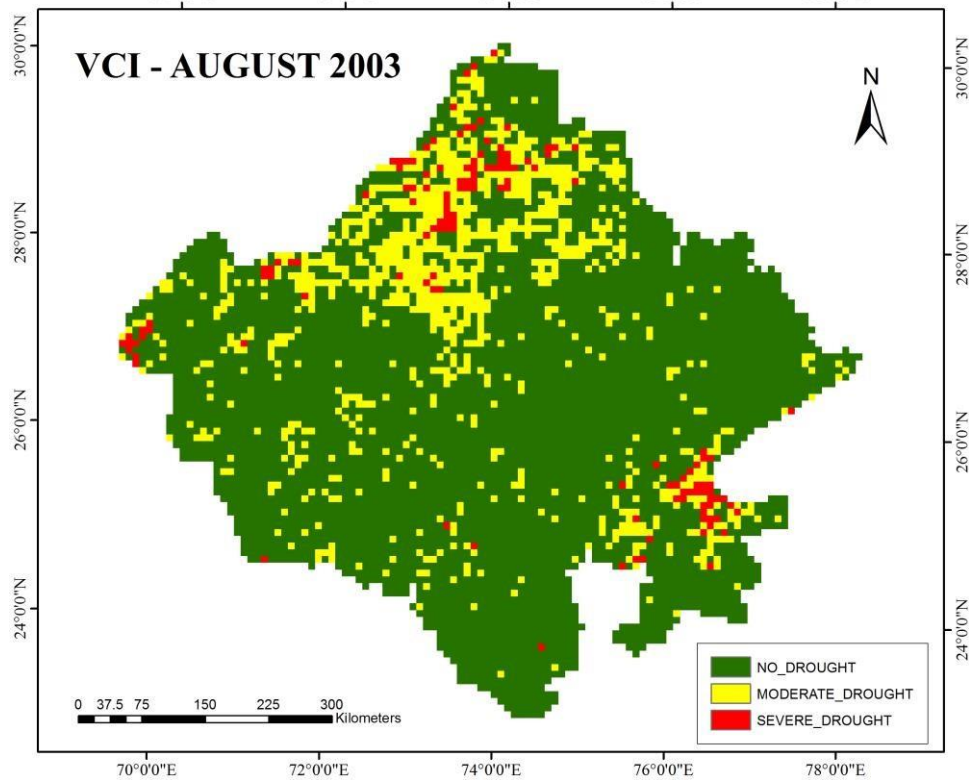
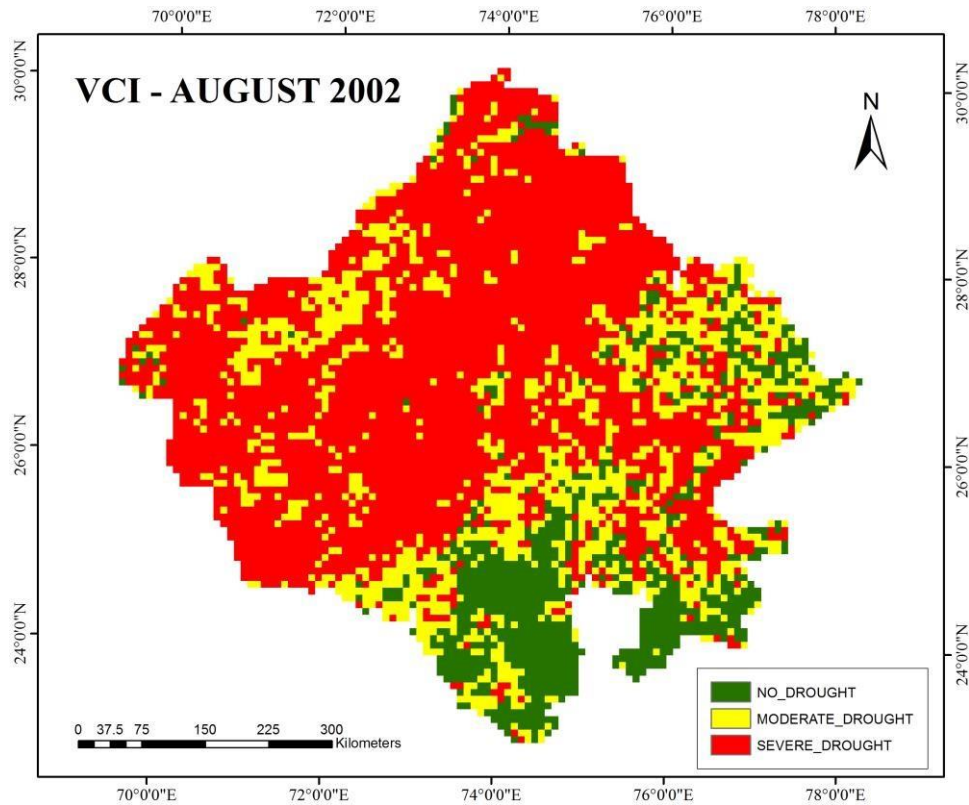
1. JULY

Results:

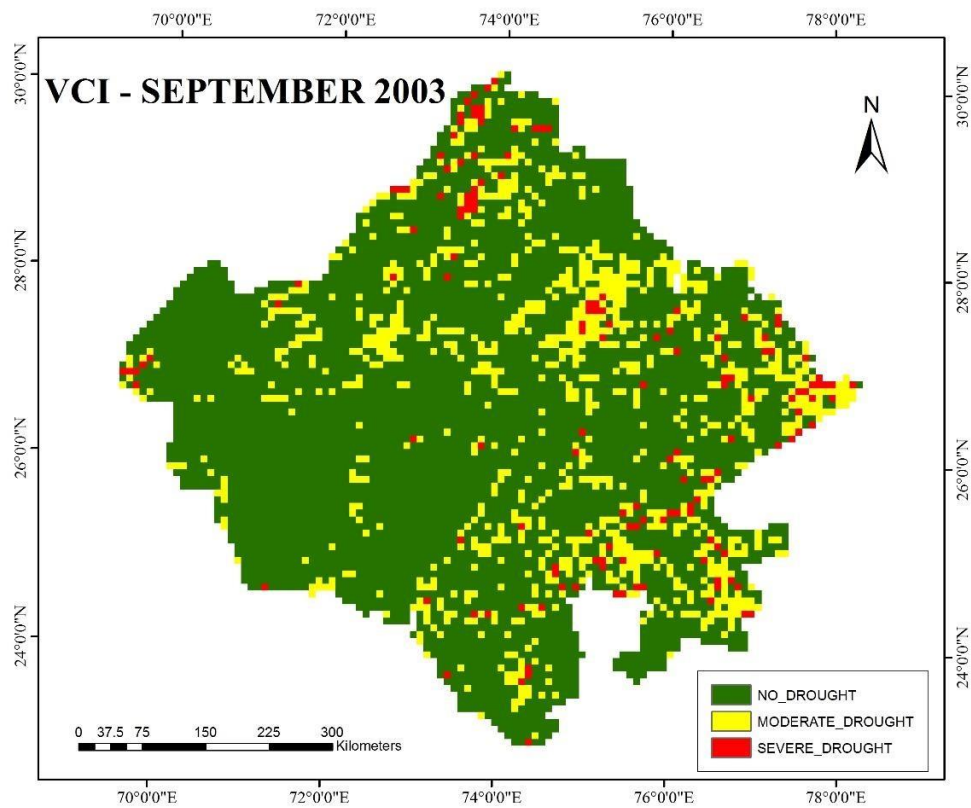
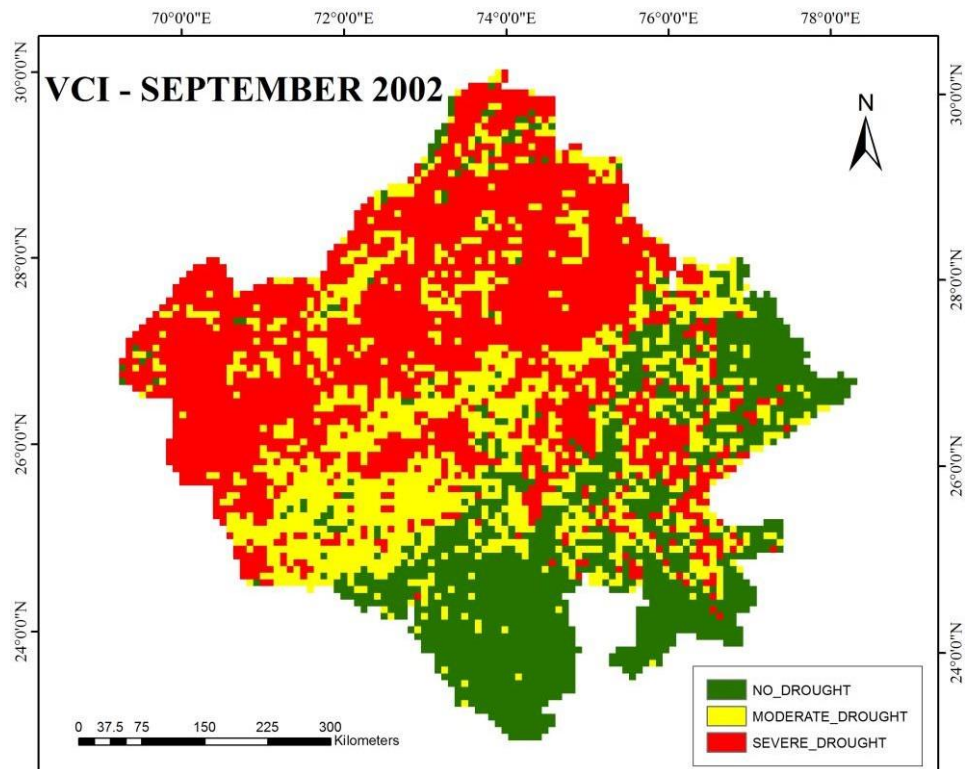


2. AUGUST

S

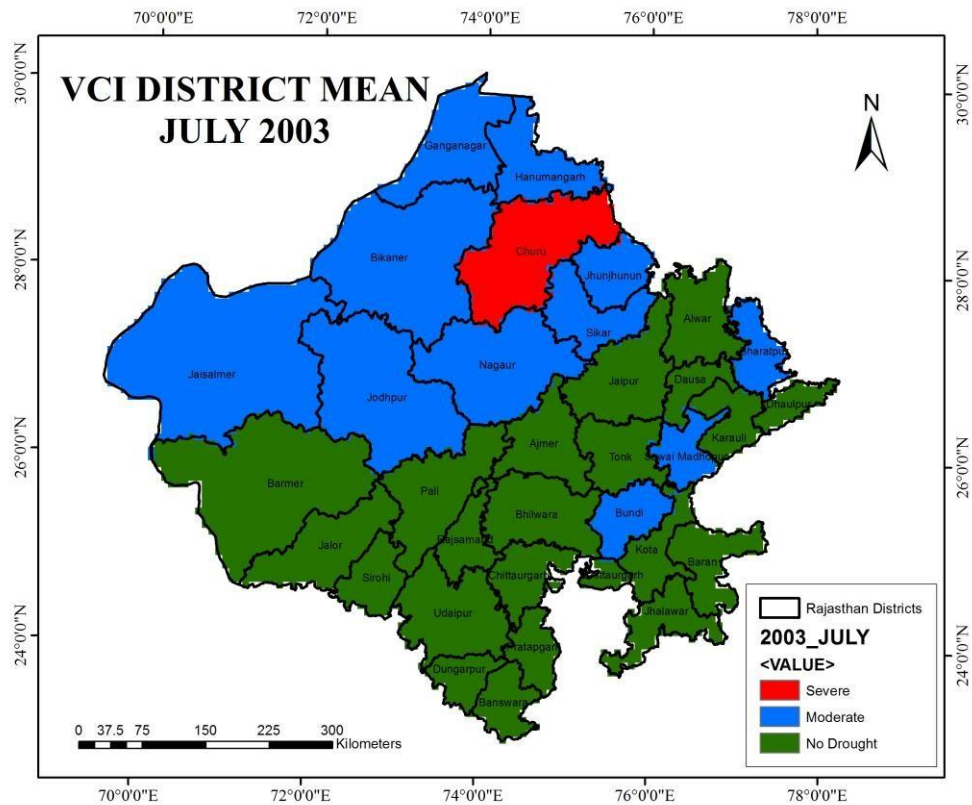
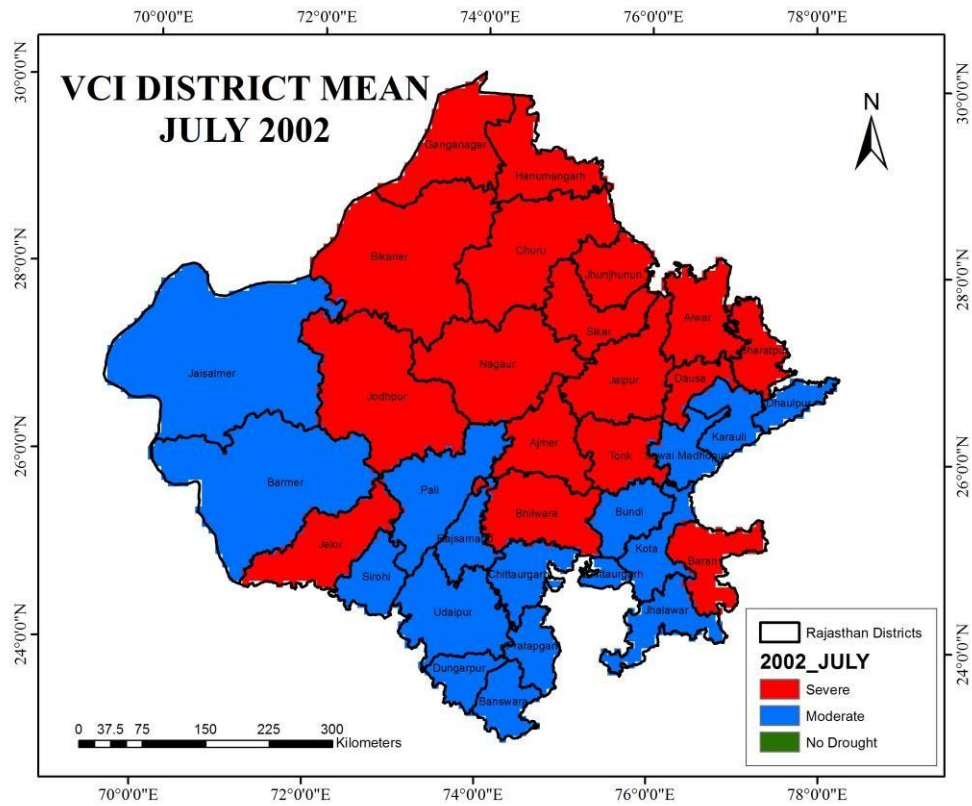


3. SEPTEMBER

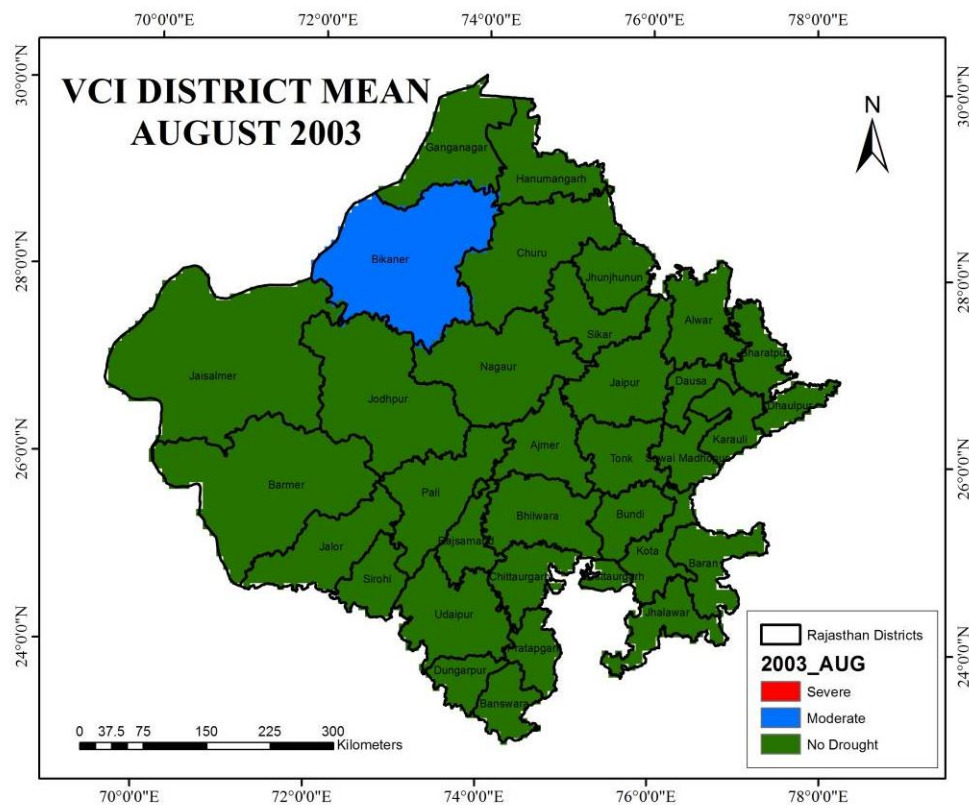
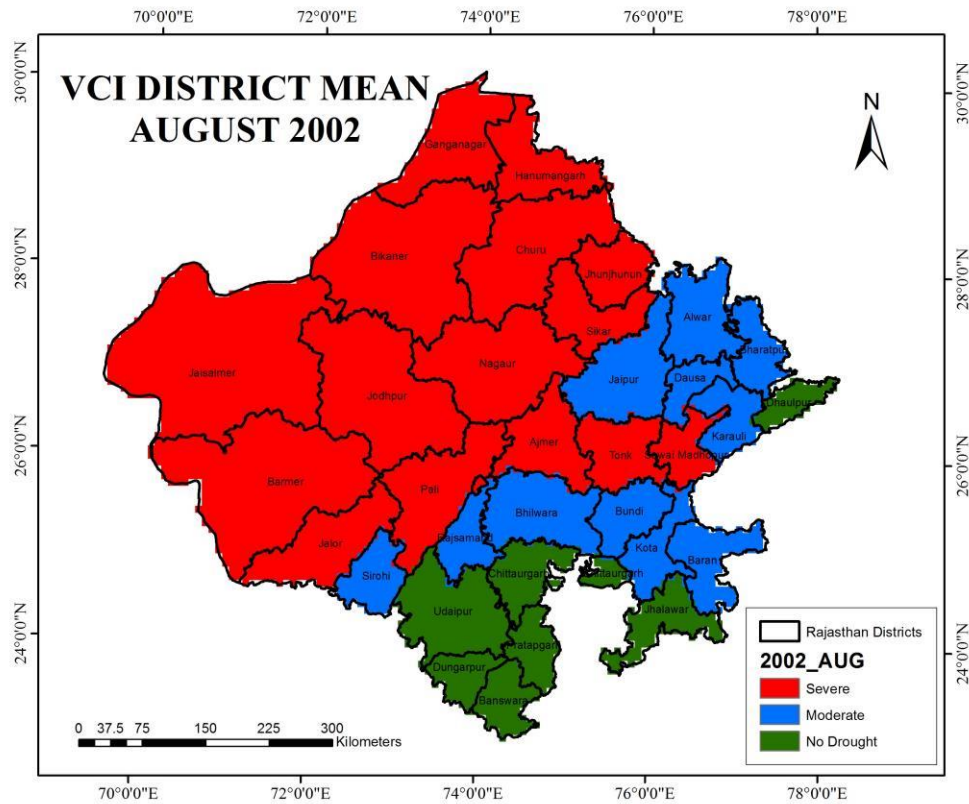


- District Mean maps.

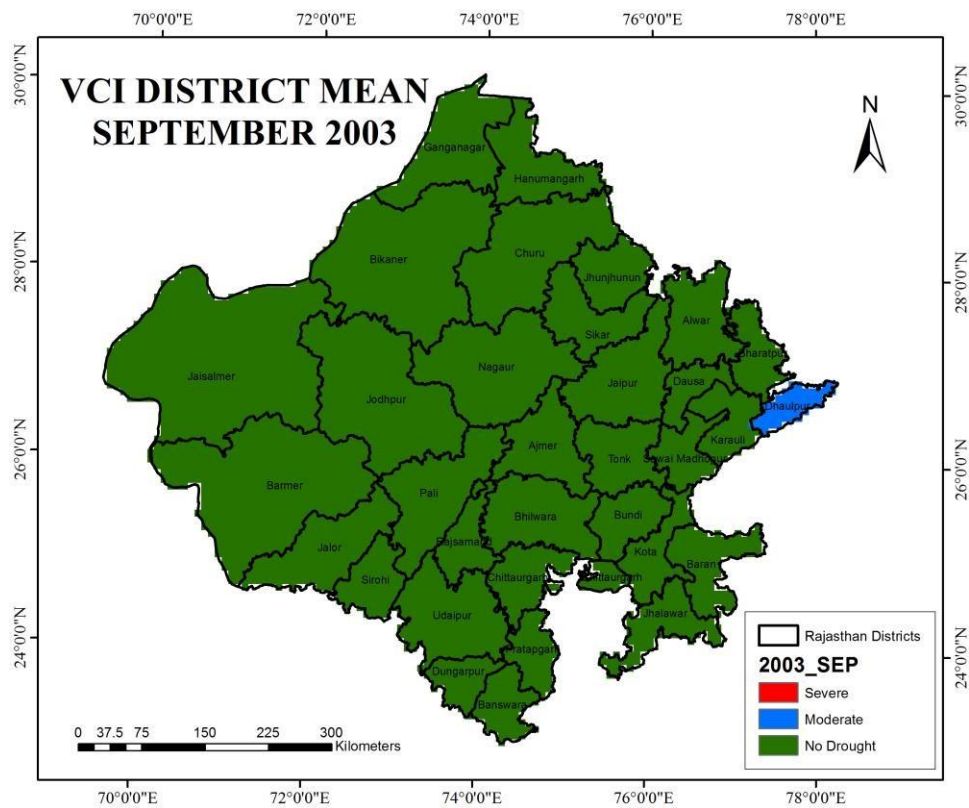
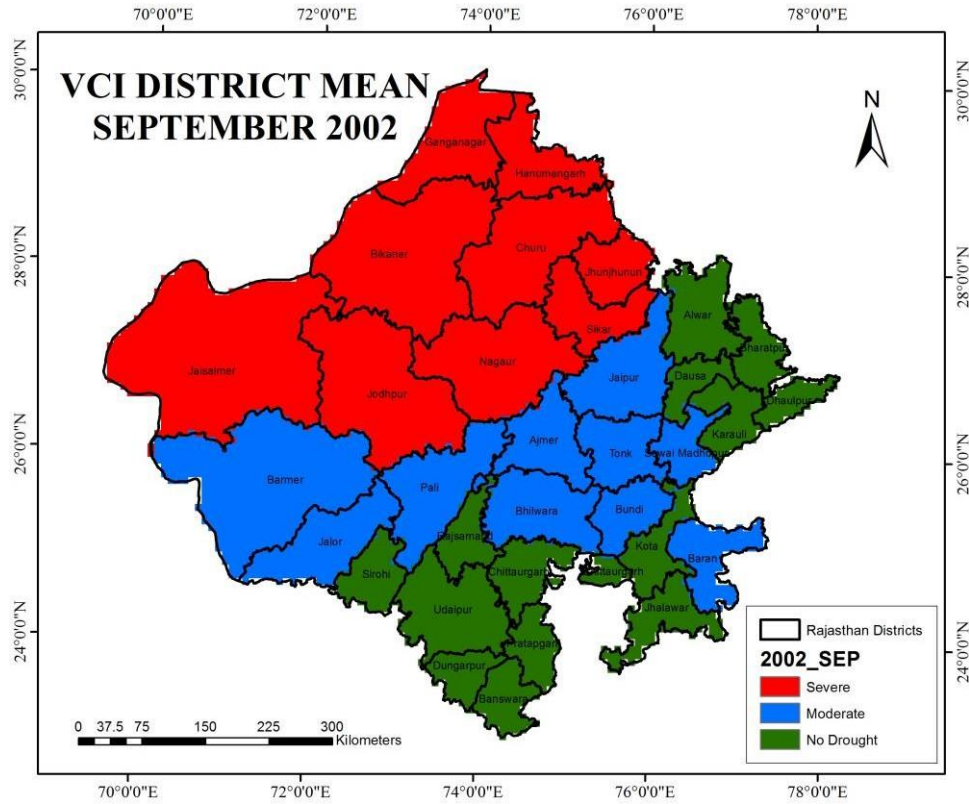
1. JULY



2. AUGUST



3. SEPTEMBER



- District mean VCI for July, August and September of 2002 and 2003. Assesement

Name of district	2002			2003		
	July	August	September	July.	August.	September.
Jaisalmer	27.037	20.442	18.458	43.972	70.900	80.565
Bikaner	24.260	15.692	19.125	31.089	45.475	67.259
Ganganagar	17.849	13.038	19.796	43.188	55.621	60.571
Hanumangarh	11.212	10.428	19.442	29.888	58.321	71.084
Churu	15.369	6.904	16.686	12.728	56.675	69.022
Jhunjhunun	12.344	9.304	10.437	25.574	70.526	57.245
Sikar	23.066	22.536	18.710	47.407	74.693	52.735
Alwar	22.384	37.388	51.074	53.480	80.610	66.715
Bharatpur	19.743	44.400	80.888	48.947	80.489	56.243
Dhaulpur	27.186	52.577	68.947	62.350	72.360	44.697
Jaipur	20.499	30.133	40.747	61.498	78.976	71.240
Dausa	21.112	32.438	52.157	50.719	79.582	65.194
Karauli	27.055	27.345	51.493	53.603	84.905	71.235
Sawai Madhopur	31.506	20.002	35.598	32.680	69.708	65.880
Tonk	23.703	23.472	31.395	56.455	81.543	81.851
Bundi	30.085	25.777	45.165	42.401	55.806	55.495
Kota	37.591	33.090	54.559	53.085	60.701	65.022
Baran	24.777	35.084	48.910	54.567	57.089	50.329
Jhalawar	39.255	66.548	89.457	85.379	81.861	71.007
Chittaurgarh	31.507	58.059	69.608	70.521	76.158	54.414
Chittaurgarh	31.507	58.059	69.608	70.521	76.158	54.414
Bhilwara	20.846	41.303	45.531	65.141	72.204	64.424
Pratapgarh	36.942	74.312	91.357	88.187	83.102	76.906
Udaipur	36.844	54.749	74.317	81.099	72.365	66.351
Dungarpur	35.601	54.084	72.763	91.401	89.211	66.041
Banswara	41.093	63.066	83.260	89.045	86.125	61.959
Ajmer	16.746	23.324	26.555	60.267	82.363	65.758
Nagaur	18.607	13.318	22.419	39.707	67.774	64.653
Jodhpur	22.582	15.159	23.137	37.268	66.951	70.661
Pali	29.600	17.725	37.251	74.134	77.257	81.131
Sirohi	38.739	34.120	57.252	84.792	75.946	75.204
Jalor	23.049	15.873	35.647	75.549	73.728	78.213
Barmer	26.086	17.777	25.688	52.230	71.847	78.545

INFERENCE

- 2002 is drought year and 2003 as normal year.
- In 2002 July month is severe than other two months. All the area come under severe and moderate drought.
- From the district mean table we can identify that Jhunjhunun district have lowest sum of 2002 July, August and September. Which means drought was extreme in this district. And the lowest affected was Pratapgarh district.
- In 2003 the VCI sum of three months shows lower for Churu and higher for Pratapgarh. Which means Churu was drier and Pratapgarh was in no drought condition.
