

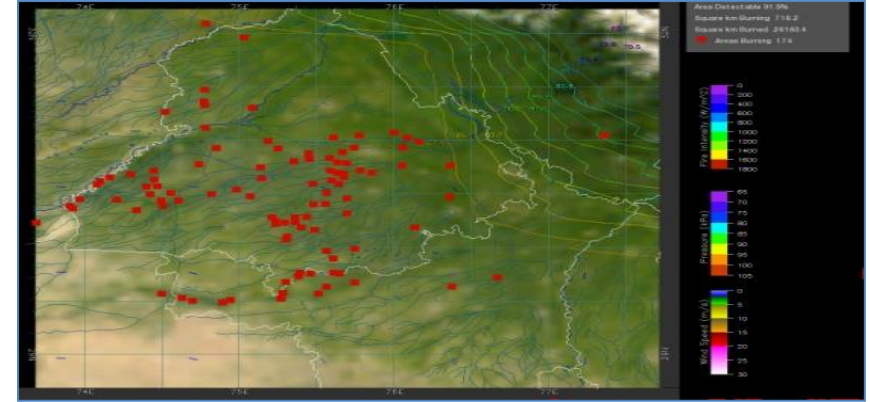
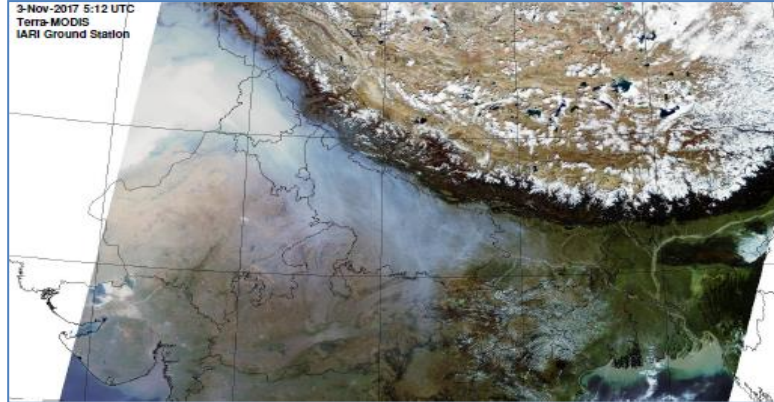


# MONITORING PADDY RESIDUE BURNING IN INDIA USING SATELLITE REMOTE SENSING DURING 2024

Bulletin  
No. 21

Events Date:  
05-Oct-2024

Issued on:  
05-Oct-2024



Consortium for Research on Agroecosystem Monitoring and Modeling from Space (CREAMS)  
Laboratory,

Division of Agricultural Physics, ICAR – Indian Agricultural Research Institute, New Delhi – 110012

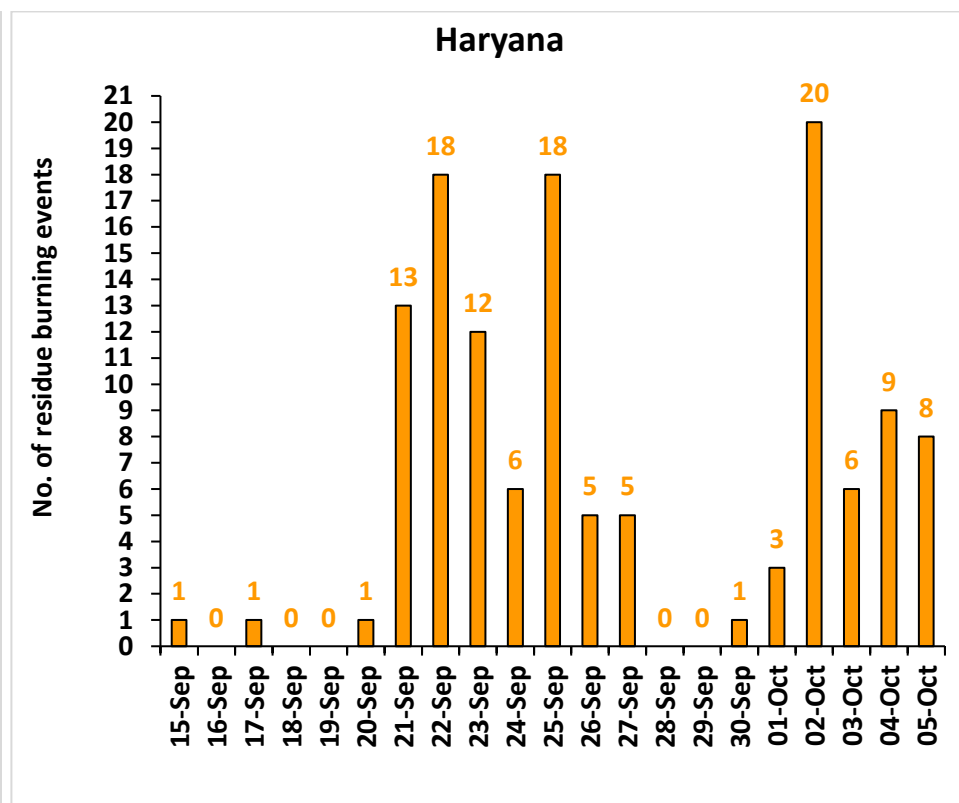
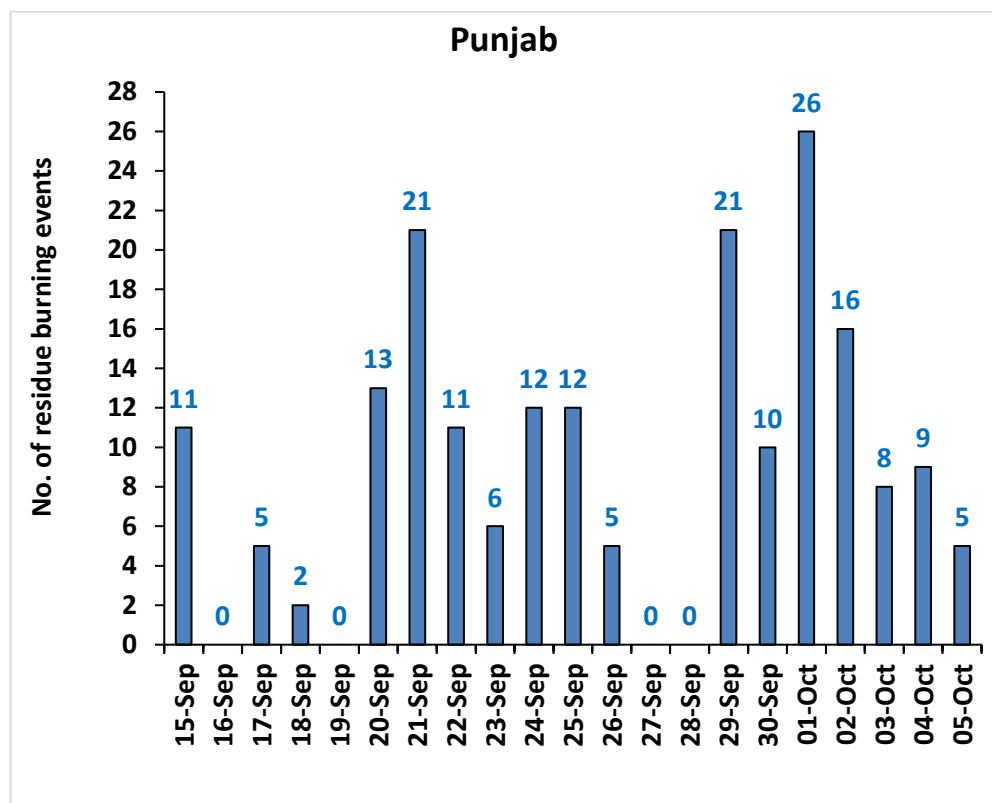
<https://creams.iari.res.in>



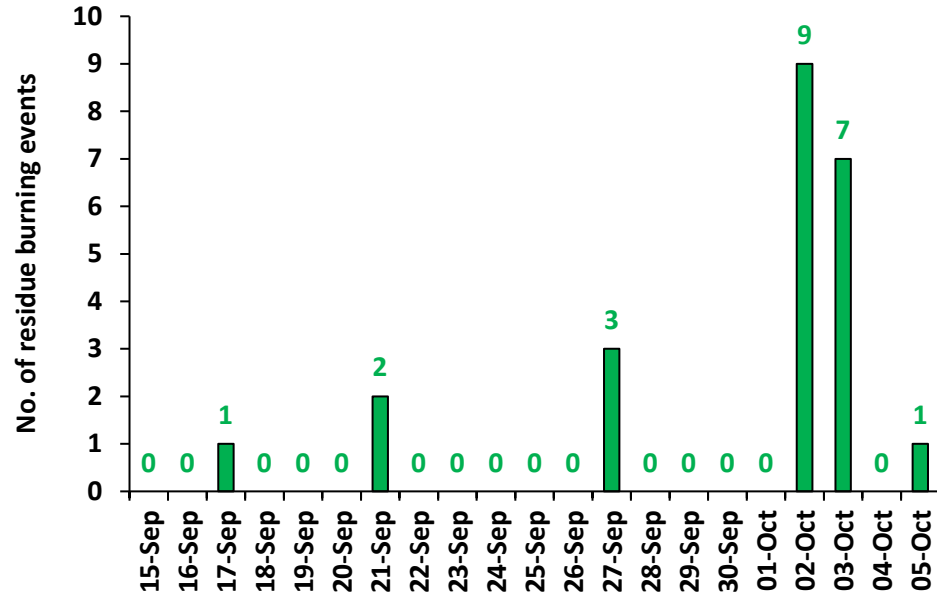
## Highlights for 05-Oct-2024

- The active fire events due to rice residue burning were monitored using satellite remote sensing, following the "Standard Protocol for Estimation of Crop Residue Burning Fire Events using Satellite Data".
- Satellites detected **18** residue burning events in the six study States on **05-Oct-2024**.
- The state wise events detected on **05-Oct-2024** were **05** in Punjab, **08** in Haryana, **01** in UP, **00** in Delhi, **02** in Rajasthan and **02** in MP.
- Total **369** burning events were detected in the six states between **15-Sept-2024** and **05-Oct-2024**, which are distributed as **193**, **127**, **23**, **00**, **11** and **15** in Punjab, Haryana, UP, Delhi, Rajasthan and MP, respectively.

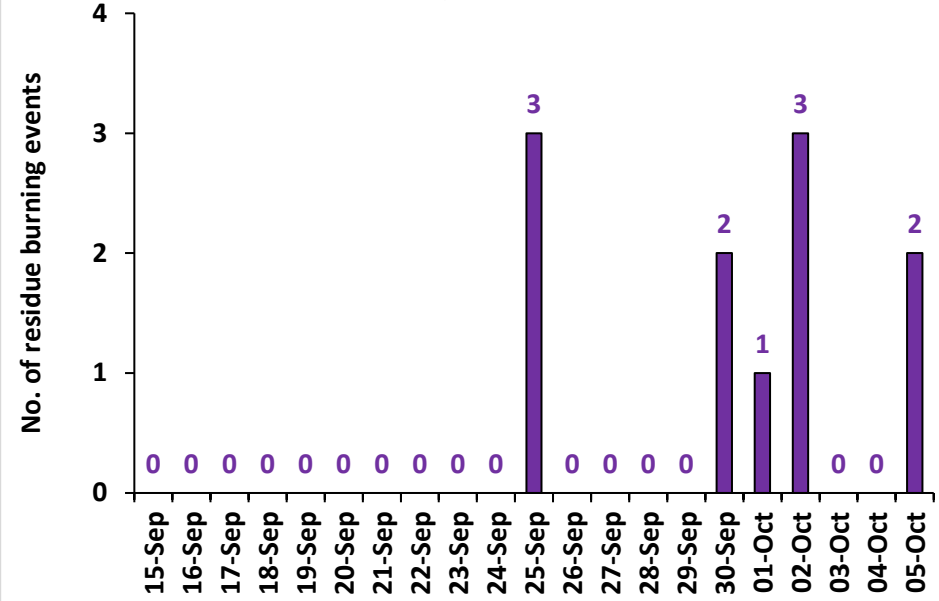
### Temporal distribution of rice residue burning events for the study States in 2024



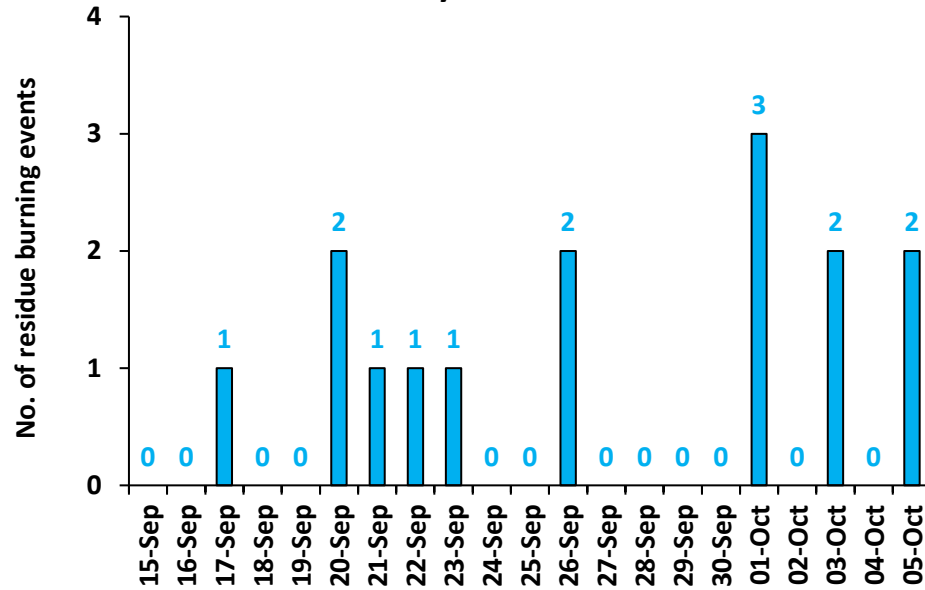
### Uttar Pradesh



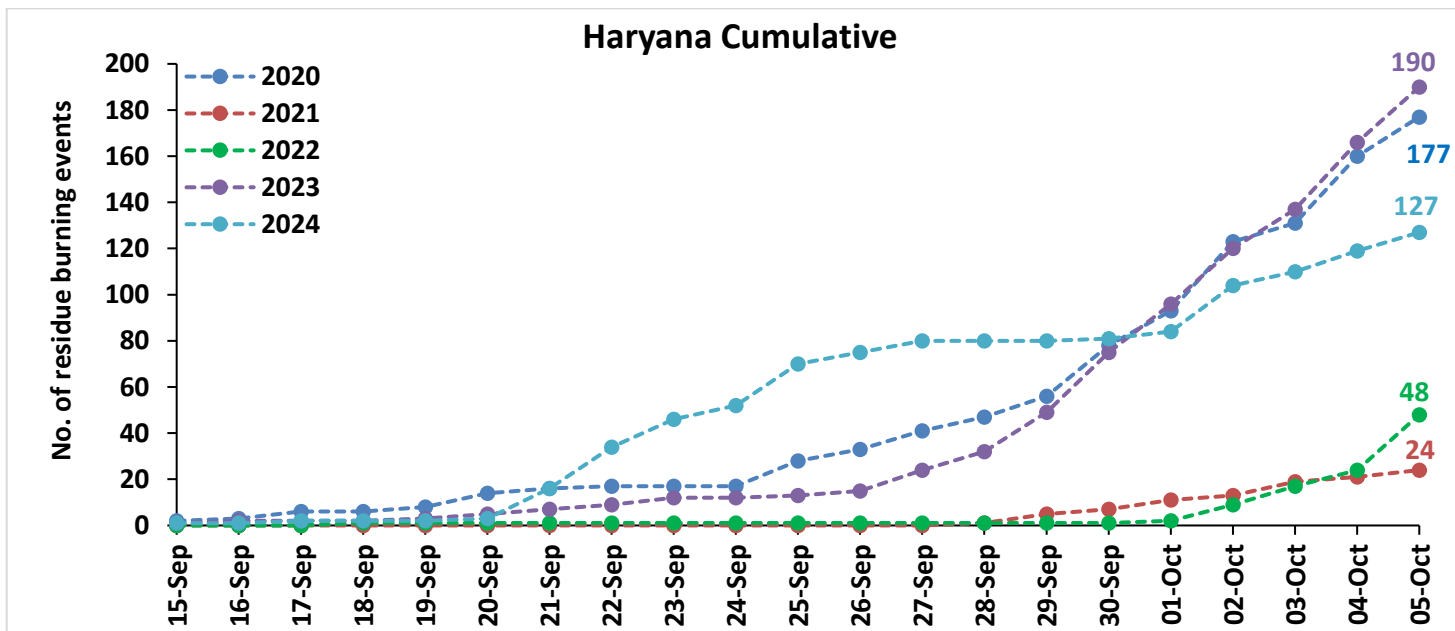
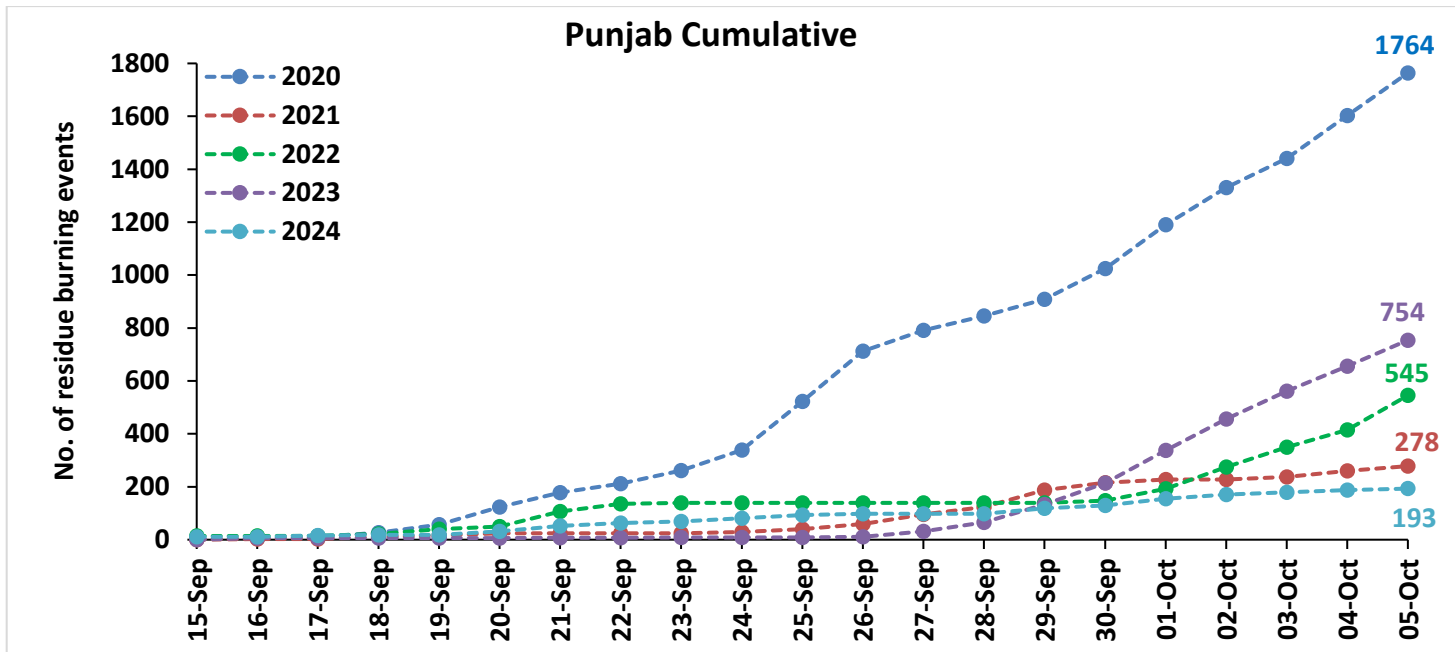
### Rajasthan

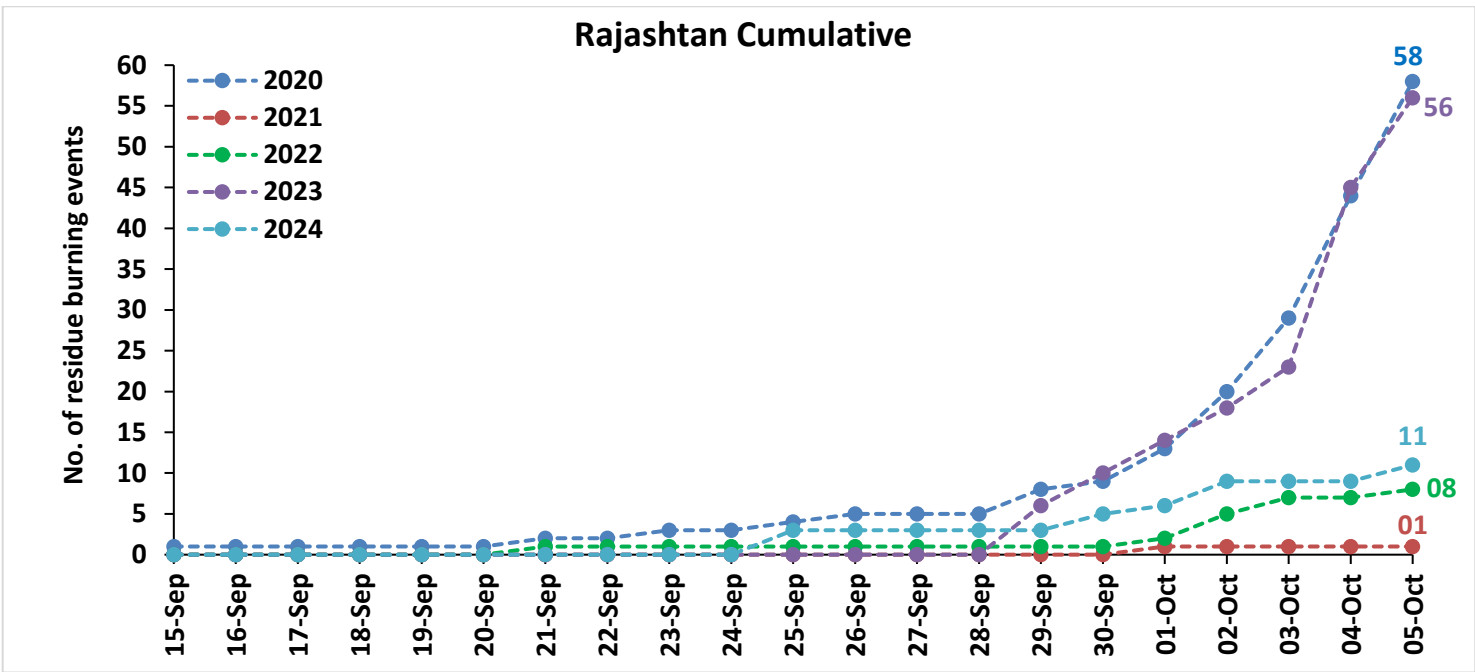
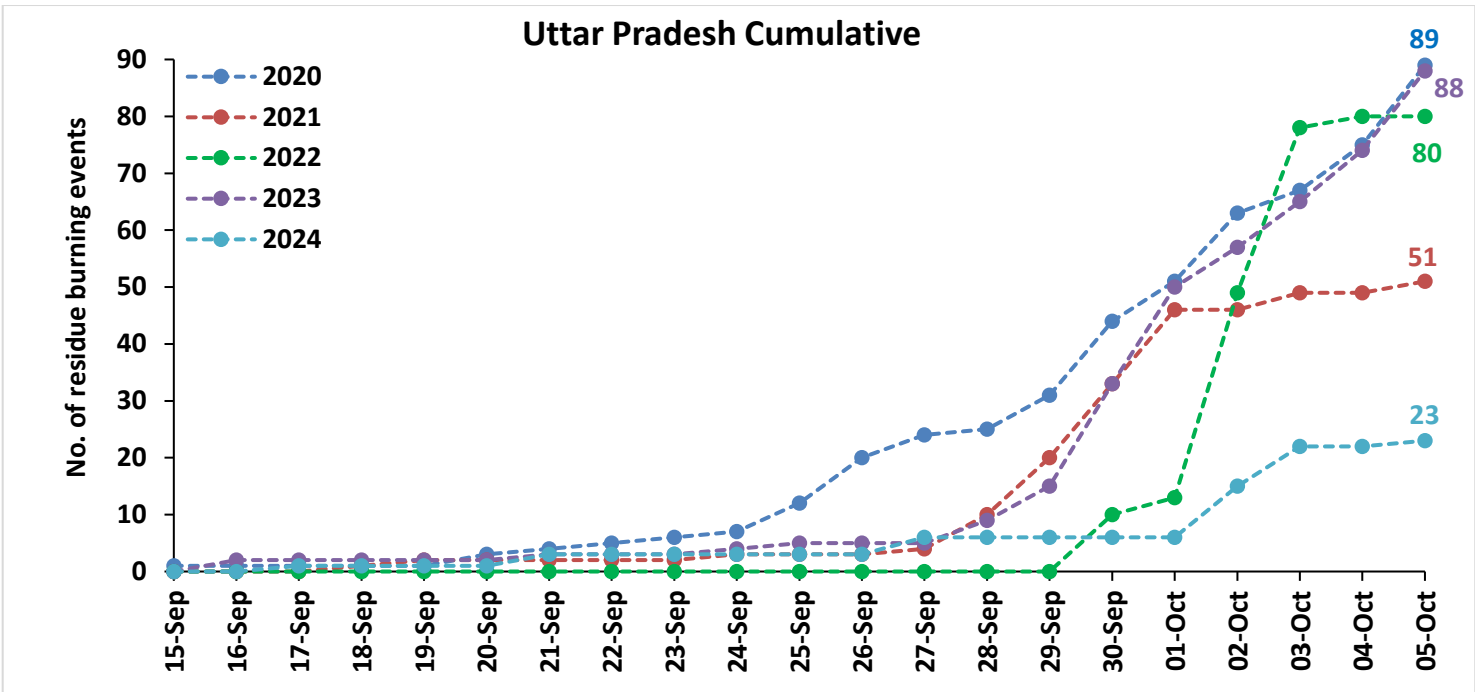


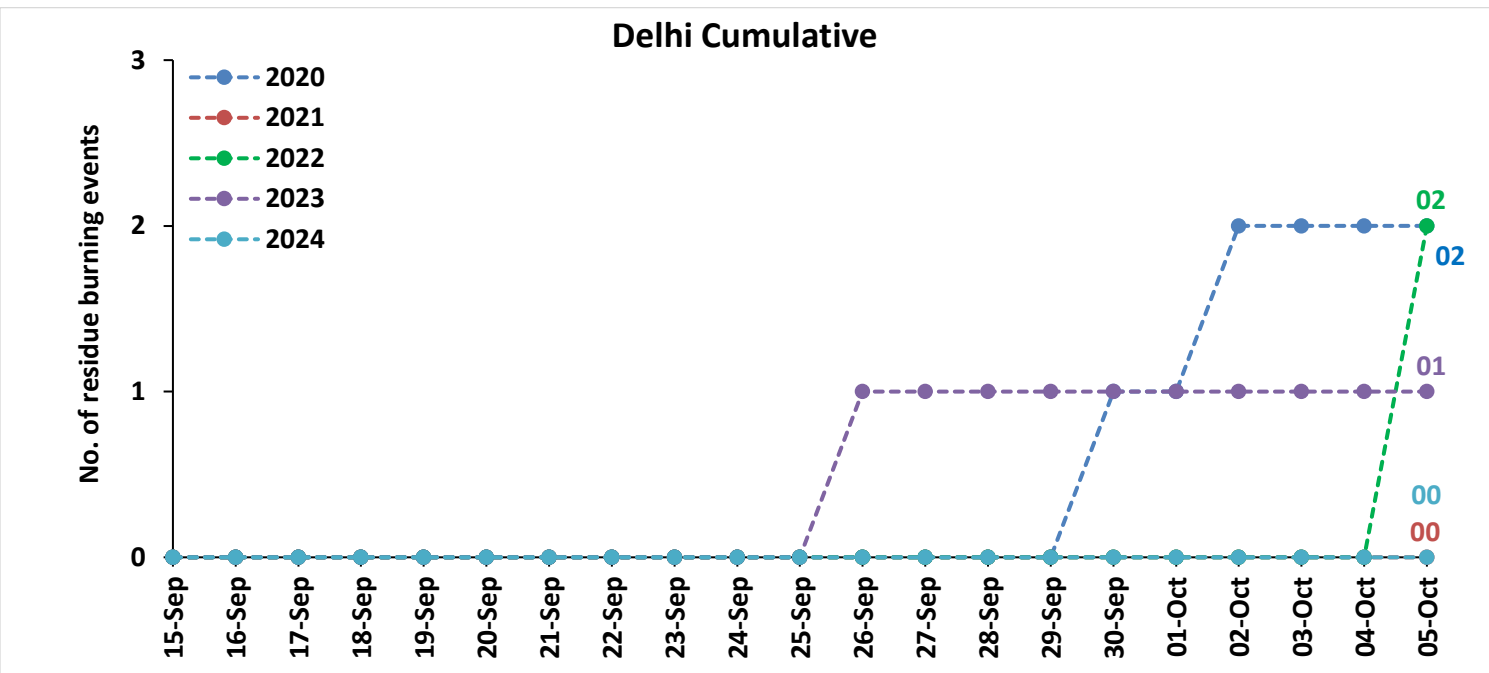
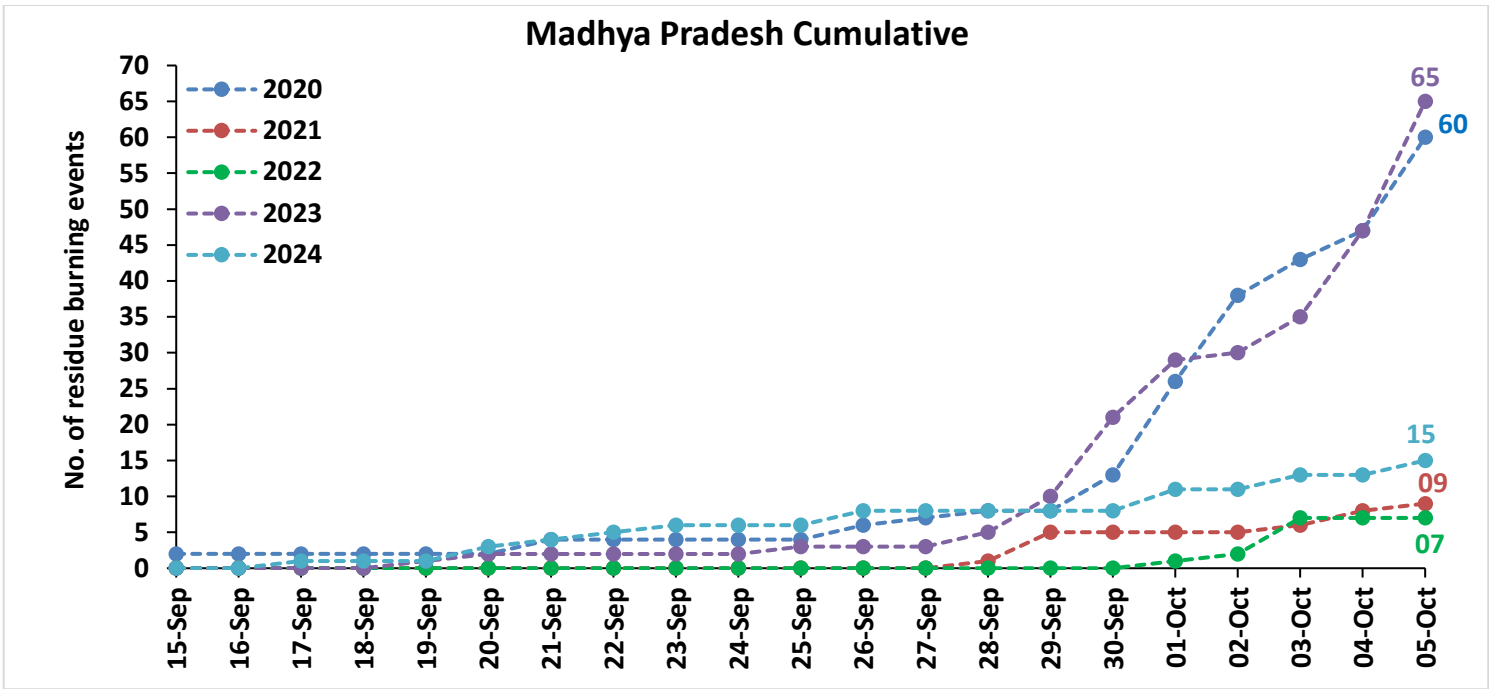
### Madhya Pradesh



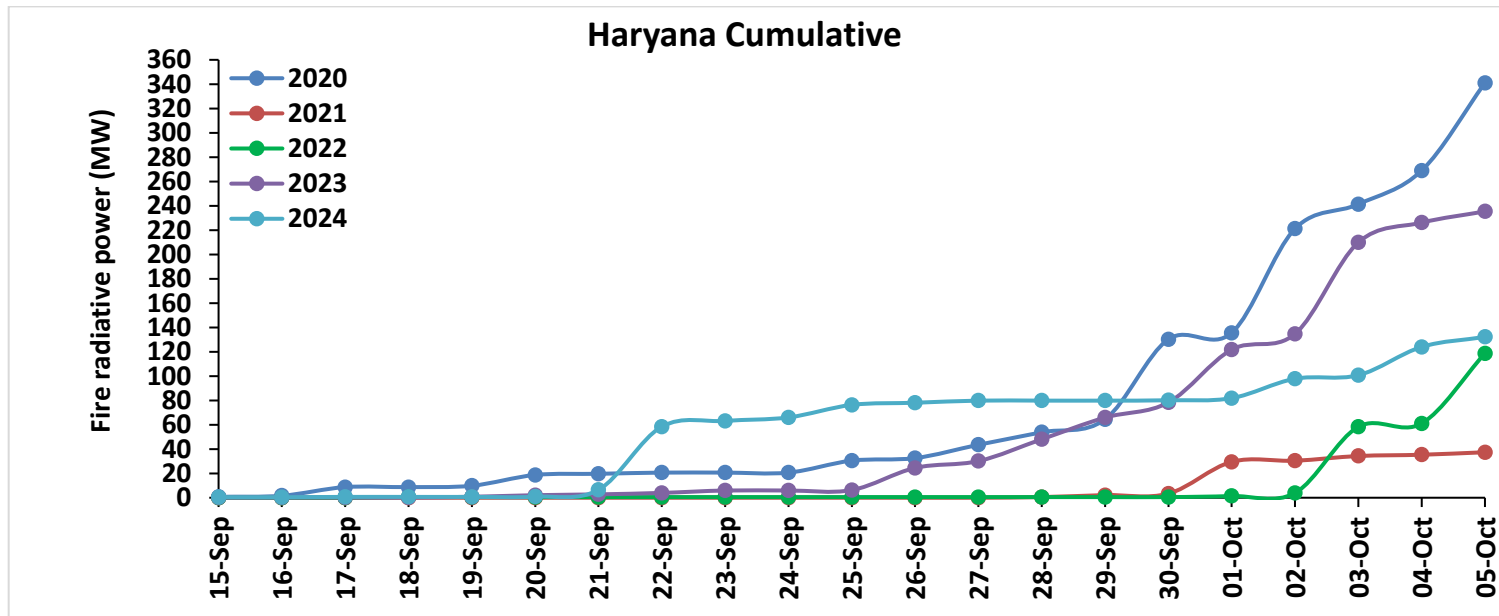
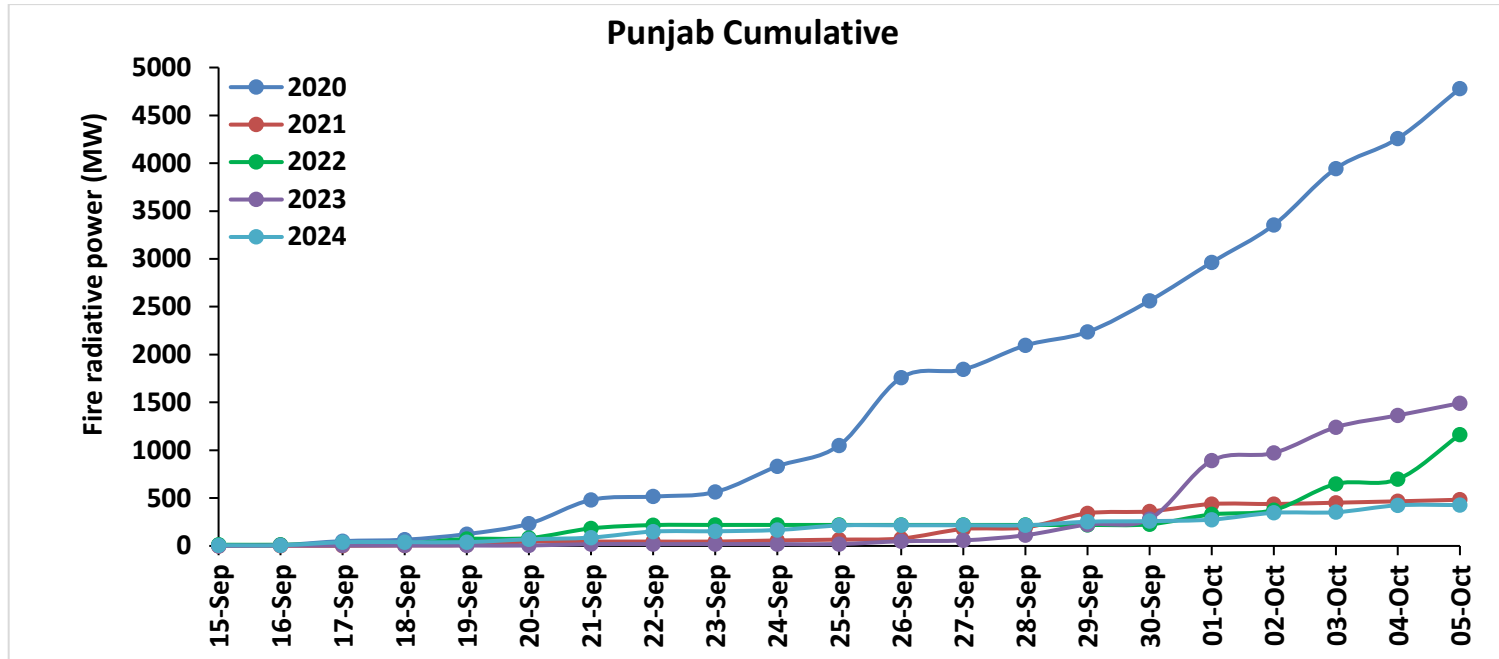
**Comparison of residue burning events in current year (2024) with previous years (2020, 2021, 2022 and 2023) for the study States**

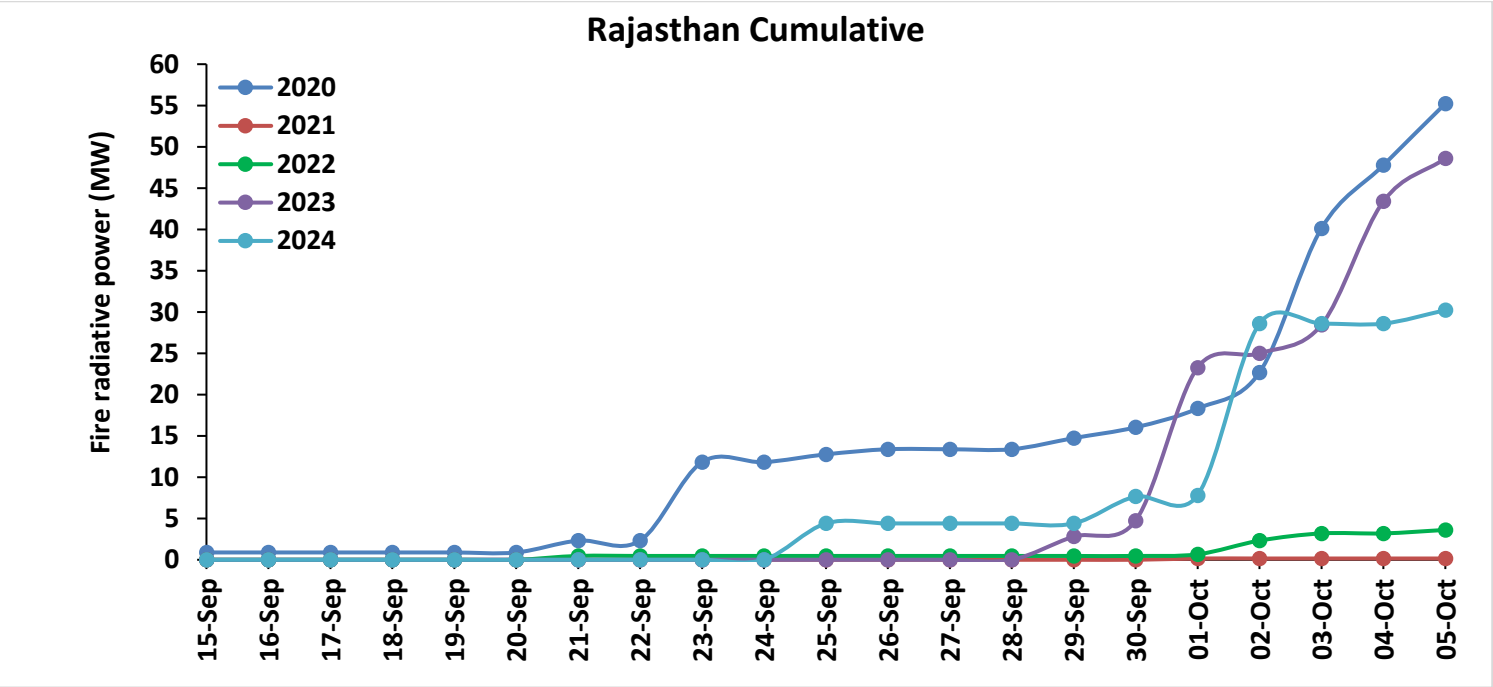
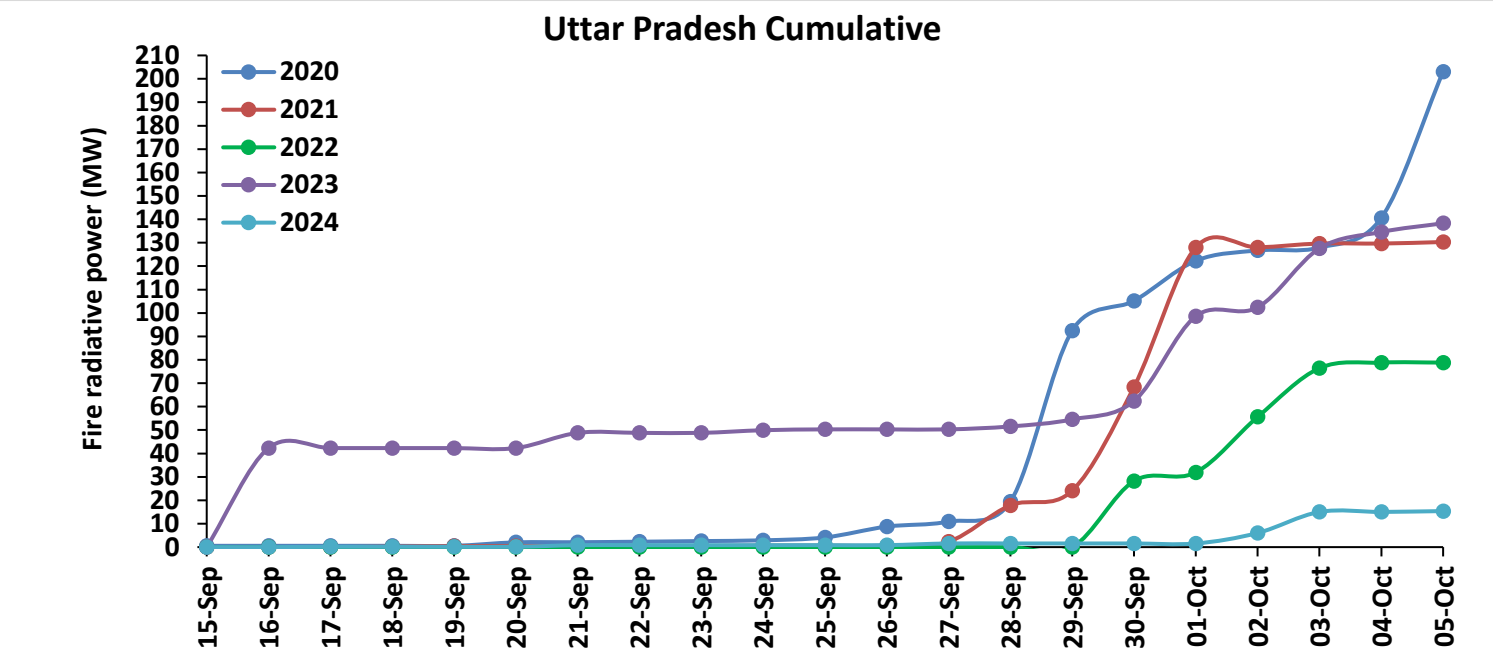




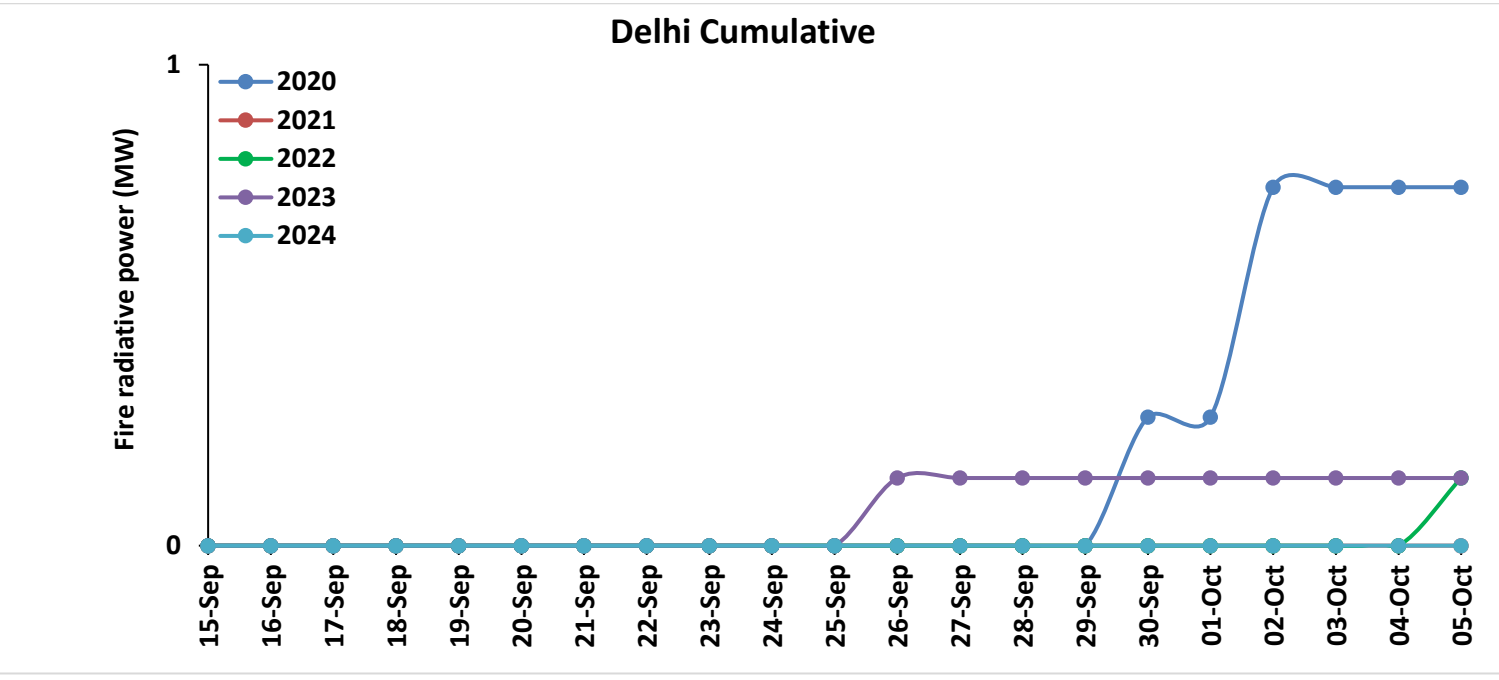
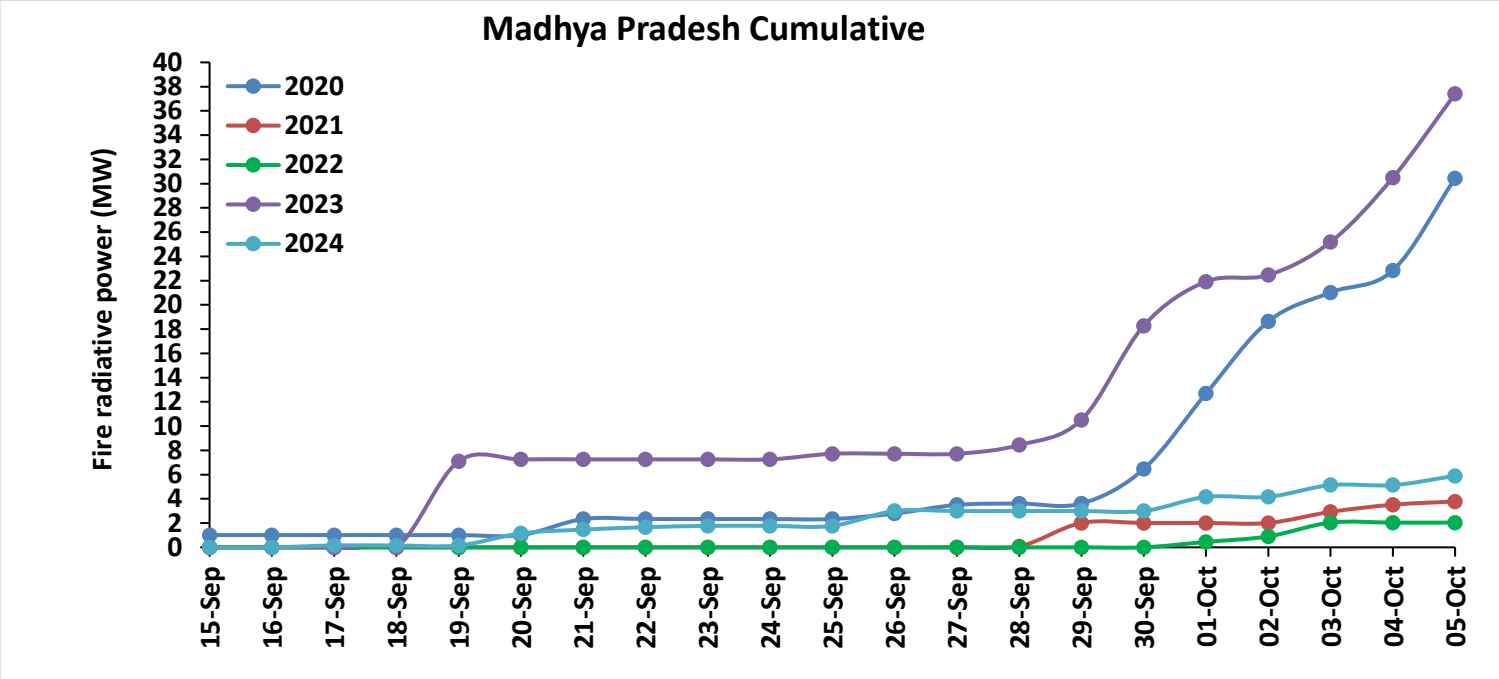


**Comparison of residue burning fire power in current year (2024) with previous years (2020,2021,2022 and 2023) for the study States**



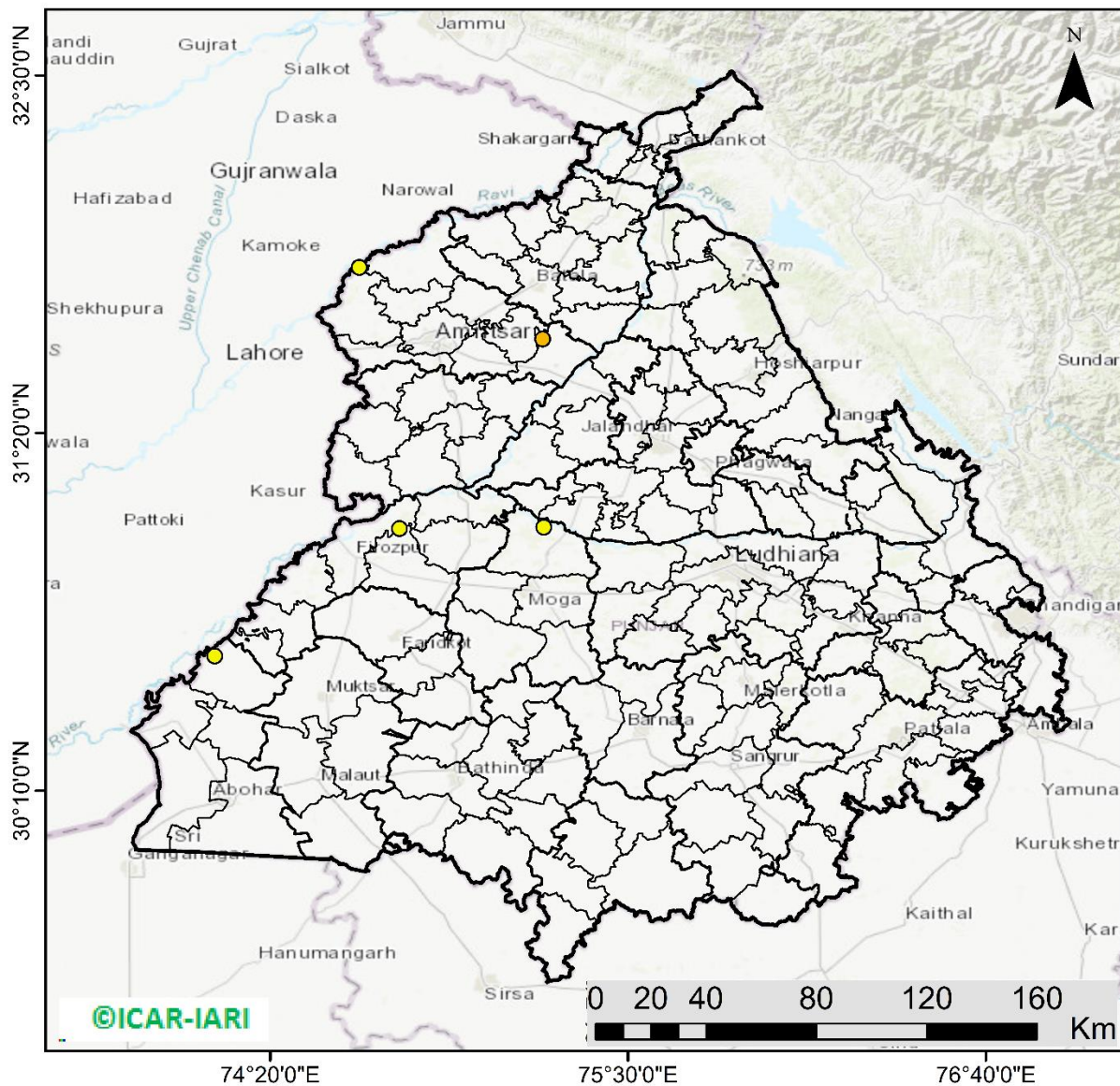






# Punjab

## RICE RESIDUE BURNING IN PUNJAB



**05** burning events detected in Punjab during (05th Oct 2024)

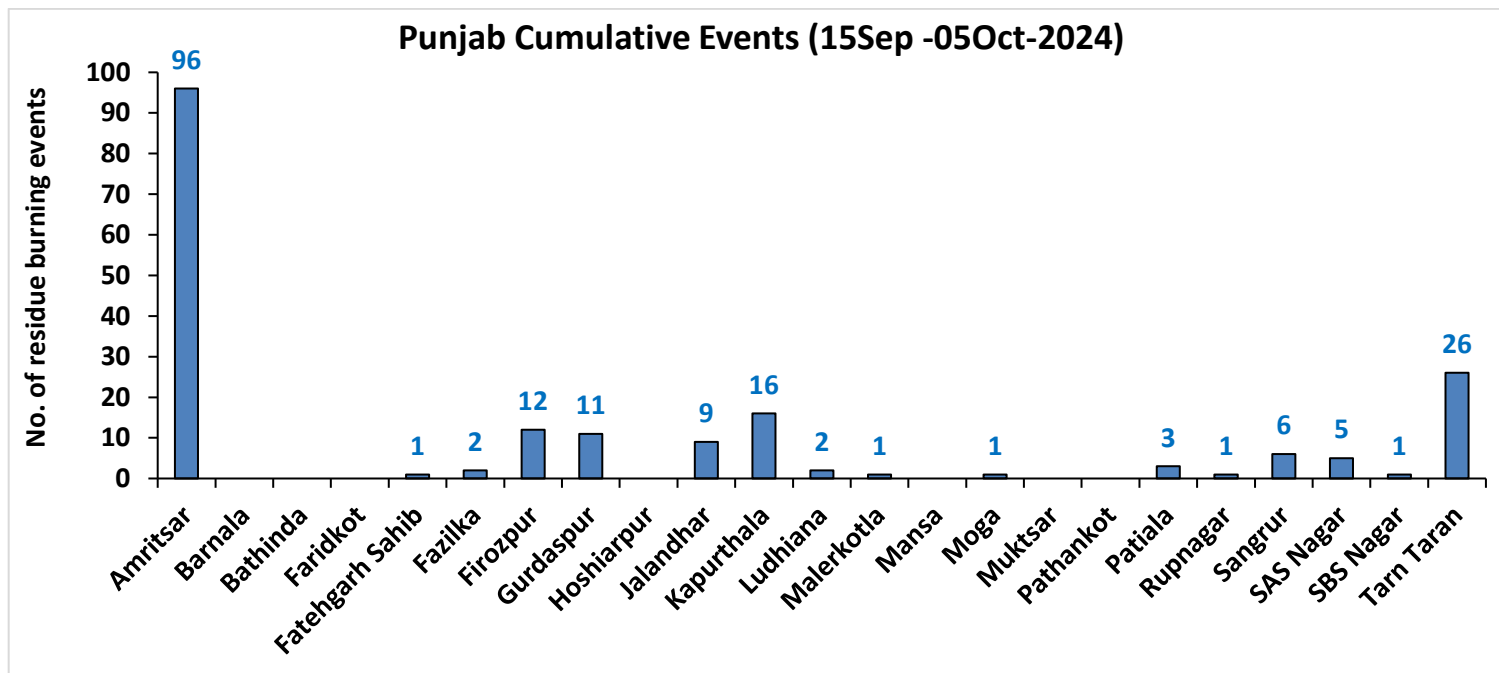
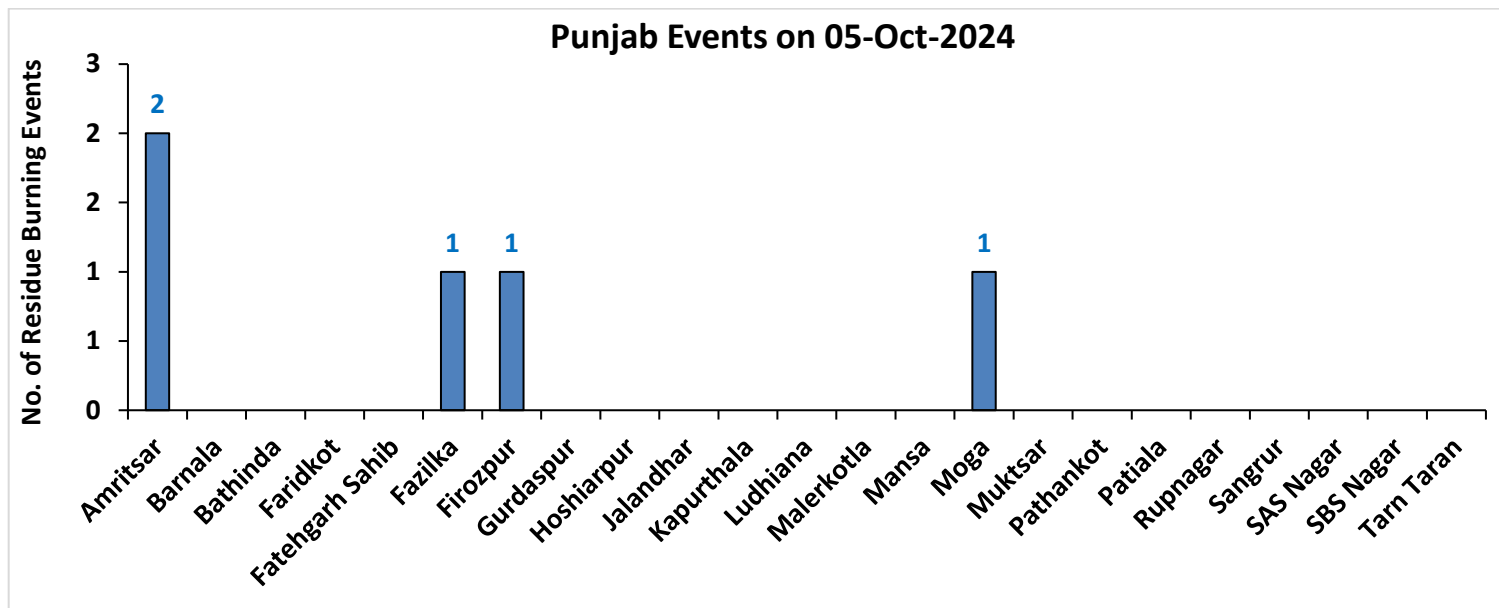
### Fire Intensity (W/m<sup>2</sup>)

- 0 - 5
- 6 - 10
- 11 - 15
- 16 - 20
- >20



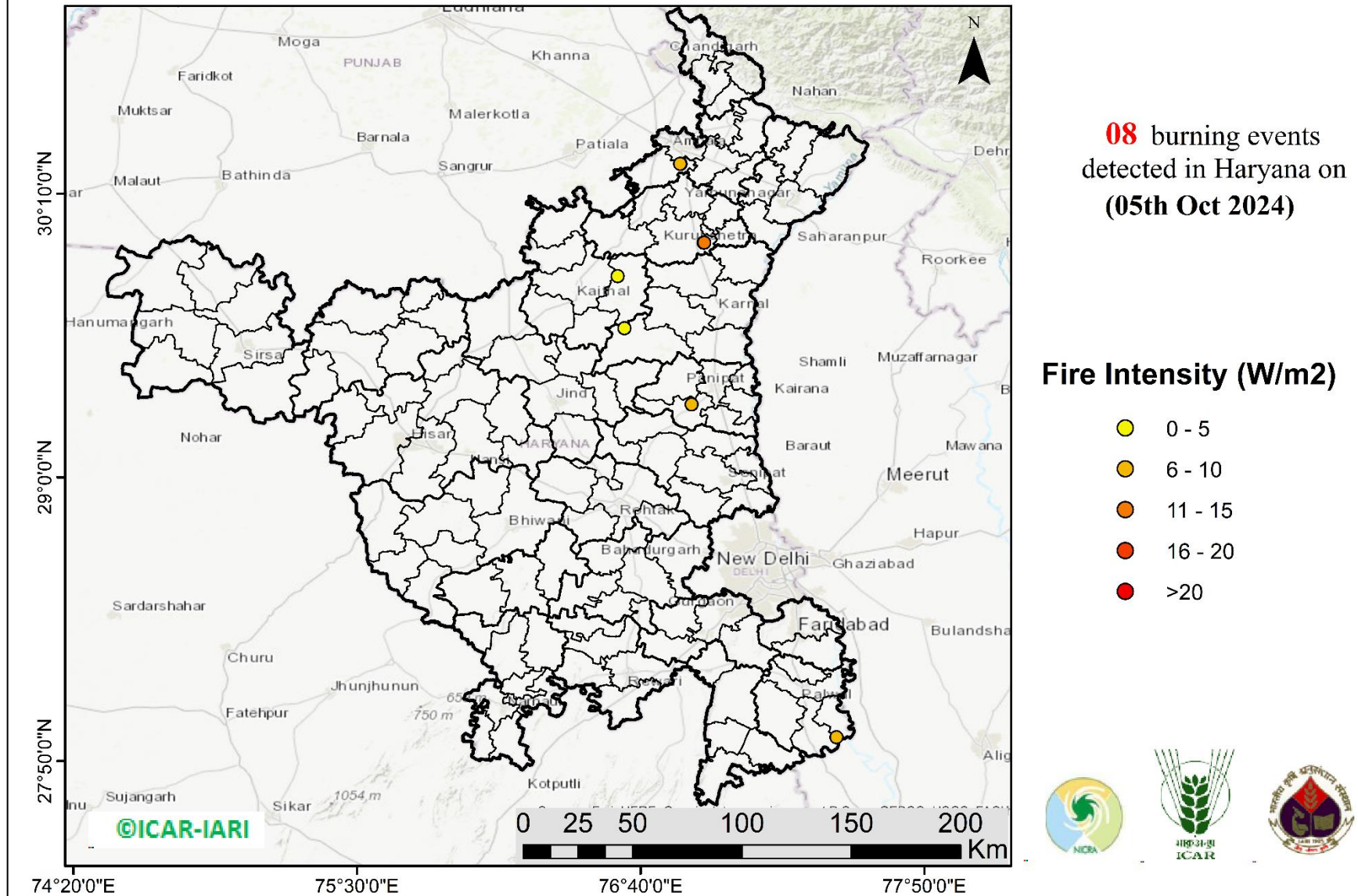
<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

## District-wise cumulative number of residues burning events in Punjab (15Sep-05Oct-2024)



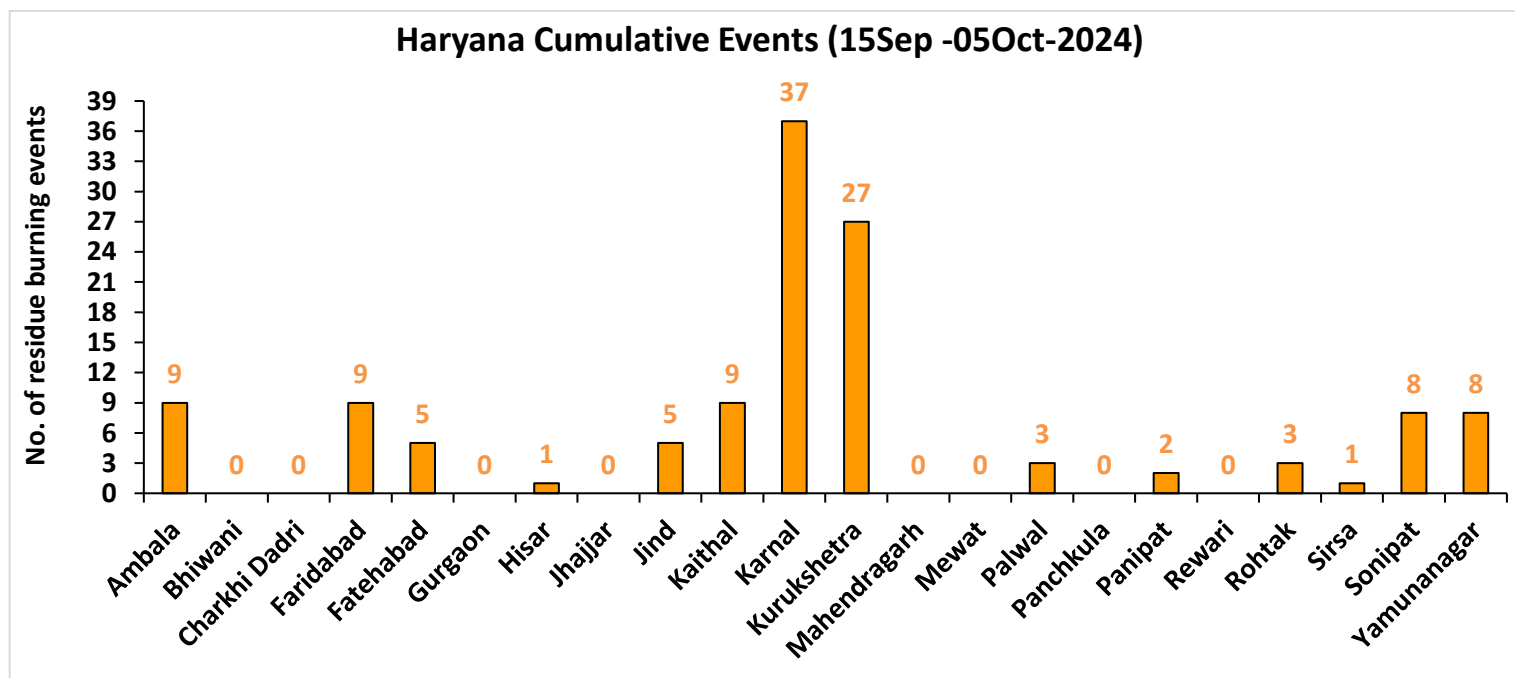
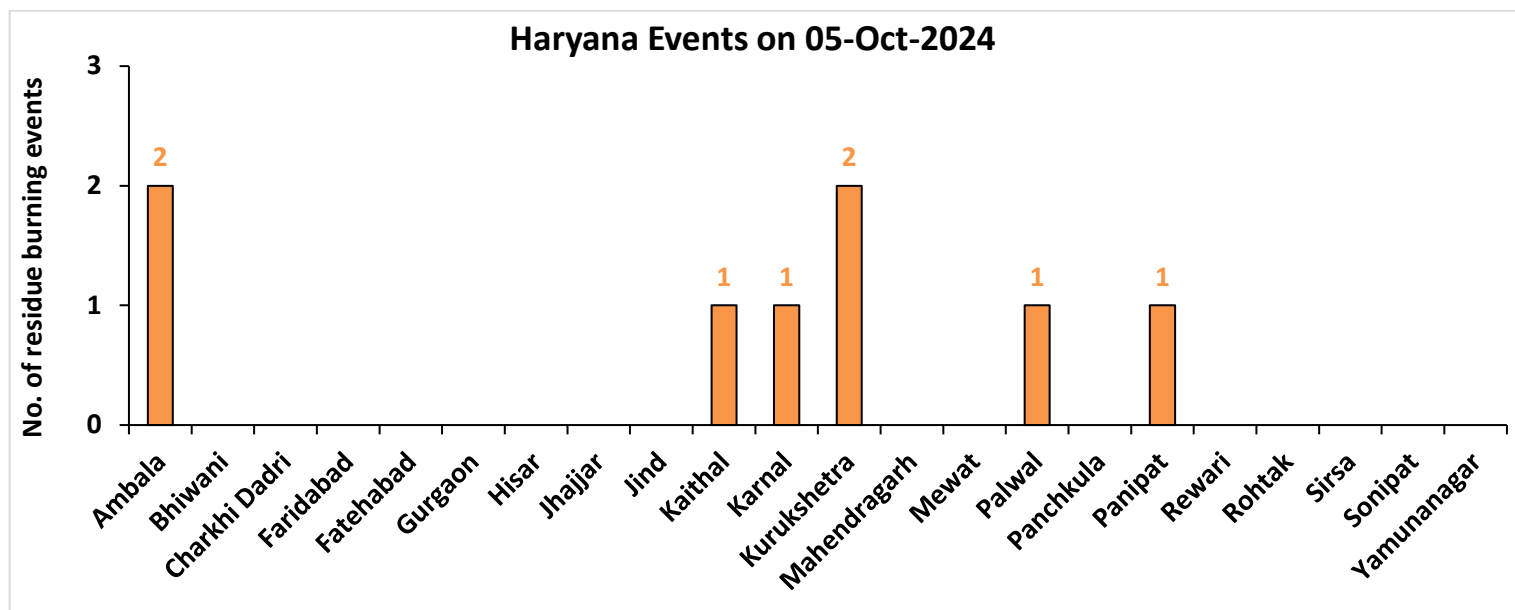
# Haryana

## RICE RESIDUE BURNING IN HARYANA



<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

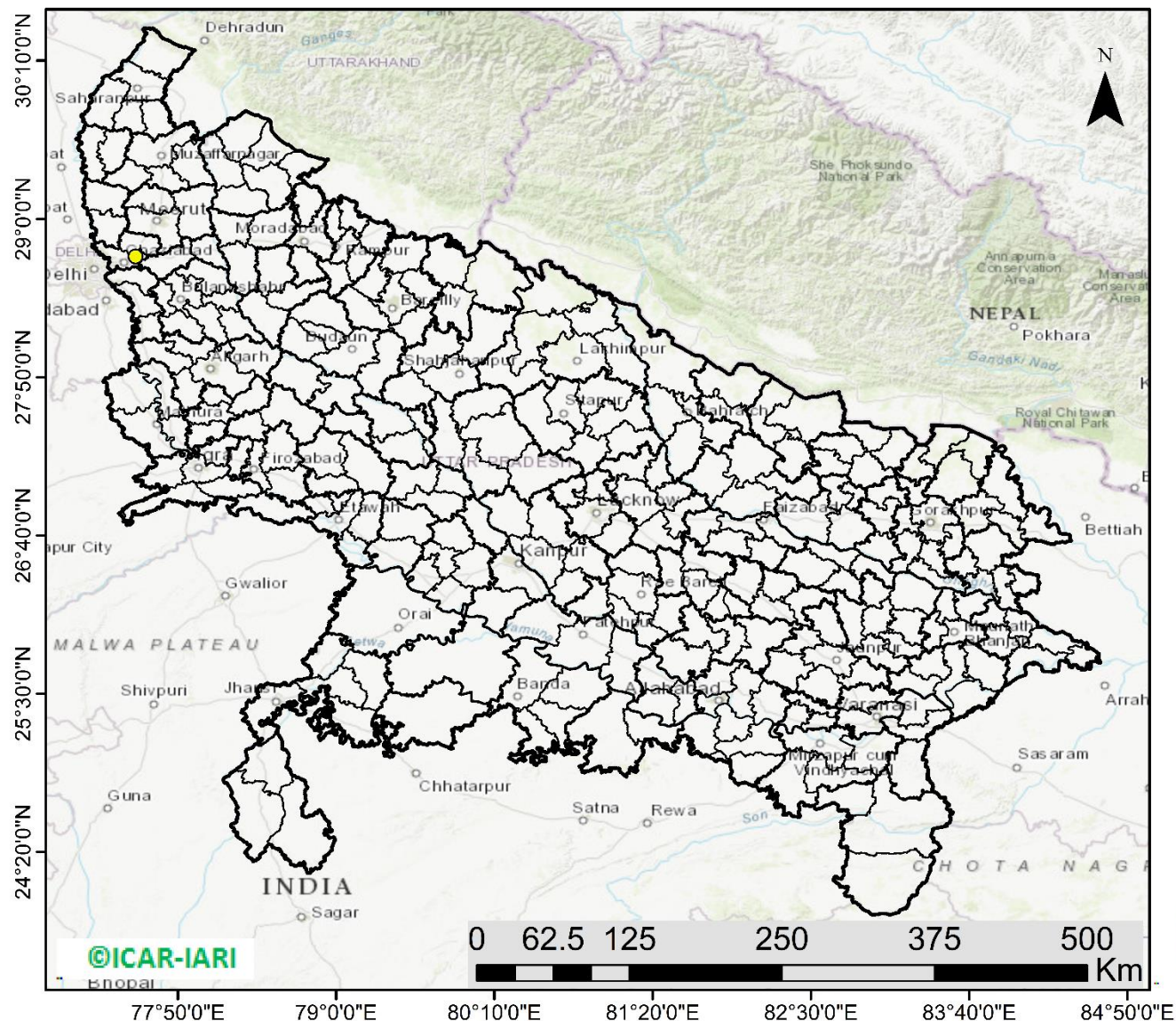
## District-wise cumulative number of residues burning events in Haryana (15Sep-05Oct-2024)





## Uttar Pradesh

### RICE RESIDUE BURNING IN UTTAR PRADESH



**01** burning events  
detected in Uttar Pradesh on  
**(05th Oct 2024)**

#### Fire Intensity (W/m<sup>2</sup>)

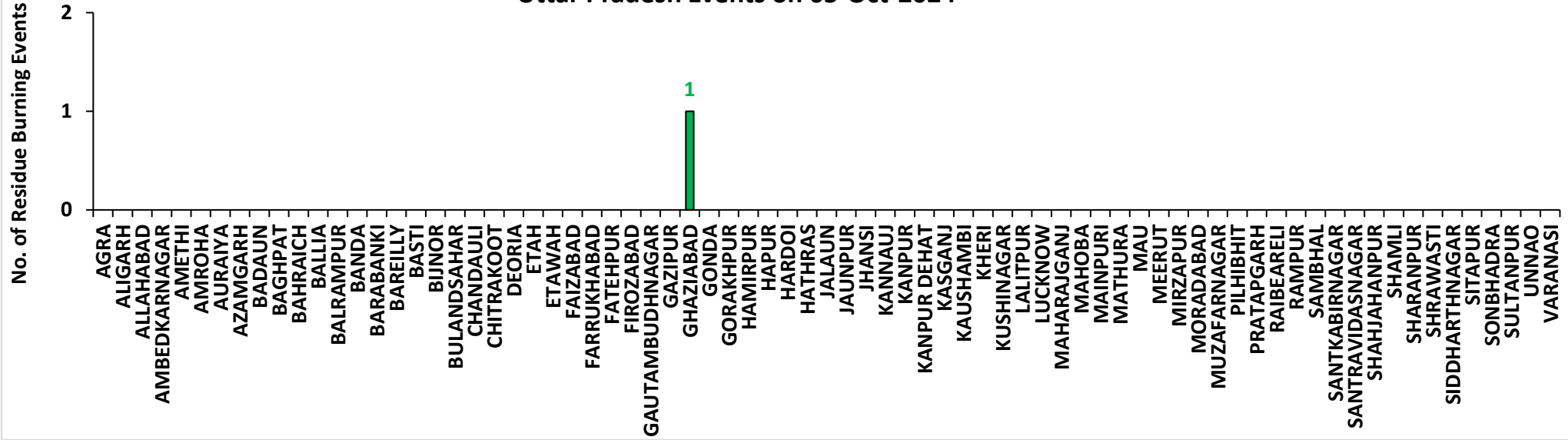
- 0 - 5
- 6 - 10
- 11 - 15
- 16 - 20
- >20



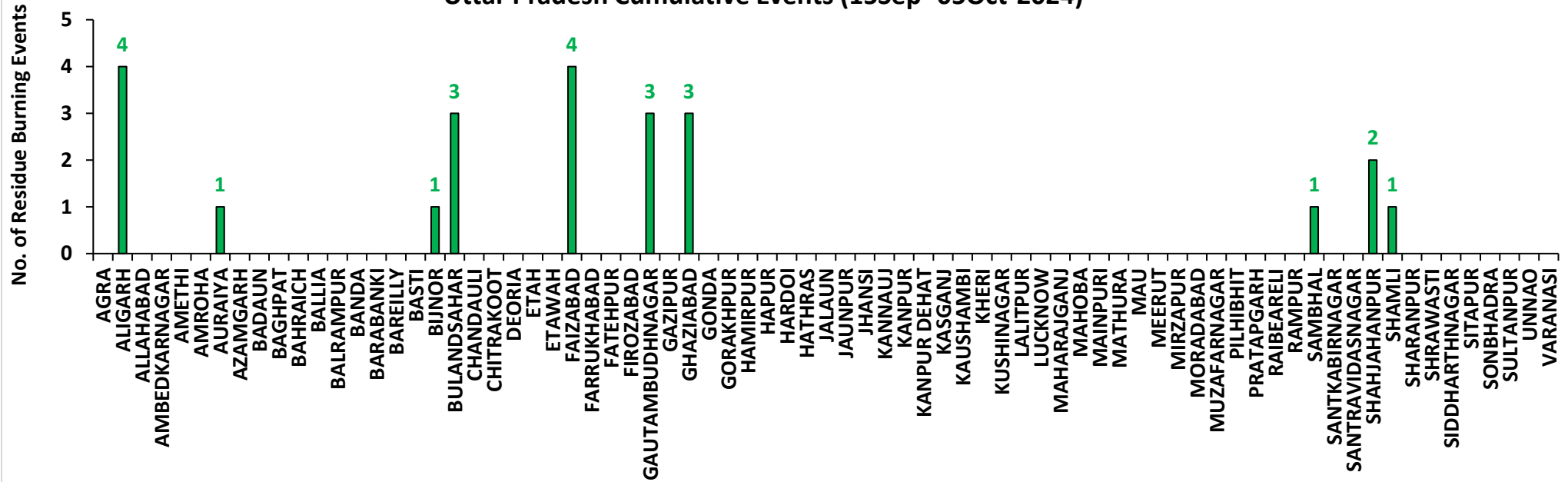
<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

## District-wise cumulative number of residues burning events in Uttar Pradesh (15Sep-05Oct-2024)

### Uttar Pradesh Events on 05-Oct-2024



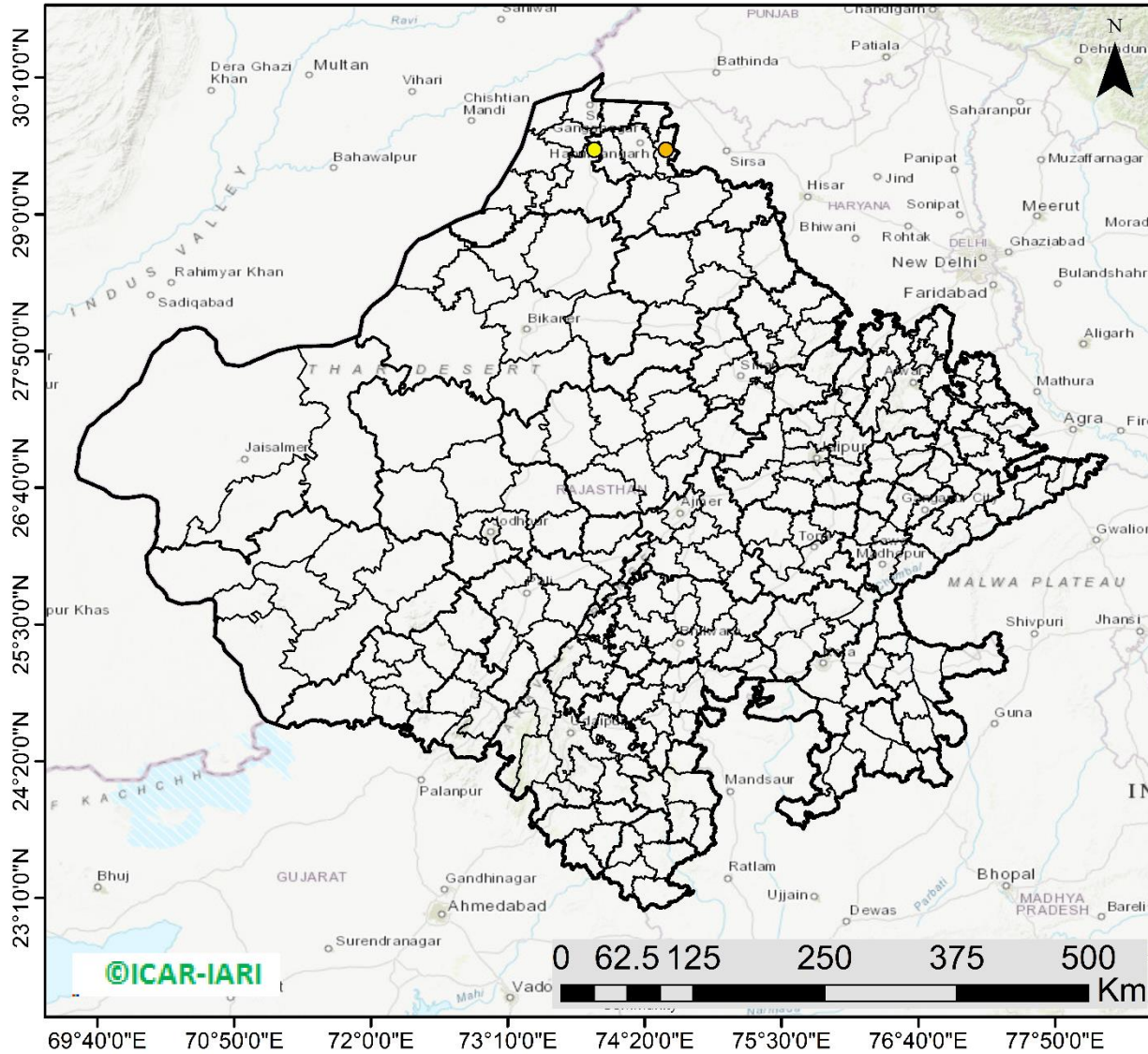
### Uttar Pradesh Cumulative Events (15Sep -05Oct-2024)





# Rajasthan

## RICE RESIDUE BURNING IN RAJASTHAN



**02** burning events  
detected in Rajasthan on  
**(05th Oct 2024)**

### Fire Intensity (W/m<sup>2</sup>)

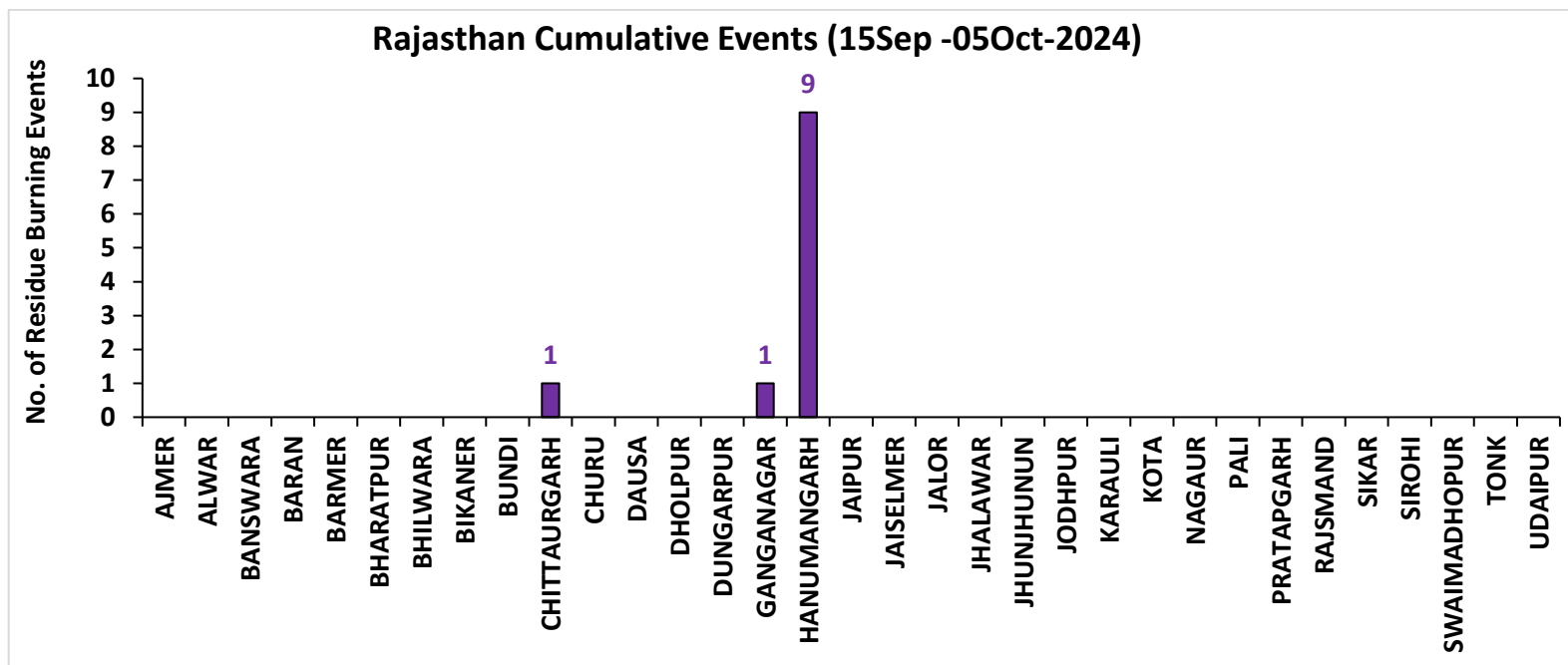
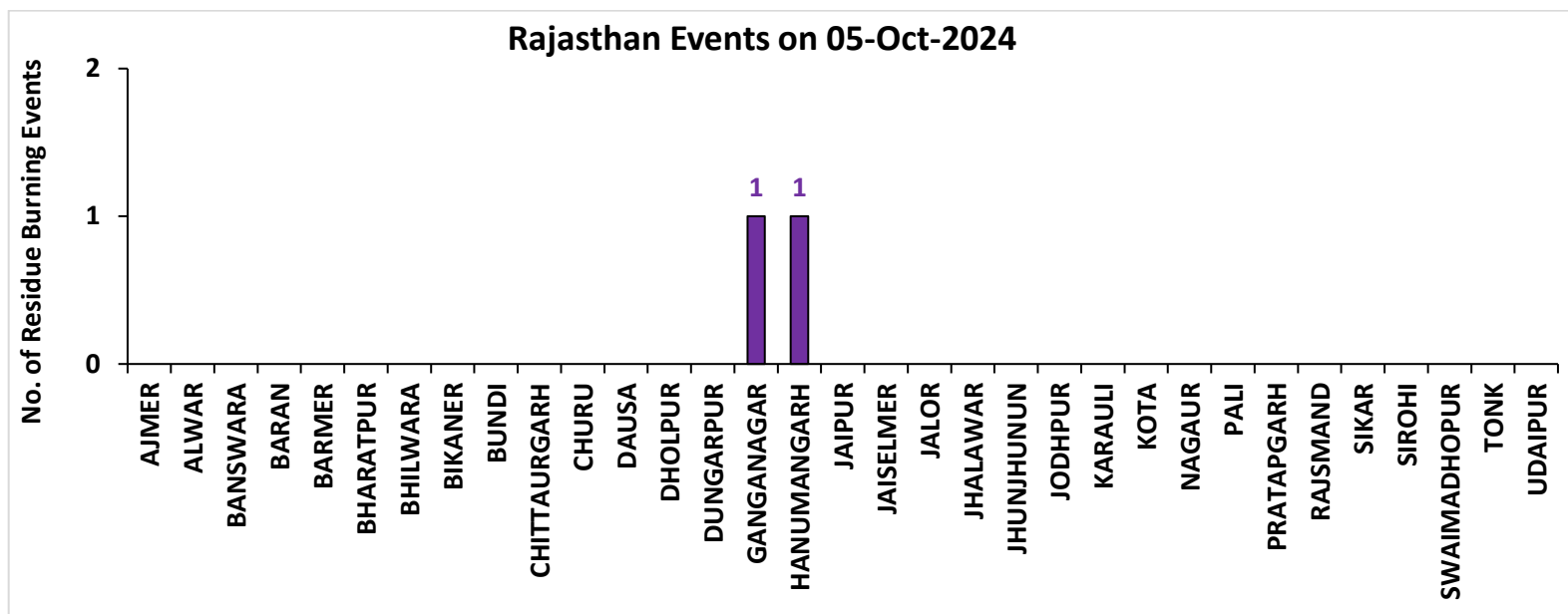
- 0 - 5
- 6 - 10
- 11 - 15
- 16 - 20
- >20



<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

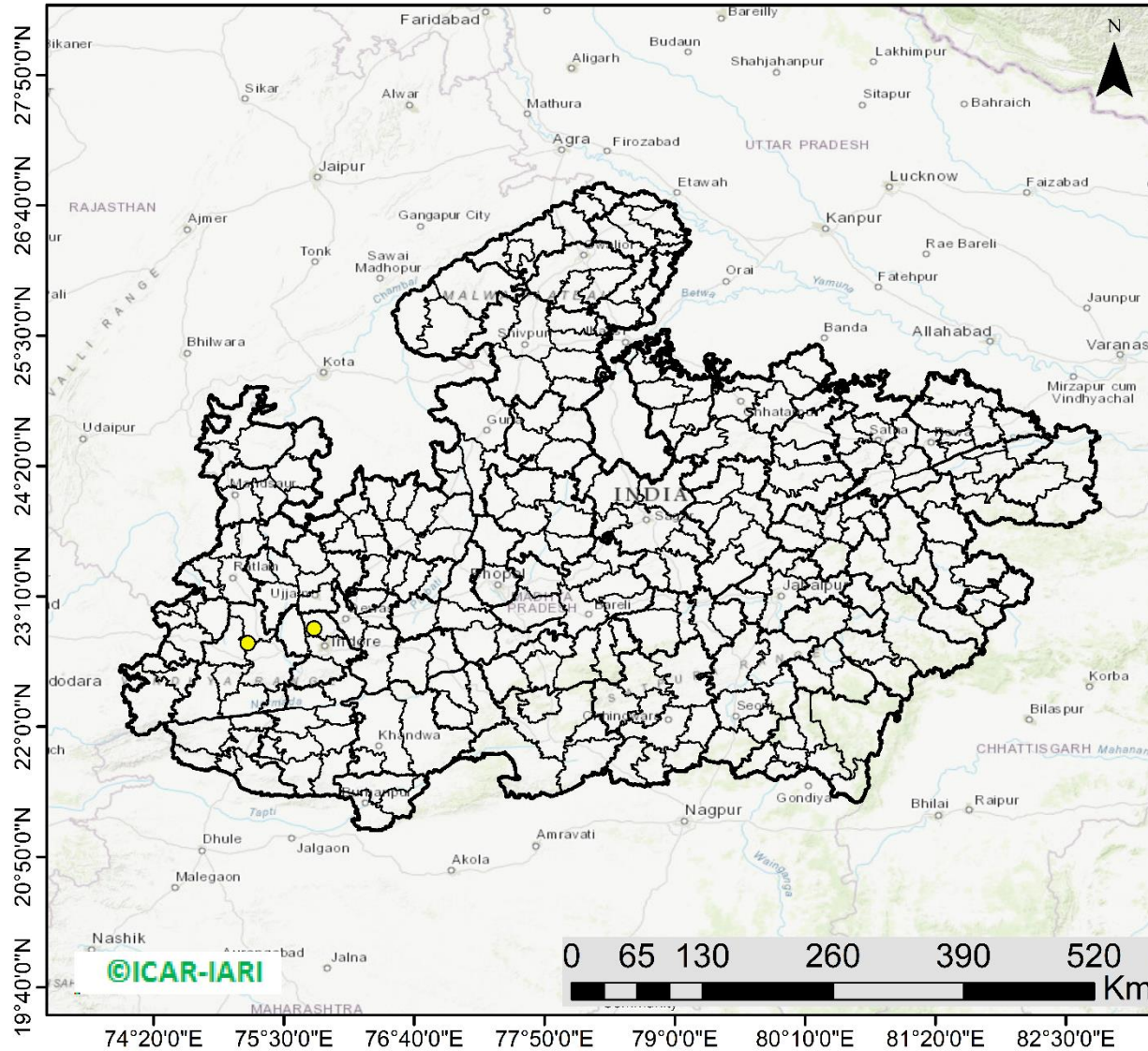


## District-wise cumulative number of residues burning events in Rajasthan (15Sep-05Oct-2024)



# Madhya Pradesh

## RICE RESIDUE BURNING IN MADHYA PRADESH



**02** burning events detected in MP on (05th Oct 2024)

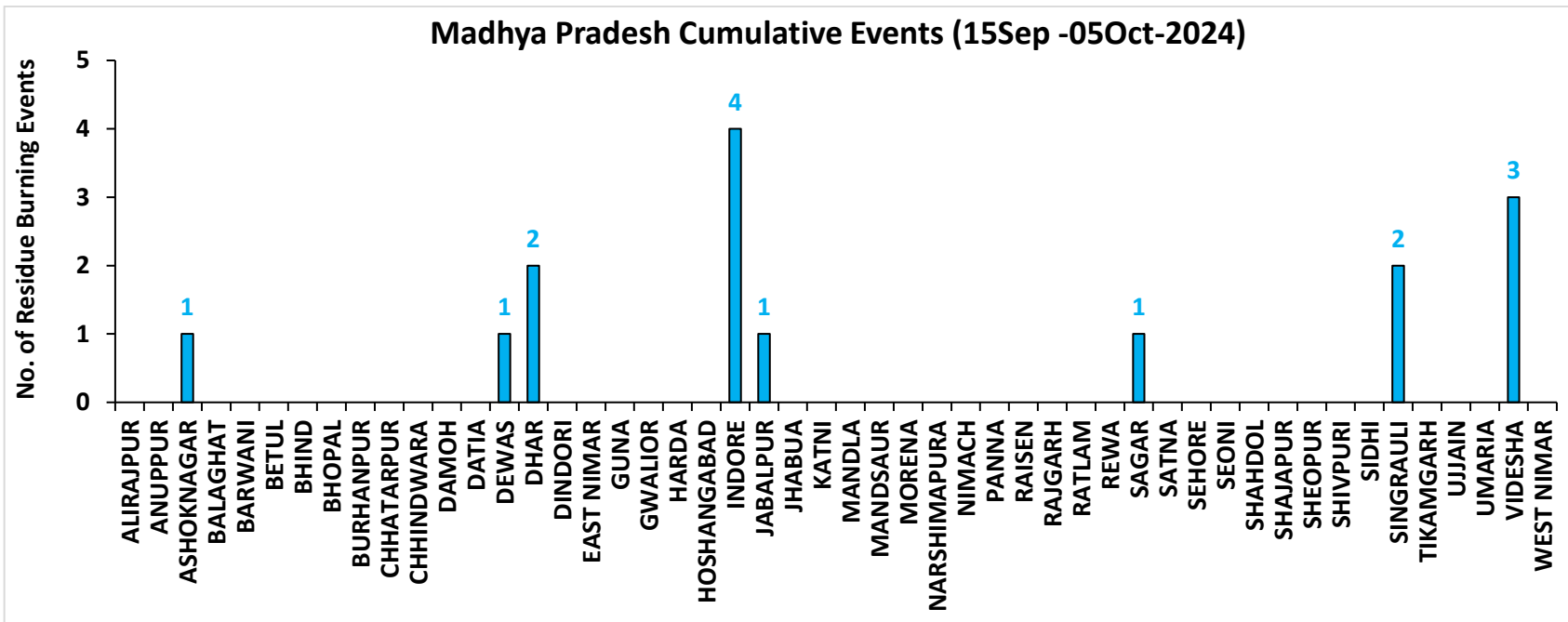
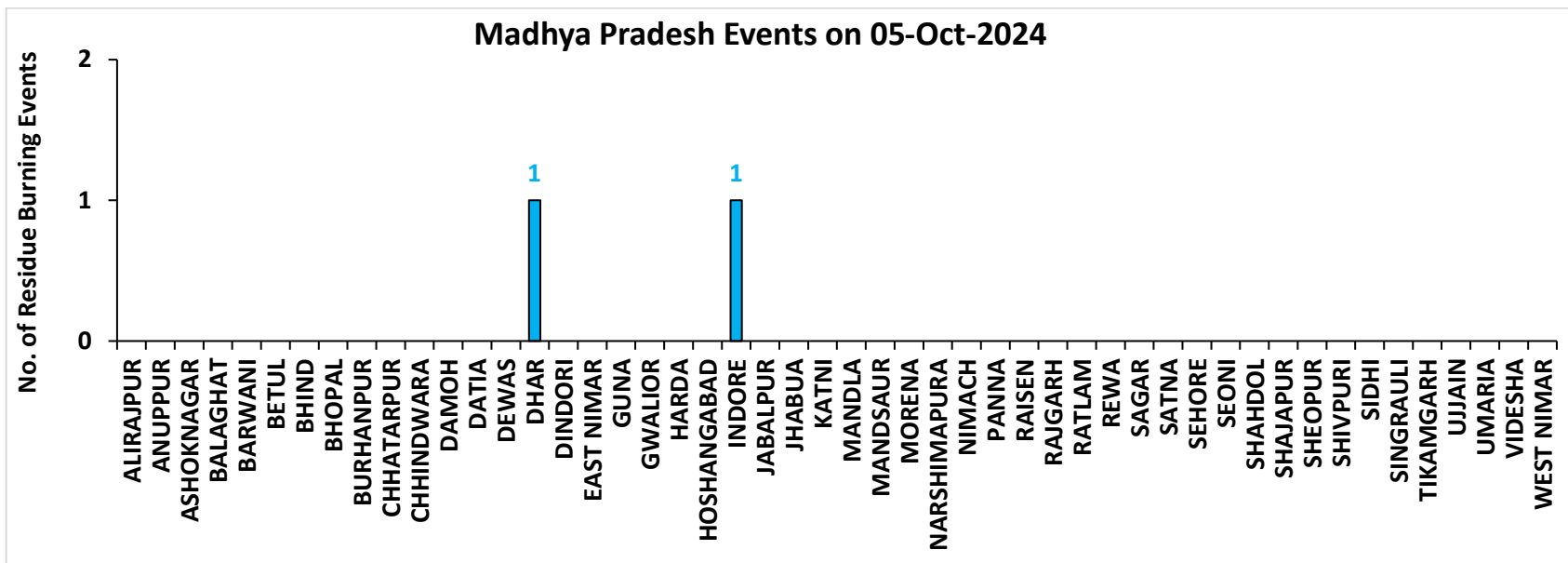
### Fire Intensity (W/m<sup>2</sup>)

- 0 - 5
- 6 - 10
- 11 - 15
- 16 - 20
- >20



<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

## District-wise cumulative number of residues burning events in Madhya Pradesh (15Sep-05Oct-2024)



**District-wise cumulative number of residues burning events detected in 2020, 2021, 2022, 2023 and 2024**  
**(Period: 15 September-05 October)**

**(a) Punjab**

District	15 Sep-05 Oct				
	2020	2021	2022	2023	2024
Amritsar	1088	169	390	478	96
Barnala	3	0	1	6	0
Bathinda	0	0	0	0	0
Faridkot	4	9	2	4	0
Fatehgarh Sahib	17	2	3	5	1
Fazilka	0	1	0	1	2
Firozpur	30	5	9	12	12
Gurdaspur	70	5	7	6	11
Hoshiarpur	3	0	0	2	0
Jalandhar	14	6	10	12	9
Kapurthala	24	3	13	44	16
Ludhiana	35	21	3	6	2
Malerkotla	0	0	0	0	1
Mansa	2	0	1	4	0
Moga	9	0	0	0	1
Muktsar	1	1	1	0	0
Pathankot	0	0	0	0	0
Patiala	73	11	13	36	3
Rupnagar	1	1	0	1	1
Sangrur	25	4	6	11	6
SAS NAGAR (Mohali)	8	1	4	23	5
SBS Nagar	2	1	2	2	1
Tarn Taran	355	38	80	101	26
<b>Total</b>	<b>1764</b>	<b>278</b>	<b>545</b>	<b>754</b>	<b>193</b>

**(b) Haryana**

District	15 Sep-05 Oct				
	2020	2021	2022	2023	2024
AMBALA	24	1	5	40	9
BHIWANI	0	0	0	0	0
CHARKHI DADRI	0	0	0	0	0
FARIDABAD	0	0	0	0	9
FATEHABAD	15	1	1	13	5
GURGAON	0	0	0	0	0
HISAR	3	0	0	4	1
JHAJJAR	0	0	0	1	0
JIND	2	0	4	13	5
KAITHAL	27	2	3	7	9
KARNAL	50	5	14	14	37
KURUKSHETRA	34	13	18	40	27
MAHENDRAGARH	0	0	0	0	0
MEWAT	0	0	0	0	0
PALWAL	1	0	0	5	3
PANCHKULA	0	0	0	0	0
PANIPAT	6	0	1	8	2
REWARI	0	0	0	0	0
ROHTAK	0	0	0	1	3
SIRSA	1	0	0	0	1
SONIPAT	4	1	1	22	8
YAMUNANAGAR	10	1	1	22	8
<b>Total</b>	<b>177</b>	<b>24</b>	<b>48</b>	<b>190</b>	<b>127</b>

**(c) Uttar Pradesh**

District	15 Sep-05 Oct																
	2020	2021	2022	2023	2024	GAUTAMBUDHNAGAR	1	0	0	2	3	MUZAFARNAGAR	2	0	0	0	0
AGRA	0	0	0	0	0	GAZIPUR	0	0	0	0	0	PILHIBHIT	3	1	2	5	0
ALIGARH	4	0	1	29	4	GHAZIABAD	1	0	1	4	3	PRATAPGARH	0	0	0	0	0
ALLAHABAD	0	0	0	0	0	GONDA	0	0	0	0	0	RAIBEARELI	1	0	0	0	0
AMBEDKARNAGAR	0	0	0	0	0	GORAKHPUR	0	0	0	0	0	RAMPUR	2	4	0	0	0
AMETHI	0	0	0	0	0	HAMIRPUR	0	0	0	0	0	SAMBHAL	5	0	4	5	1
AMROHA	0	0	0	2	0	HAPUR	2	0	0	0	0	SANTKABIRNAGAR	0	0	0	0	0
AURAIYA	11	0	4	2	1	HARDOI	0	0	0	1	0	SANTRAVIDASNAGAR	0	0	0	0	0
AZAMGARH	0	0	0	0	0	HATHRAS	0	0	0	2	0	SHAHJAHANPUR	6	37	53	13	2
BADAUN	0	0	0	0	0	JALAUN	0	0	0	0	0	SHAMLI	7	2	2	2	1
BAGHPAT	1	0	0	0	0	JAUNPUR	0	0	0	0	0	SHARANPUR	4	0	0	0	0
BAHRAICH	0	0	0	0	0	JHANSI	4	0	0	0	0	SHRAWASTI	0	0	0	0	0
BALLIA	0	0	0	0	0	KANNAUJ	1	0	0	0	0	SIDDHARTHNAGAR	0	0	0	0	0
BALRAMPUR	0	0	0	0	0	KANPUR	0	1	0	0	0	SITAPUR	3	0	0	0	0
BANDA	0	0	0	0	0	KANPUR DEHAT	1	0	0	0	0	SONBHADRA	0	0	0	0	0
BARABANKI	1	0	0	0	0	KASGANJ	1	0	0	0	0	SULTANPUR	0	0	0	0	0
BAREILLY	3	0	0	1	0	KAUSHAMBI	1	0	0	1	0	UNNAO	2	0	0	0	0
BASTI	0	0	0	0	0	KHERI	4	3	8	0	0	VARANASI	0	0	0	0	0
BIJNOR	1	0	1	0	1	KUSHINAGAR	0	0	0	0	0	<b>Total</b>	<b>89</b>	<b>51</b>	<b>80</b>	<b>88</b>	<b>23</b>
BULANDSAHAR	1	0	2	2	3	LALITPUR	0	1	2	0	0						
CHANDAULI	0	0	0	0	0	LUCKNOW	0	0	0	0	0						
CHITRAKOOT	0	0	0	0	0	MAHARAJGANJ	0	0	0	0	0						
DEORIA	0	0	0	2	0	MAHOBA	0	0	0	0	0						
ETAH	3	0	0	0	0	MAINPURI	0	1	0	1	0						
ETAWAH	0	0	0	0	0	MATHURA	2	1	0	11	0						
FAIZABAD	0	0	0	0	4	MAU	0	0	0	0	0						
FARRUKHABAD	0	0	0	0	0	MEERUT	8	0	0	2	0						
FATEHPUR	1	0	0	0	0	MIRZAPUR	0	0	0	0	0						
FIROZABAD	1	0	0	0	0	MORADABAD	1	0	0	1	0						

**(d) Delhi**

District	15 Sep-05 Oct				
	2020	2021	2022	2023	2024
CENTRAL	0	0	0	0	0
EAST	0	0	0	0	0
NEW DELHI	0	0	0	0	0
NORTH	1	0	2	1	0
NORTH EAST	0	0	0	0	0
NORTH WEST DELHI	0	0	0	0	0
SHAHADRA	0	0	0	0	0
SOUTH	1	0	0	0	0
SOUTH EAST	0	0	0	0	0
SOUTH WEST DELHI	0	0	0	0	0
WEST DELHI	0	0	0	0	0
<b>Total</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>0</b>

**(e) Rajasthan**

District	15 Sep-05 Oct				
	2020	2021	2022	2023	2024
AJMER	0	0	0	0	0
ALWAR	1	0	0	0	0
BANSWARA	0	0	0	0	0
BARAN	30	0	3	22	0
BARMER	2	0	0	0	0
BHARATPUR	0	0	0	1	0
BHILWARA	1	0	0	0	0
BIKANER	0	0	0	0	0
BUNDI	1	0	3	2	0
CHITTAURGARH	0	1	0	1	1
CHURU	0	0	0	0	0
DAUSA	0	0	0	0	0
DHOLPUR	0	0	0	0	0
DUNGARPUR	0	0	0	0	0
GANGANAGAR	1	0	0	4	1
HANUMANGARH	9	0	1	7	9
JAIPUR	0	0	0	0	0
JAISELMER	1	0	0	0	0
JALOR	0	0	0	0	0
JHALAWAR	0	0	0	3	0
JHUNJHUNUN	1	0	0	0	0
JODHPUR	1	0	0	0	0
KARALI	1	0	0	0	0
KOTA	7	0	1	16	0
NAGOUR	0	0	0	0	0
PALI	1	0	0	0	0
PRATAPGARH	0	0	0	0	0
RAJSMAND	0	0	0	0	0
SIKAR	0	0	0	0	0
SIROHI	0	0	0	0	0
SWAIMADHOPUR	0	0	0	0	0
TONK	1	0	0	0	0
UDAIPUR	0	0	0	0	0
<b>Total</b>	<b>58</b>	<b>1</b>	<b>8</b>	<b>56</b>	<b>11</b>

**(f) Madhya Pradesh**

District	15 Sep-05 Oct										
	2020	2021	2022	2023	2024	PANNA	0	0	0	0	0
ALIRAJPUR	0	0	0	0	0	RAISEN	0	0	0	0	0
ANUPPUR	0	0	0	0	0	RAJGARH	1	0	2	2	0
ASHOKNAGAR	5	0	0	3	1	RATLAM	0	0	0	1	0
BALAGHAT	0	0	0	0	0	REWA	0	0	0	0	0
BARWANI	0	0	0	0	0	SAGAR	2	2	1	2	1
BETUL	0	0	0	0	0	SATNA	2	0	0	0	0
BHIND	0	0	0	2	0	SEHORE	1	0	1	4	0
BHOPAL	1	0	0	2	0	SEONI	0	0	0	0	0
BURHANPUR	0	0	0	0	0	SHAHDOL	0	0	0	0	0
CHHATARPUR	1	0	0	1	0	SHAJAPUR	3	0	0	1	0
CHHINDWARA	0	0	0	0	0	SHEOPUR	0	0	0	1	0
DAMOH	5	0	0	4	0	SHIVPURI	0	0	0	0	0
DATIA	1	0	0	2	0	SIDHI	0	0	0	0	0
DEWAS	0	0	0	1	1	SINGRAULI	0	0	0	0	2
DHAR	6	0	0	6	2	TIKAMGARH	0	0	0	0	0
DINDORI	0	0	0	0	0	UJJAIN	3	0	0	3	0
EAST NIMAR	0	0	0	0	0	UMARIA	0	0	0	0	0
GUNA	5	1	1	9	0	VIDESHA	11	1	1	7	3
GWALIOR	4	0	1	2	0	WEST NIMAR	0	0	0	0	0
HARDA	6	5	0	3	0	<b>Total</b>	<b>60</b>	<b>9</b>	<b>7</b>	<b>65</b>	<b>15</b>
HOSHANGABAD	0	0	0	1	0						
INDORE	1	0	0	4	4						
JABALPUR	1	0	0	0	1						
JHABUA	0	0	0	0	0						
KATNI	0	0	0	0	0						
MANDLA	0	0	0	0	0						
MANDSAUR	0	0	0	0	0						
MORENA	1	0	0	4	0						
NARSHIMAPURA	0	0	0	0	0						
NIMACH	0	0	0	0	0						

**State-wise and date-wise number of paddy residue burning events detected in 2020 ,2021 ,2022, 2023 and 2024**  
**(Period: 15 September-05 October)**

**Number of Paddy Residue Burning Events Detected**

Date	Punjab					Haryana					Uttar Pradesh				
	2020	2021	2022	2023	2024	2020	2021	2022	2023	2024	2020	2021	2022	2023	2024
15-Sep	5	0	14	0	11	2	0	0	1	1	1	0	0	0	0
16-Sep	0	2	0	6	0	1	0	0	1	0	0	0	0	2	0
17-Sep	5	0	1	0	5	3	0	0	0	1	0	0	0	0	1
18-Sep	17	9	7	0	2	0	0	1	0	0	0	1	0	0	0
19-Sep	30	5	18	0	0	2	0	0	1	0	0	1	0	0	0
20-Sep	67	8	10	0	13	6	0	0	2	1	2	0	0	0	0
21-Sep	54	0	56	1	21	2	0	0	2	13	1	0	0	1	2
22-Sep	34	0	30	0	11	1	0	0	2	18	1	0	0	0	0
23-Sep	49	0	3	1	6	0	0	0	3	12	1	0	0	0	0
24-Sep	78	5	0	0	12	0	0	0	0	6	1	1	0	1	0
25-Sep	184	11	0	0	12	11	0	0	1	18	5	0	0	1	0
26-Sep	190	19	0	3	5	5	0	0	2	5	8	0	0	0	0
27-Sep	78	37	0	21	0	8	0	0	9	5	4	1	0	0	3
28-Sep	55	28	0	33	0	6	1	0	8	0	1	6	0	4	0
29-Sep	63	64	0	68	21	9	4	0	17	0	6	10	0	6	0
30-Sep	116	27	8	81	10	22	2	0	26	1	13	13	10	18	0
01-Oct	165	13	45	123	26	15	4	1	21	3	7	13	3	17	0
02-Oct	141	0	83	119	16	30	2	7	24	20	12	0	36	7	9
03-Oct	110	9	75	105	8	8	6	8	17	6	4	3	29	8	7
04-Oct	162	23	65	95	9	29	2	7	29	9	8	0	2	9	0
05-Oct	161	18	130	98	5	17	3	24	24	8	14	2	0	14	1
<b>Total</b>	<b>1764</b>	<b>278</b>	<b>545</b>	<b>754</b>	<b>193</b>	<b>177</b>	<b>24</b>	<b>48</b>	<b>190</b>	<b>127</b>	<b>89</b>	<b>51</b>	<b>80</b>	<b>88</b>	<b>23</b>



## Number of Paddy Residue Burning Events Detected

Date	Delhi					Rajasthan					Madhya Pradesh				
	2020	2021	2022	2023	2024	2020	2021	2022	2023	2024	2020	2021	2022	2023	2024
15-Sep	0	0	0	0	0	1	0	0	0	0	2	0	0	0	0
16-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
18-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
20-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2
21-Sep	0	0	0	0	0	1	0	1	0	0	2	0	0	0	1
22-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
23-Sep	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
24-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25-Sep	0	0	0	0	0	1	0	0	0	3	0	0	0	1	0
26-Sep	0	0	0	1	0	1	0	0	0	0	2	0	0	0	2
27-Sep	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
28-Sep	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0
29-Sep	0	0	0	0	0	3	0	0	6	0	0	4	0	5	0
30-Sep	1	0	0	0	0	1	0	0	4	2	5	0	0	11	0
01-Oct	0	0	0	0	0	4	1	1	4	1	13	0	1	8	3
02-Oct	1	0	0	0	0	7	0	3	4	3	12	0	1	1	0
03-Oct	0	0	0	0	0	9	0	2	5	0	5	1	5	5	2
04-Oct	0	0	0	0	0	15	0	0	22	0	4	2	0	12	0
05-Oct	0	0	2	0	0	14	0	1	11	2	13	1	0	18	2
<b>Total</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>58</b>	<b>1</b>	<b>8</b>	<b>56</b>	<b>11</b>	<b>60</b>	<b>9</b>	<b>7</b>	<b>65</b>	<b>15</b>

### Details of residue burning events in Punjab on 05-Oct-2024

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m <sup>2</sup> )
1	AMRITSAR	CHOGAWAN	S-NPP	31.87329	74.62439	13:59:02	D	2.70
2	AMRITSAR	RAYYA	S-NPP	31.63960	75.22223	13:59:02	D	10.00
3	FAZILKA	JALALABAD	S-NPP	30.60582	74.15311	13:59:02	D	2.30
4	FIROZPUR	GHALL KHURD	S-NPP	31.02138	74.75515	13:59:02	D	1.90
5	MOGA	KOT ISE KHAN AT DHARAMKOT	S-NPP	31.02587	75.22571	13:59:02	D	4.20

### Details of residue burning events in Haryana on 05-Oct-2024

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m <sup>2</sup> )
1	AMBALA	AMBALA-II	S-NPP	30.28845	76.83097	13:59:02	D	6.30
2	AMBALA	AMBALA-II	S-NPP	30.28921	76.82946	13:59:02	D	7.70
3	KAITHAL	PUNDRI	S-NPP	29.82665	76.57250	13:59:02	D	2.80
4	KARNAL	ASSANDH	S-NPP	29.61242	76.60048	13:59:02	D	5.00
5	KURUKSHETRA	THANESAR	S-NPP	29.96460	76.92637	13:59:02	D	8.60
6	KURUKSHETRA	THANESAR	S-NPP	29.96462	76.92856	13:59:02	D	11.40
7	PALWAL	HASSANPUR	S-NPP	27.93062	77.47237	13:59:02	D	9.50
8	PANIPAT	ISRANA	S-NPP	29.29958	76.87650	13:59:02	D	7.00

### Details of residue burning events in Uttar Pradesh on 05-Oct-2024

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m <sup>2</sup> )
1	GHAZIABAD	GHAZIABAD	S-NPP	28.72135	77.52235	13:59:02	D	2.60

**Details of residue burning events in Rajasthan on 05-Oct-2024**

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m2)
1	GANGANAGAR	SURATGARH	S-NPP	29.54990	73.90462	13:59:02	D	4.00
2	HANUMANGARH	TIBI	S-NPP	29.55073	74.51469	13:59:02	D	7.50

**Details of residue burning events in Madhya Pradesh on 05-Oct-2024**

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m2)
1	DHAR	BADNAWAR	S-NPP	22.74639	75.17732	13:59:02	D	3.70
2	INDORE	SANWER	S-NPP	22.87662	75.77058	13:59:02	D	1.70

**The study used data received from following Satellites at NRSC Ground Station**

S. No.	Satellite Name	Sensor	Resolution (meter)	Day / Night Passes
1.	Suomi NPP	VIIRS	375 / 750	Both
2.	Terra	MODIS	1000	Both
3.	Aqua	MODIS	1000	Both

**The rice mask for the Punjab and Haryana were provided by MNCFC, MoA&FW, Govt of India  
The kharif crop mask for Delhi, Uttar Pradesh, Rajasthan and Madhya Pradesh were provided by NRSC**

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GIS Maps of fire events can be visualized online on ICAR KRISHI Geoportal website: <http://geoportal.icar.gov.in:8080/geoexplorer/composer/>  
(Part of KRISHI Portal: <https://krishi.icar.gov.in> initiative)

The DASHBOARD for paddy residue burning events is available at weblink: [CREAMS Fire Dashboard](#)

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