



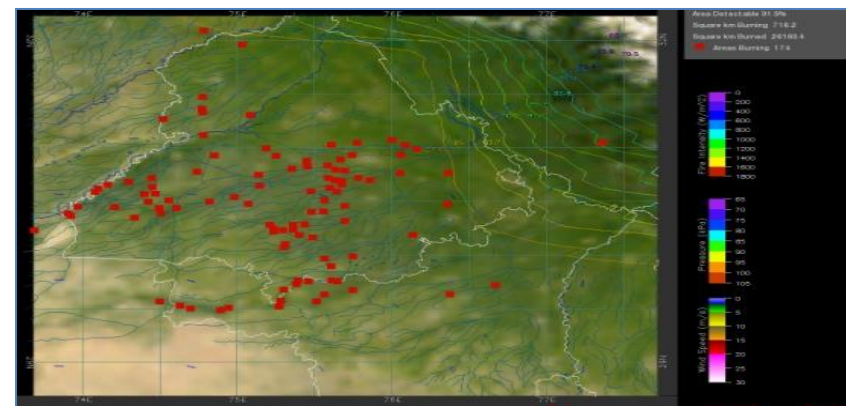
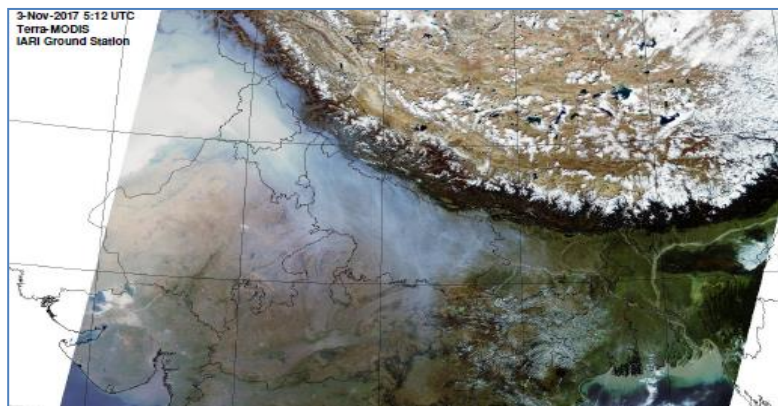
**Bulletin
No. 29**

**Events Date:
13-Oct-2023**

**Issued on:
13-Oct-2023**



MONITORING PADDY RESIDUE BURNING IN INDIA USING SATELLITE REMOTE SENSING DURING 2023



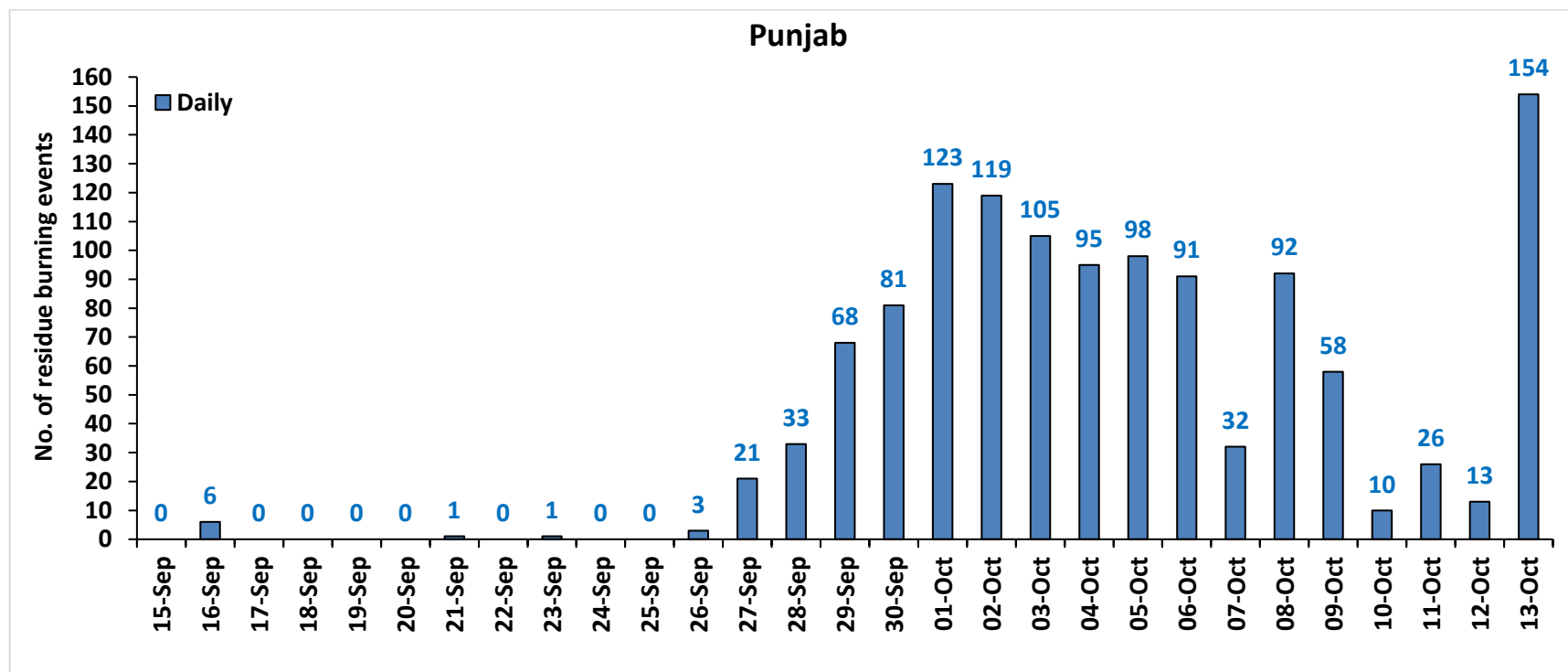
**Consortium for Research on Agroecosystem Monitoring and Modeling from Space (CREAMS) Laboratory,
Division of Agricultural Physics, ICAR – Indian Agricultural Research Institute, New Delhi – 110012**

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

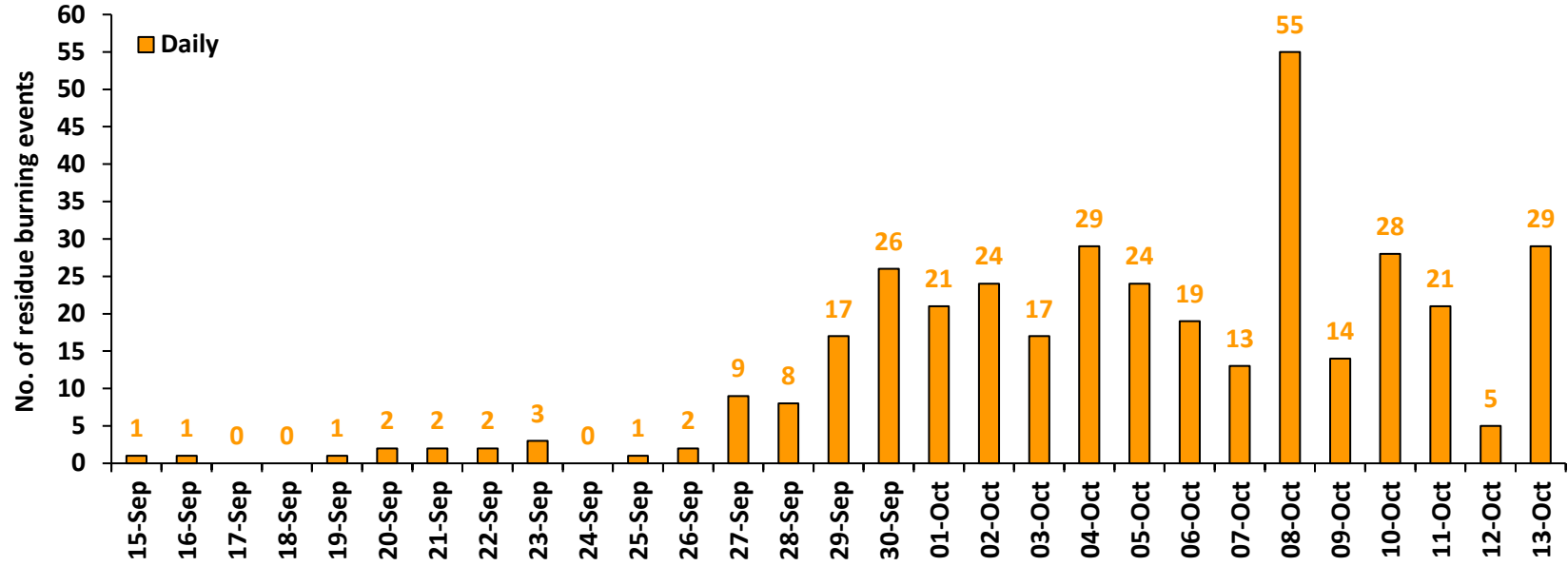
Highlights for 13-Oct-2023

- 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 **262** residue burning events in the six study States on 13-Oct-2023.
- The state wise events detected on 13-Oct-2023 were **154** in Punjab, **29** in Haryana, **19** in UP, **00** in Delhi, **28** in Rajasthan and **32** in MP.
- Total **2271** burning events were detected in the six states between 15-Sept-2023 and 13-Oct-2023, which are distributed as **1230**, **374**, **259**, **02**, **174** and **232** in Punjab, Haryana, UP, Delhi, Rajasthan and MP, respectively.

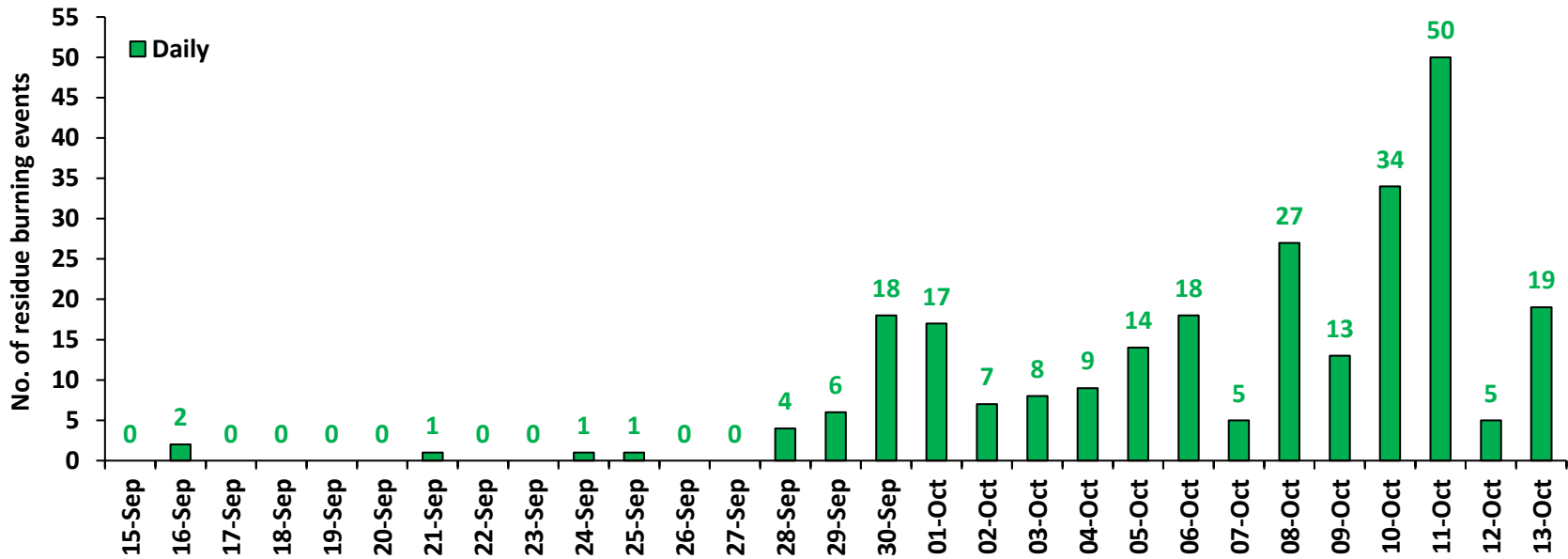
Temporal distribution of rice residue burning events for the study States in 2023



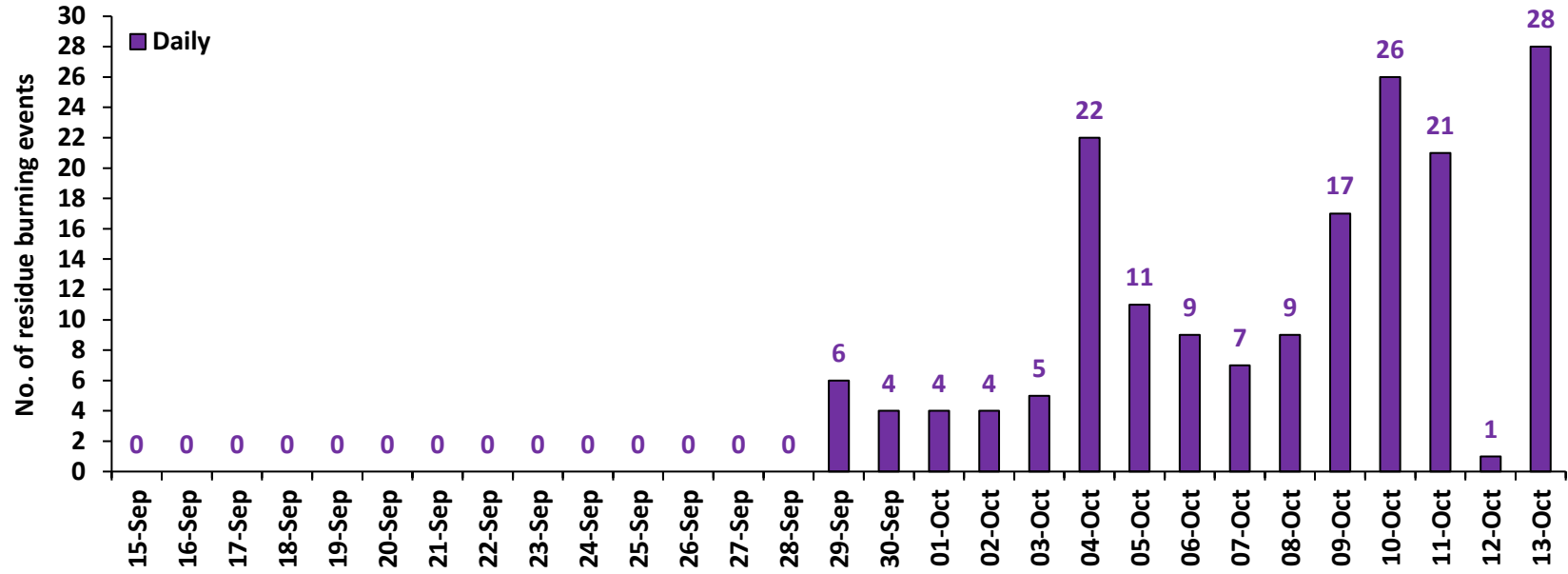
Haryana



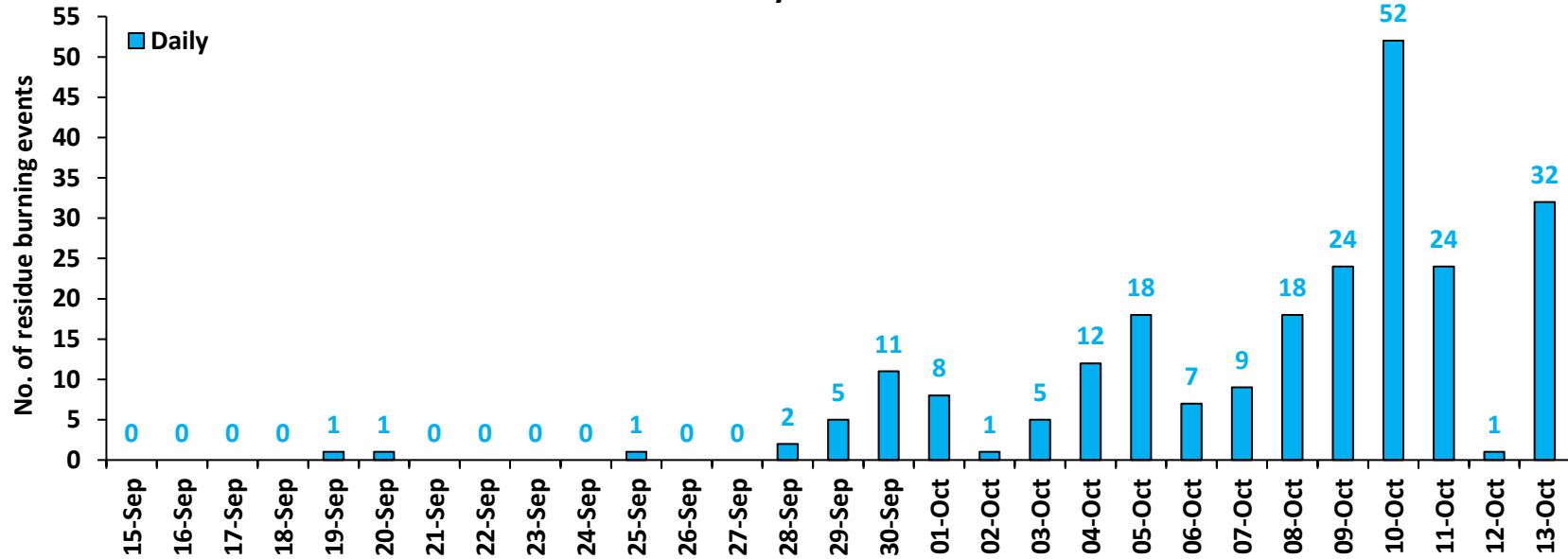
Uttar Pradesh

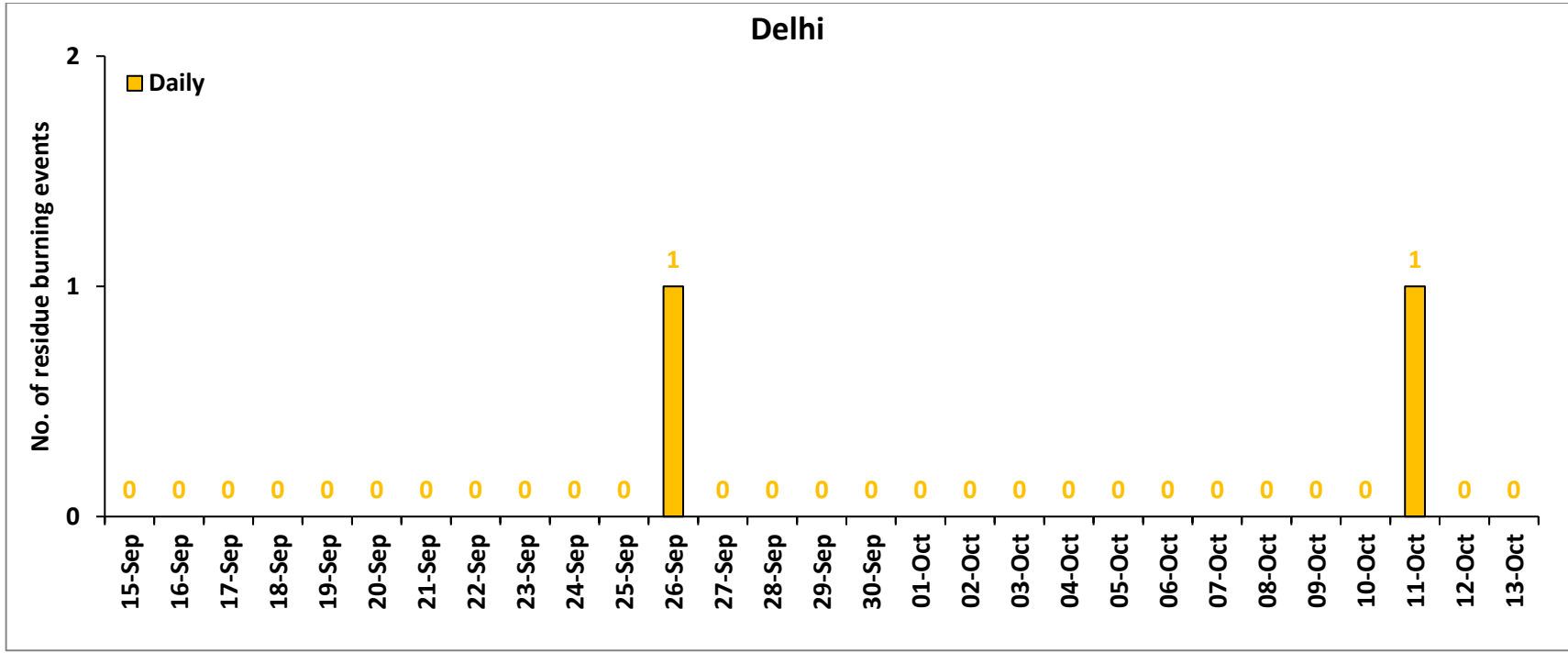


Rajasthan

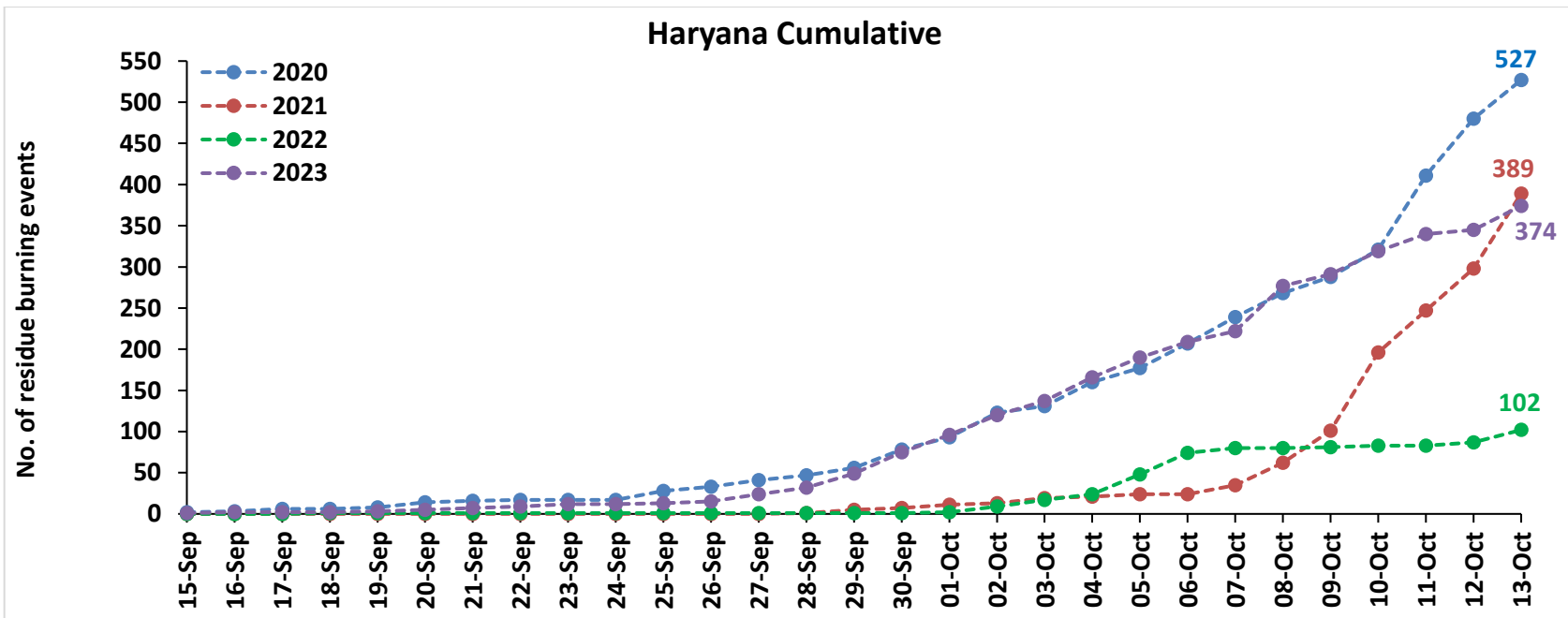
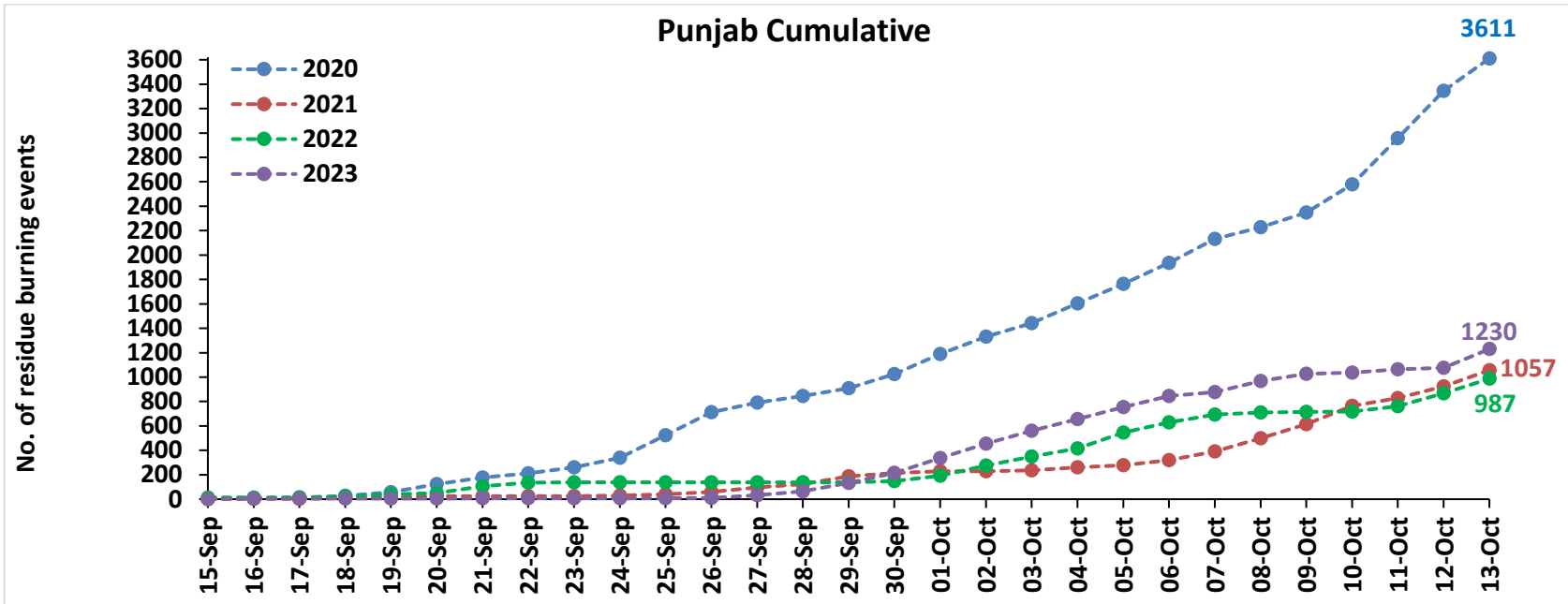


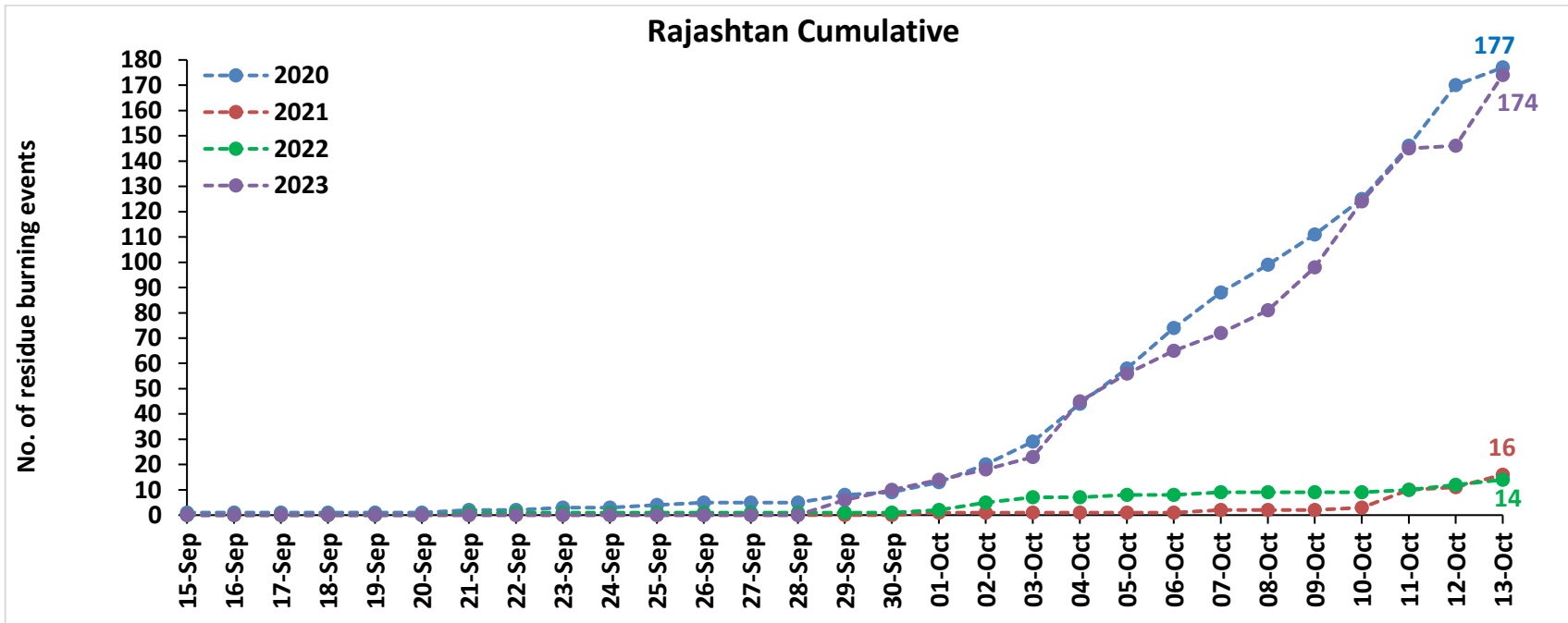
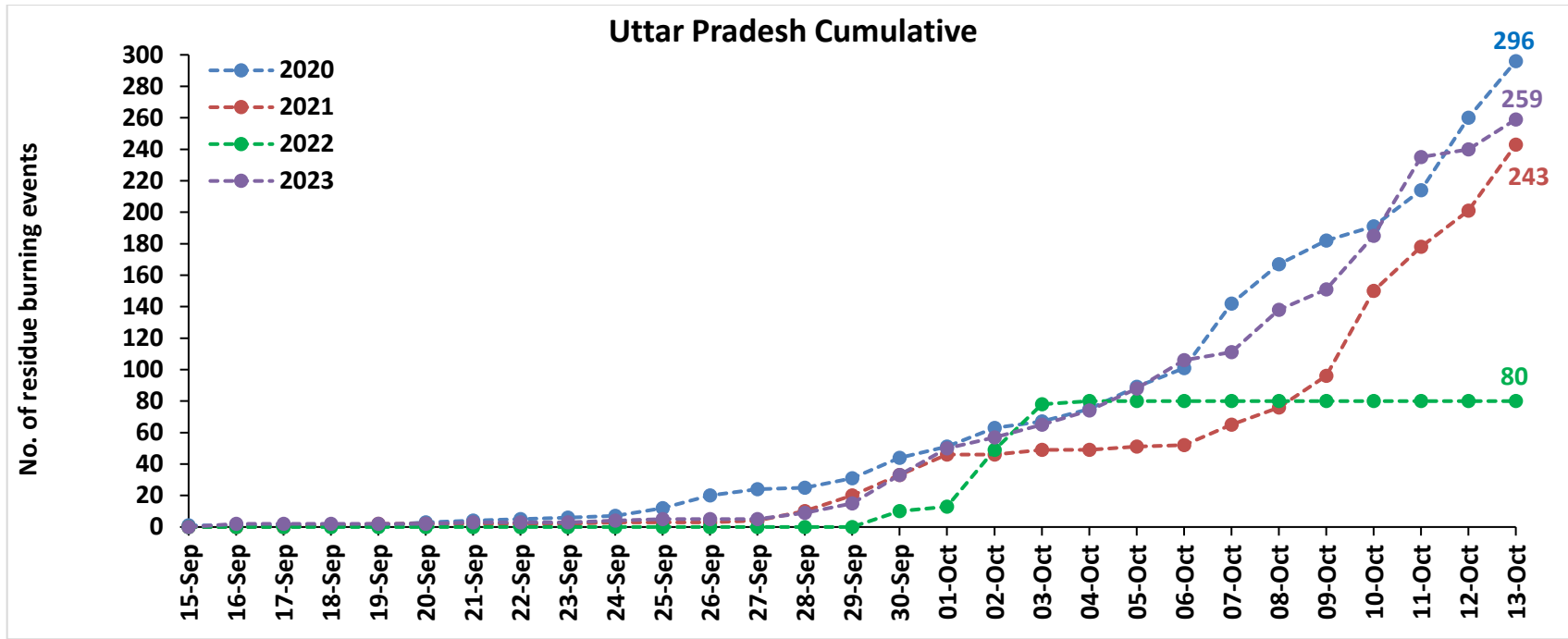
Madhya Pradesh

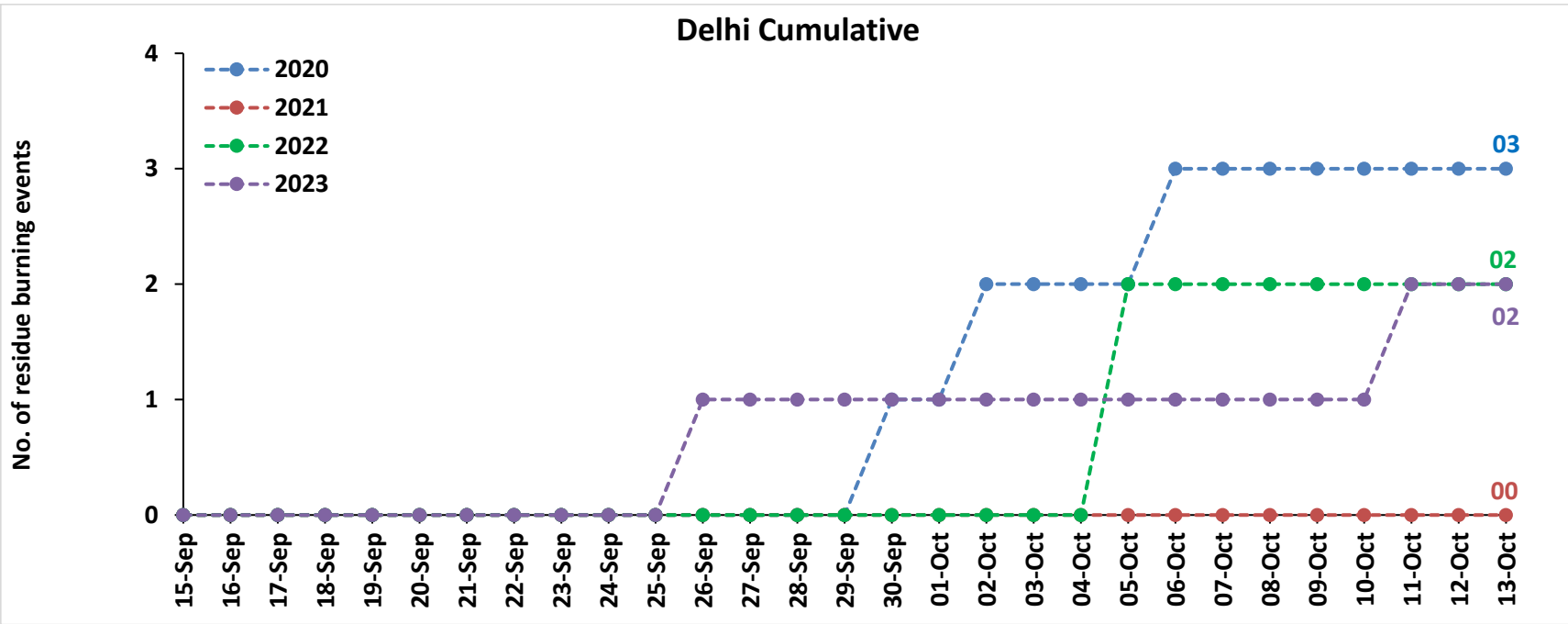
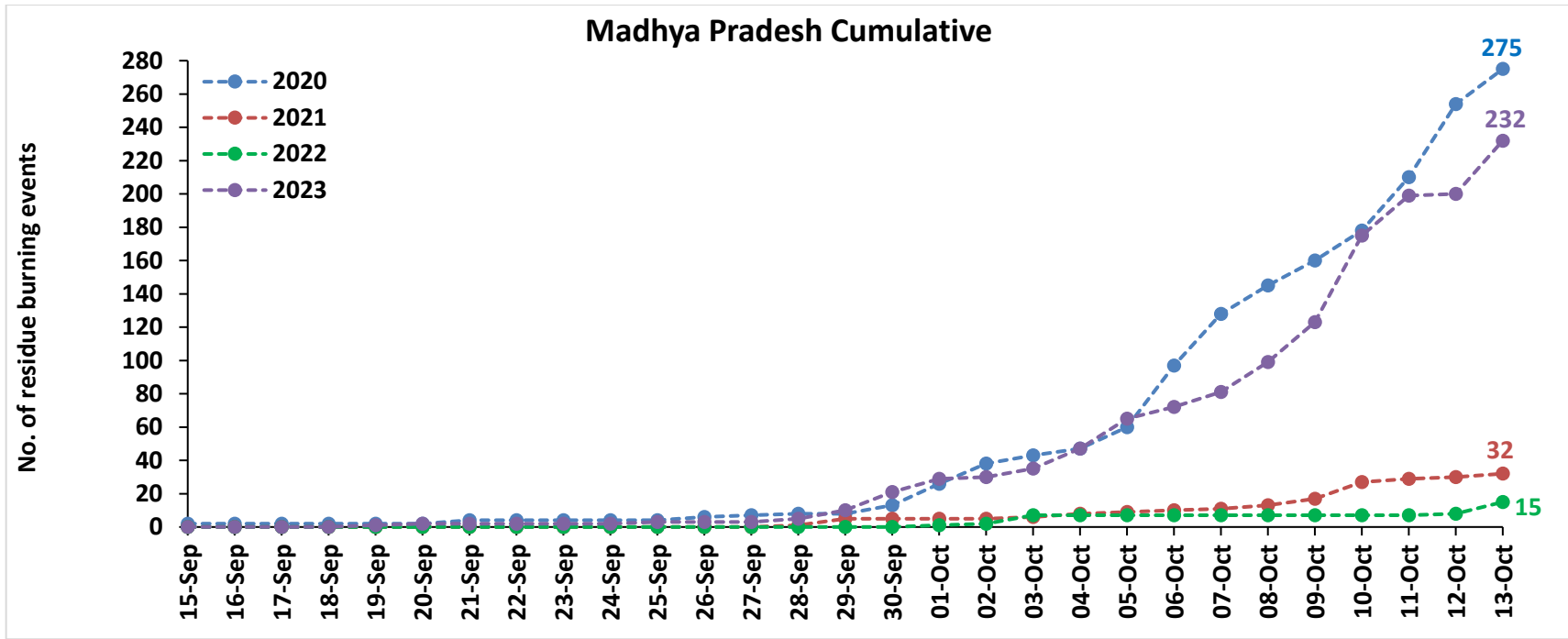




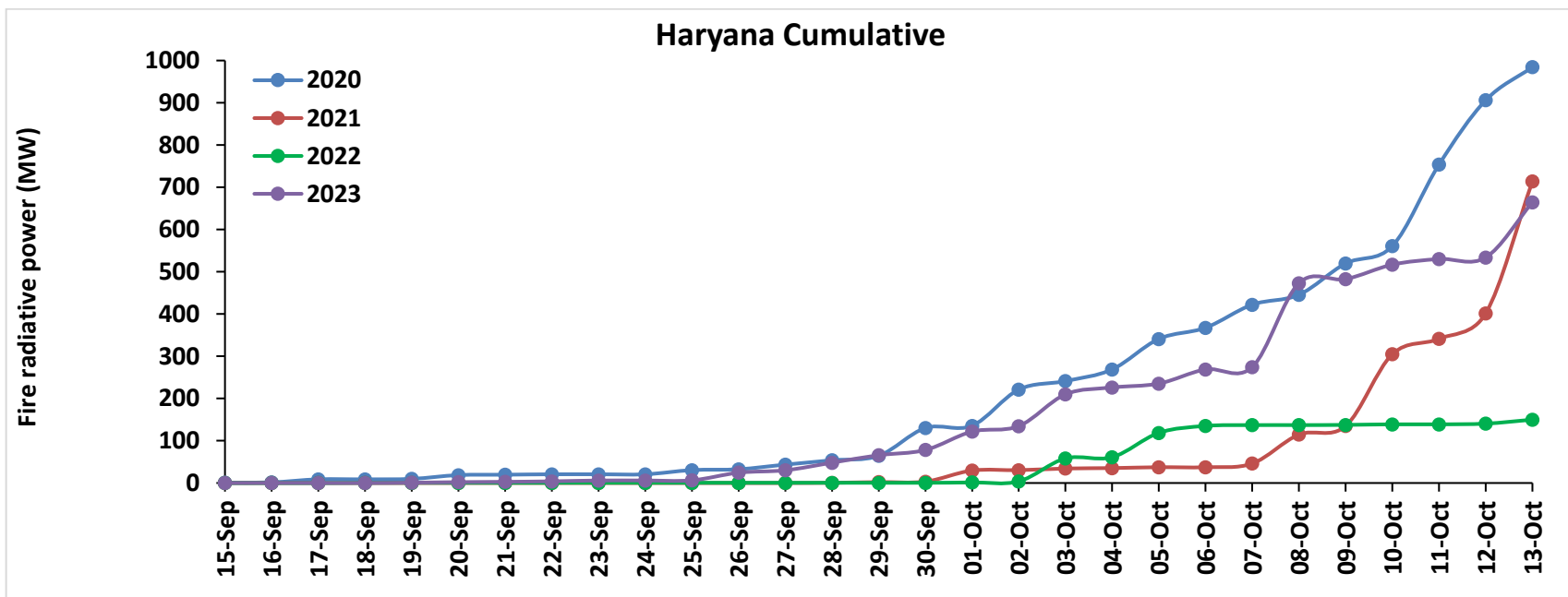
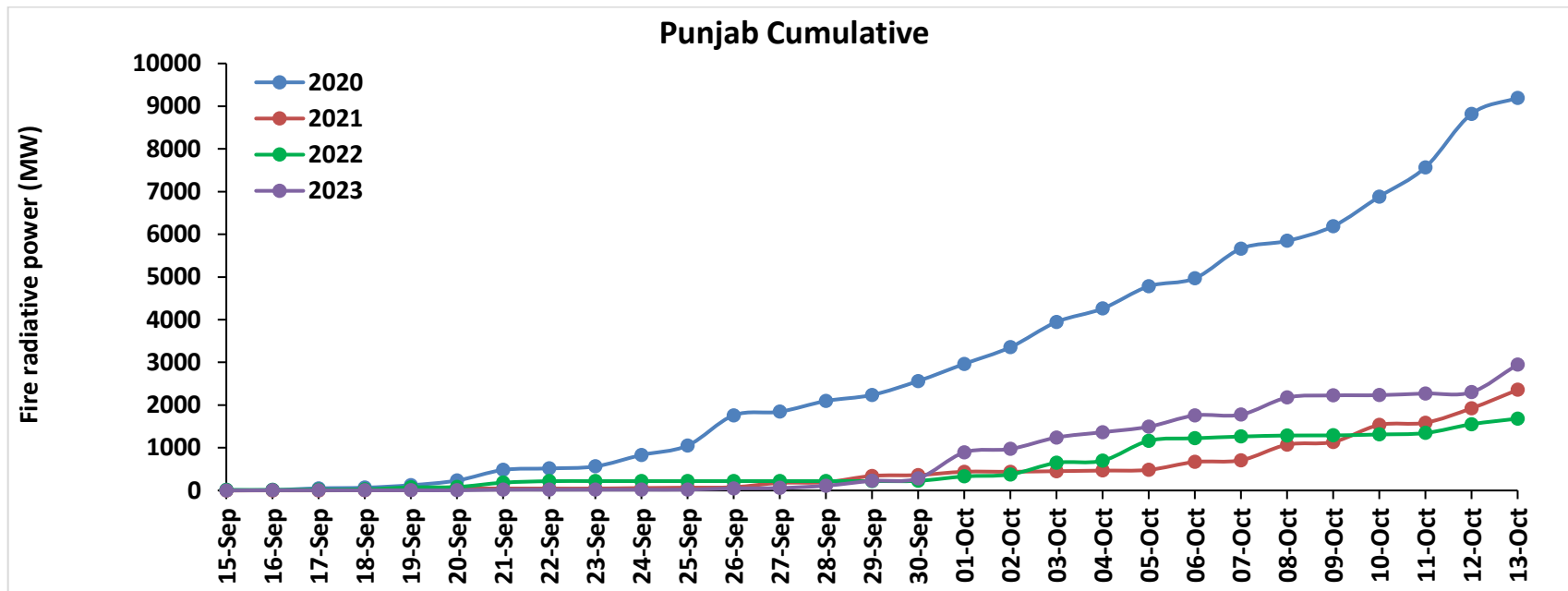
Comparison of residue burning events in current year (2023) with previous years (2020, 2021 and 2022) for the study State

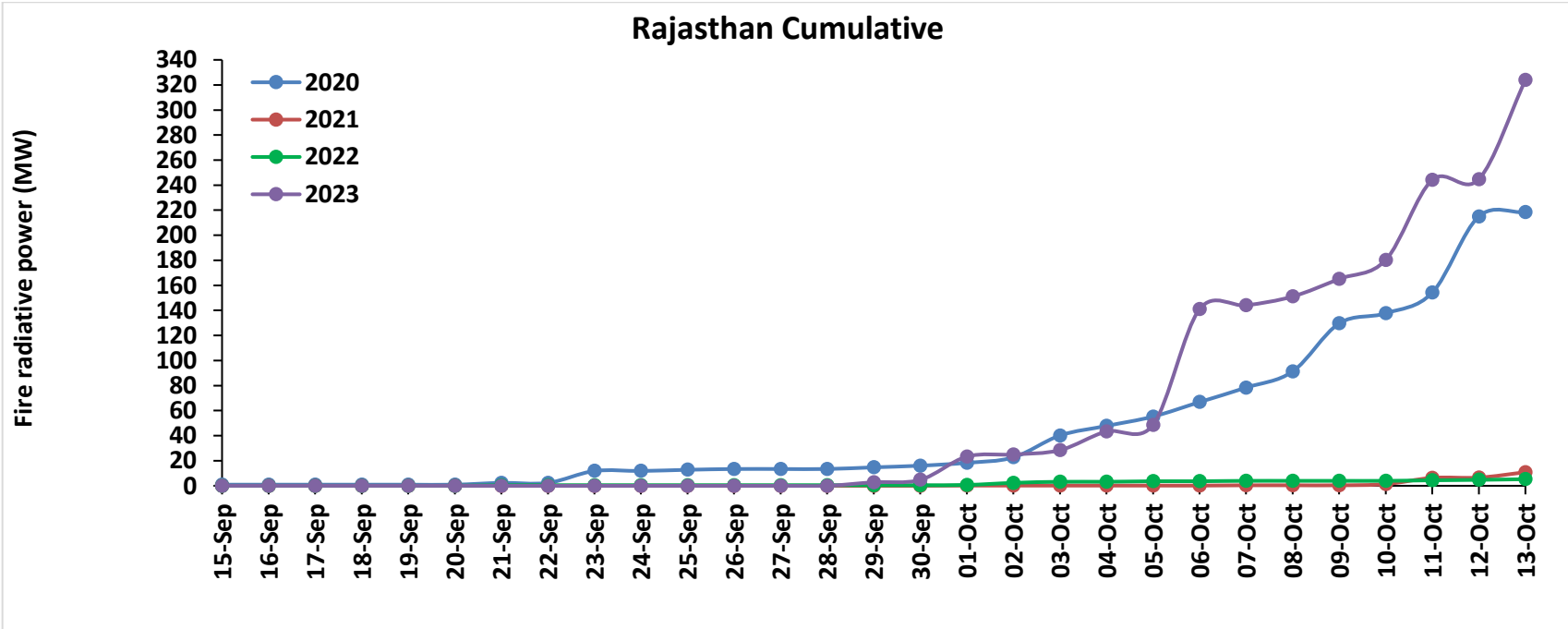
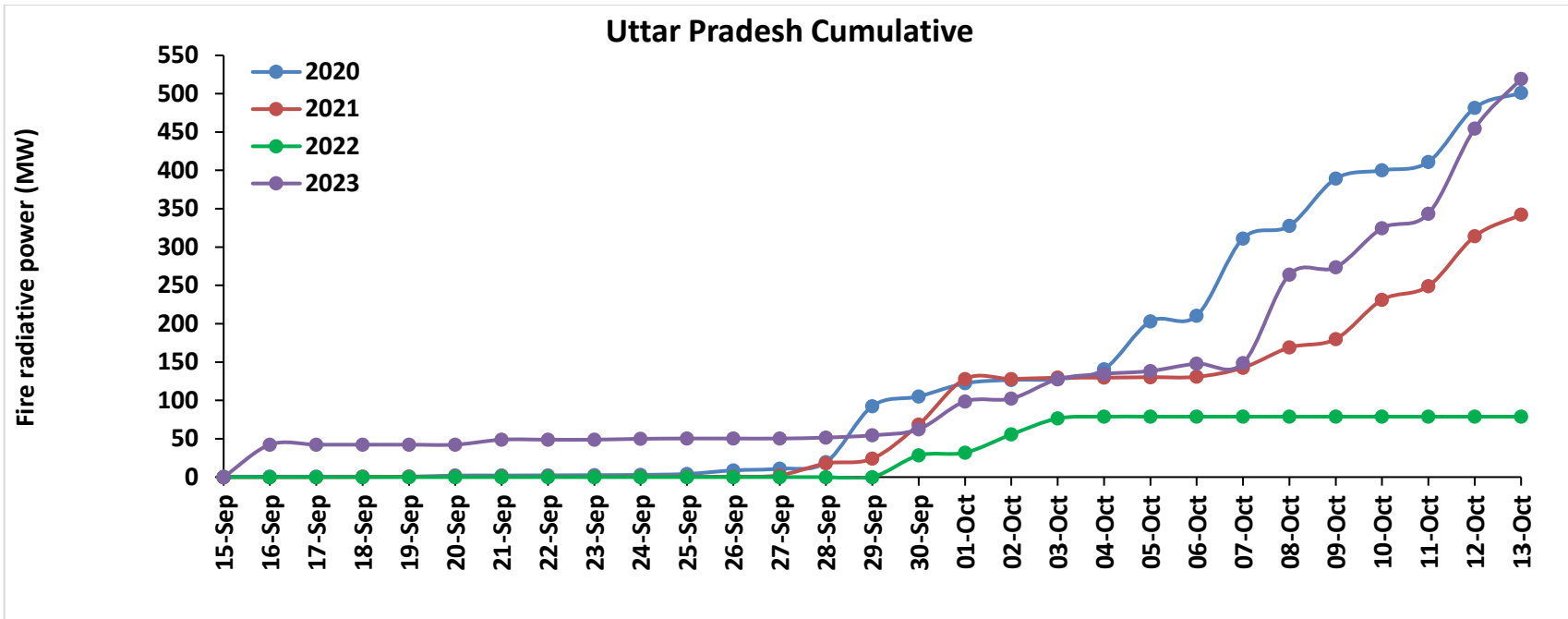




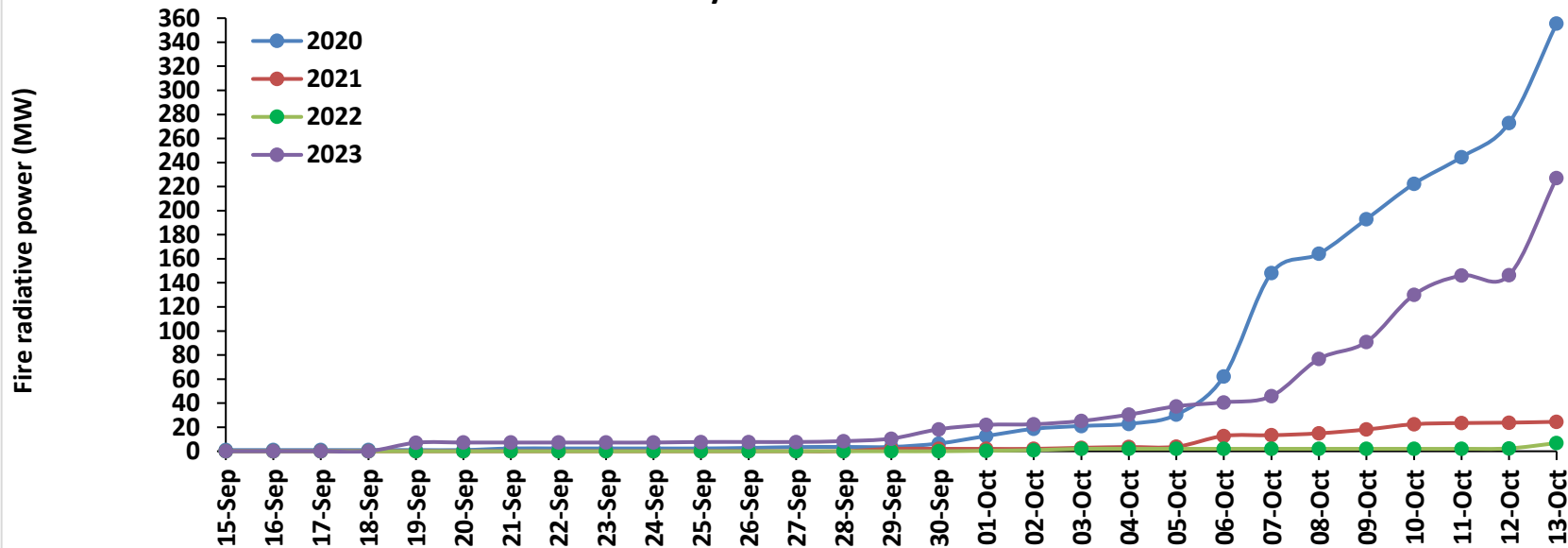


Comparison of residue burning fire power in current year (2023) with previous years (2020, 2021 and 2022) for the study States

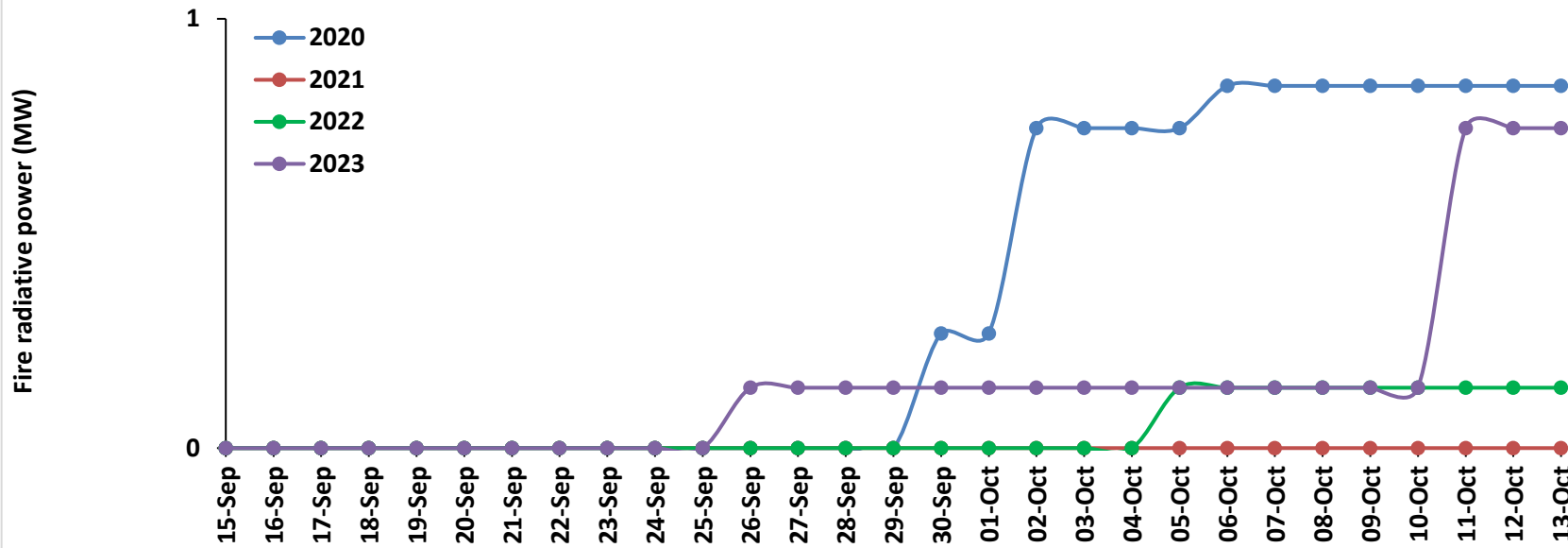




Madhya Pradesh Cumulative

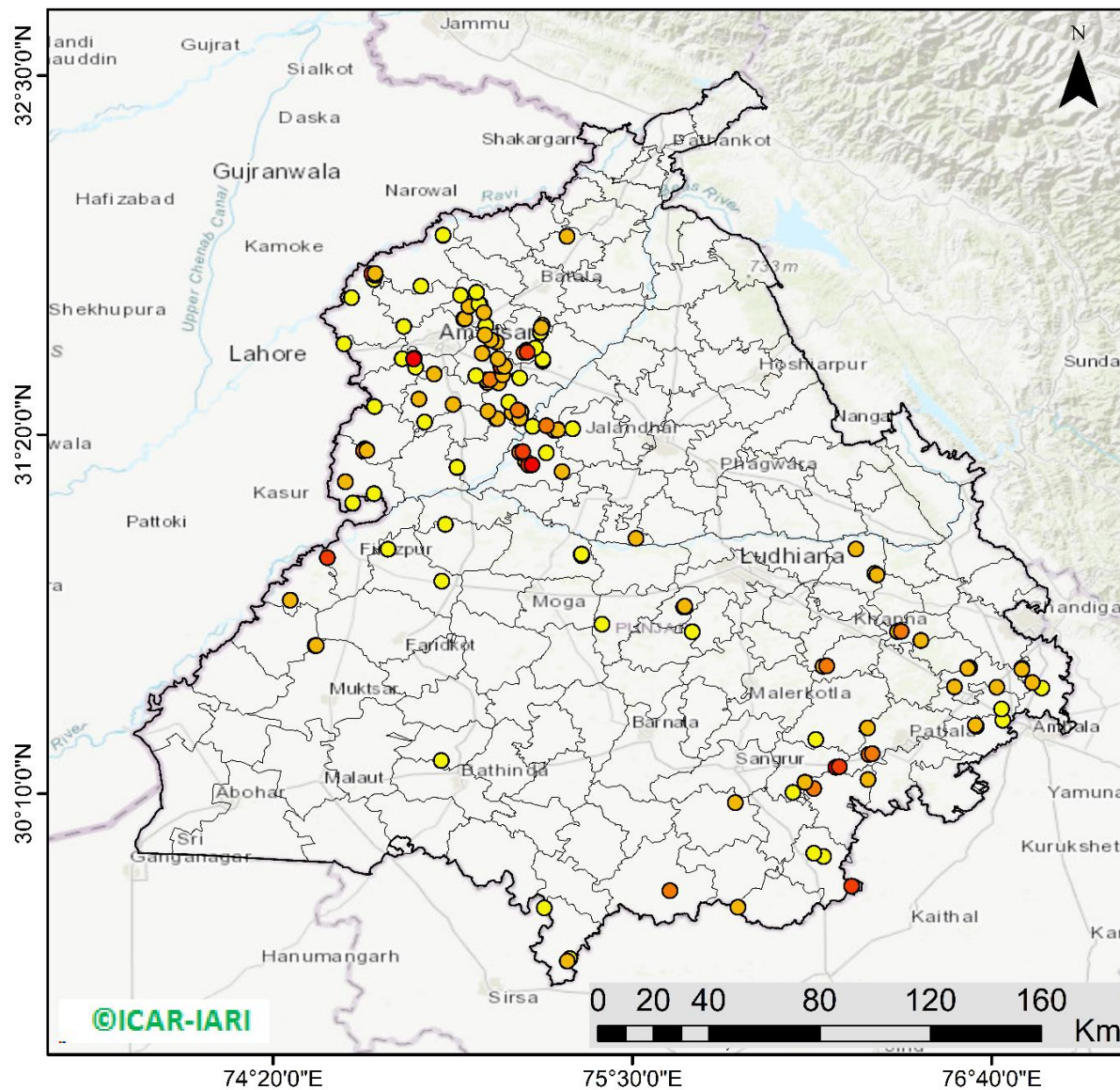


Delhi Cumulative



Punjab

RICE RESIDUE BURNING IN PUNJAB



154 burning events detected in Punjab during (13th Oct 2023)

Fire Intensity (W/m²)

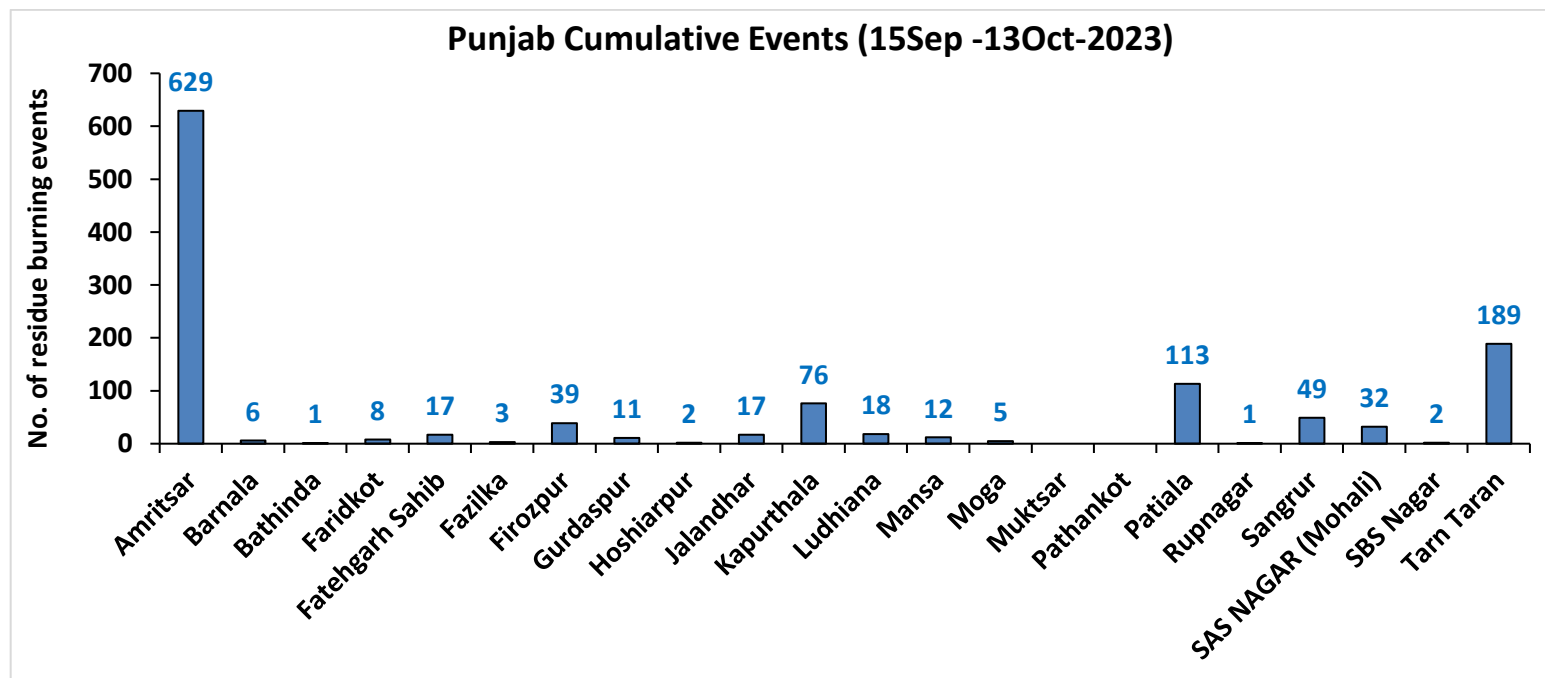
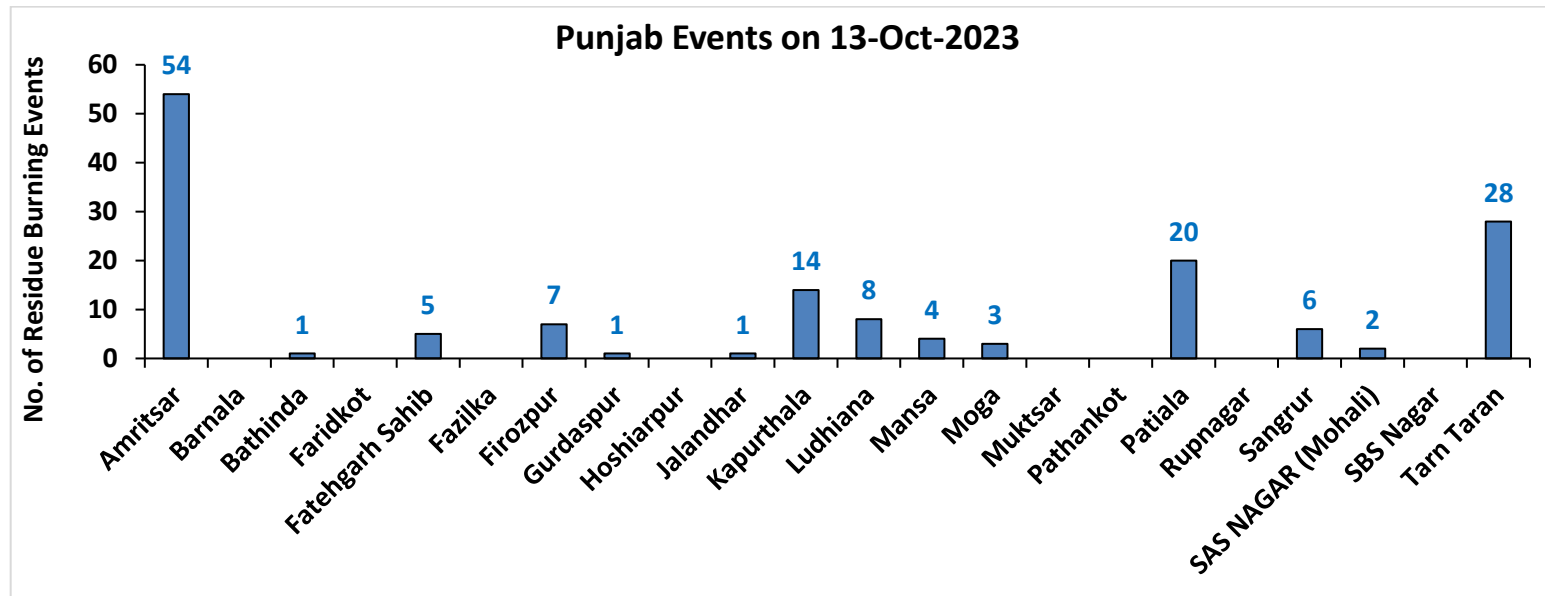
- 0 - 5
- 6 - 10
- 11 - 15
- 16 - 20
- >20

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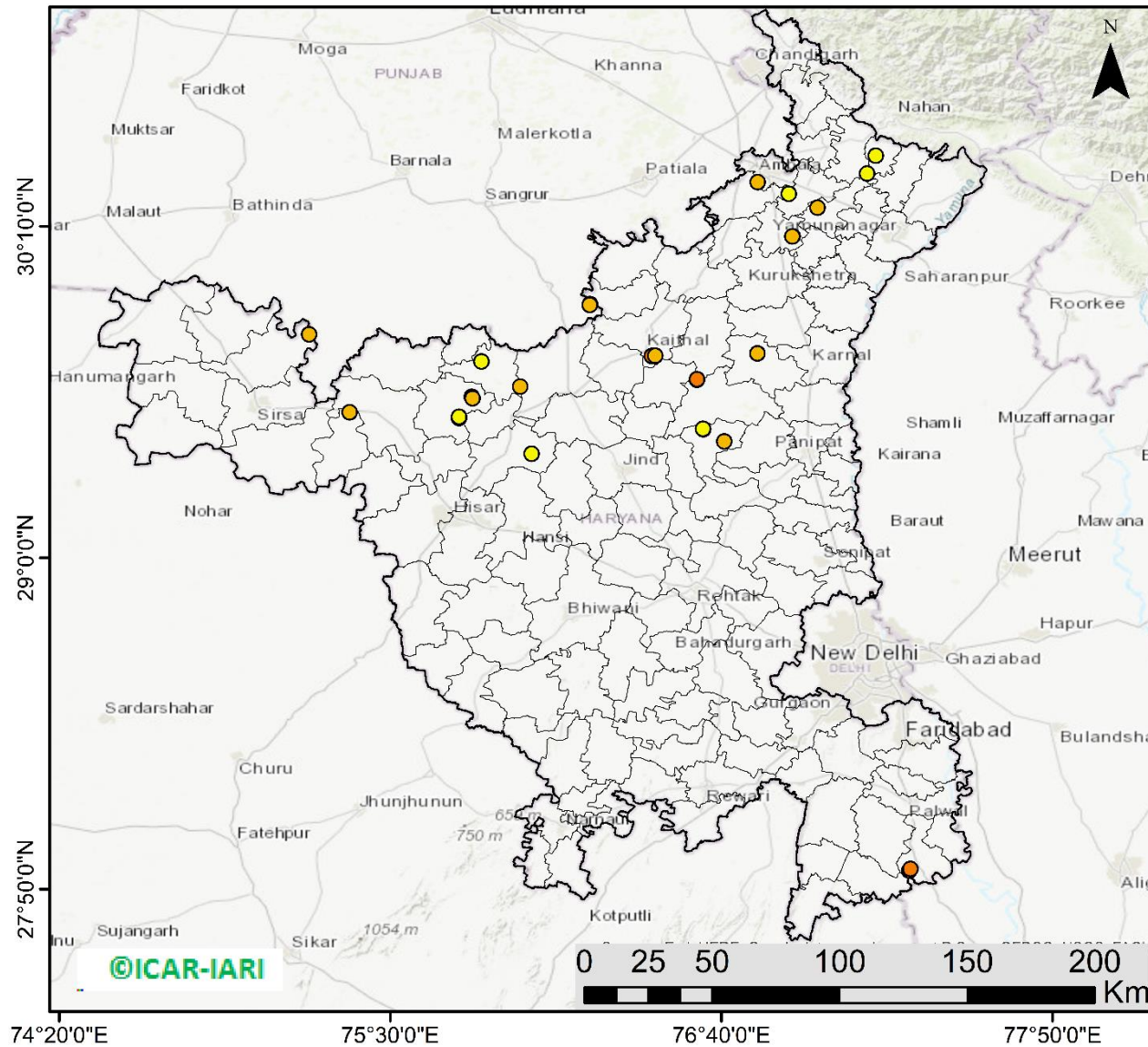
<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

District-wise cumulative number of residues burning events in Punjab (15Sep- 13Oct-2023)



Haryana

RICE RESIDUE BURNING IN HARYANA



29 burning events detected in Haryana on **(13th Oct 2023)**

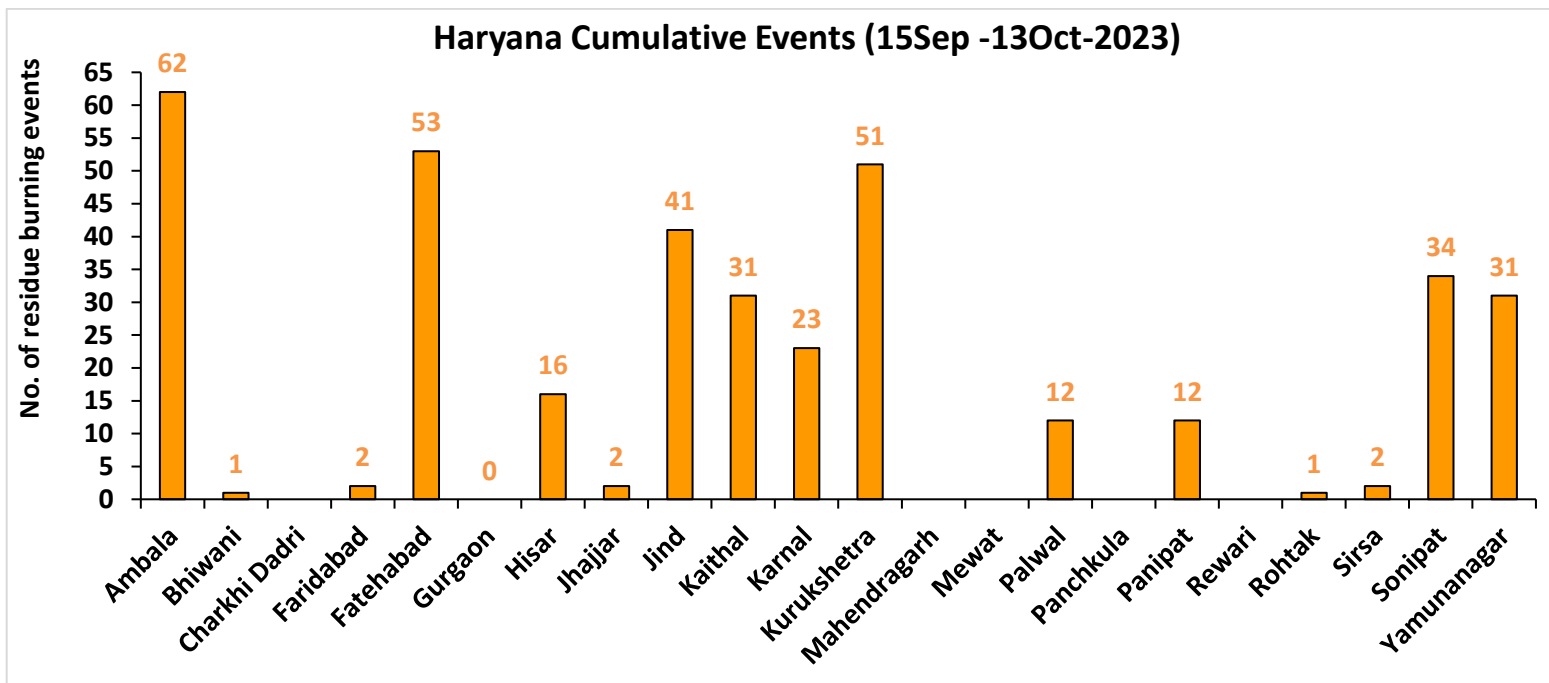
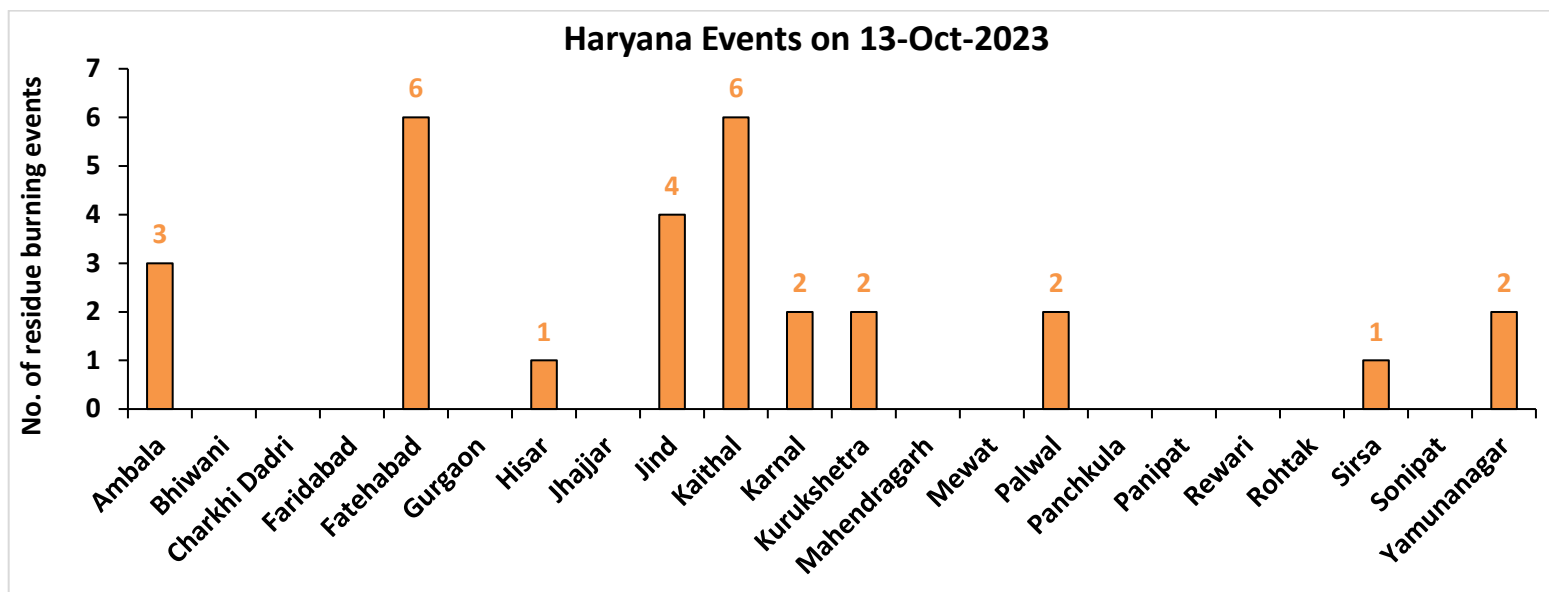
Fire Intensity (W/m²)

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



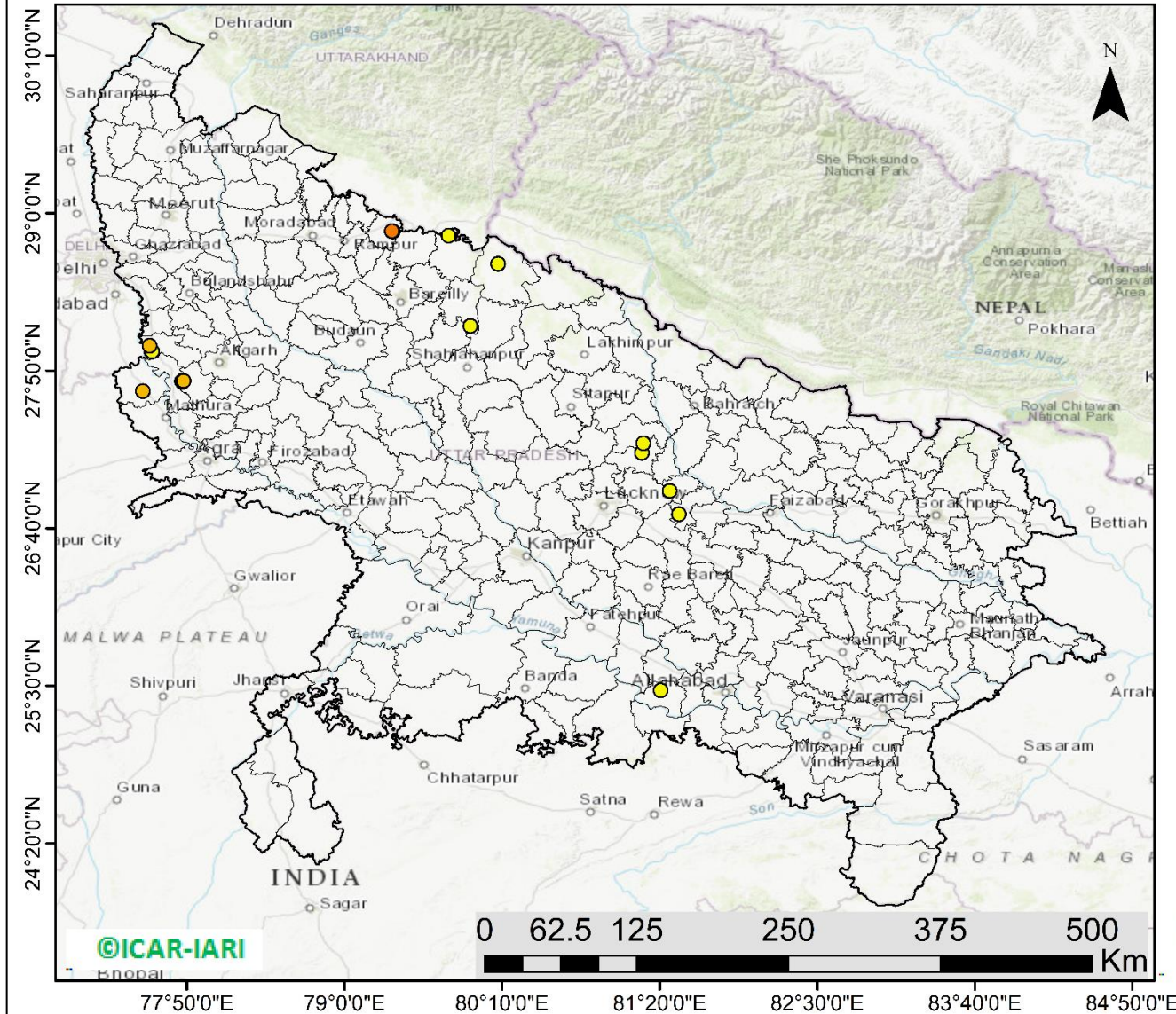
<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

District-wise cumulative number of residues burning events in Haryana (15Sep-13Oct -2023)



Uttar Pradesh

RICE RESIDUE BURNING IN UTTAR PRADESH



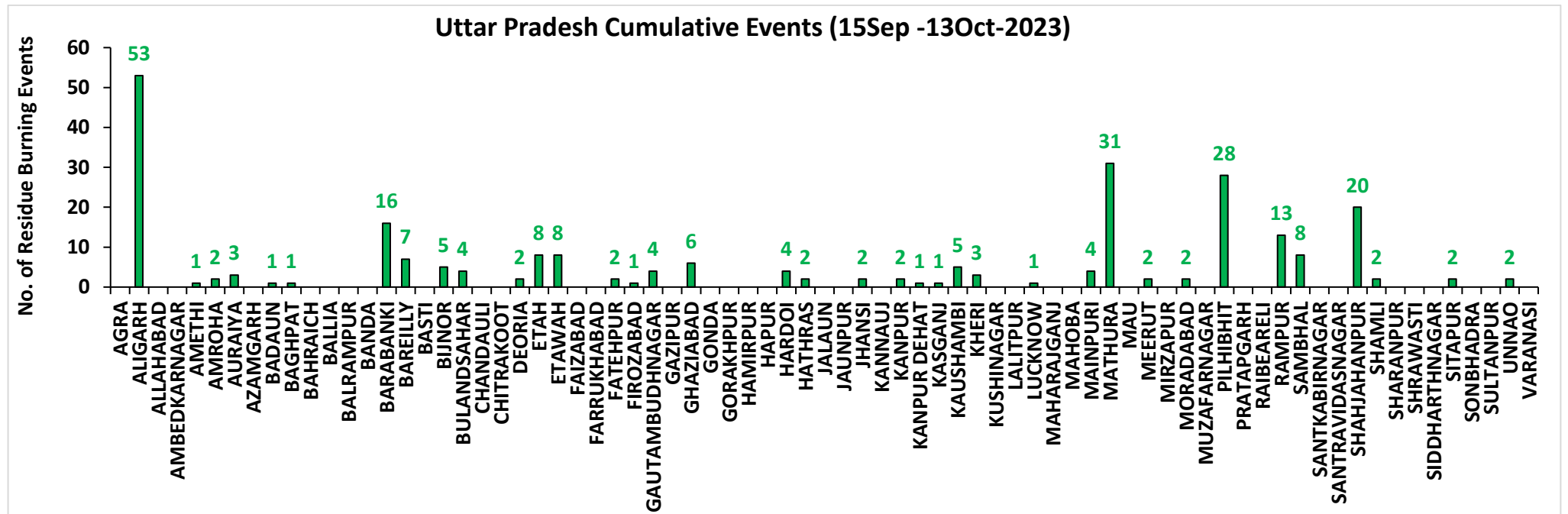
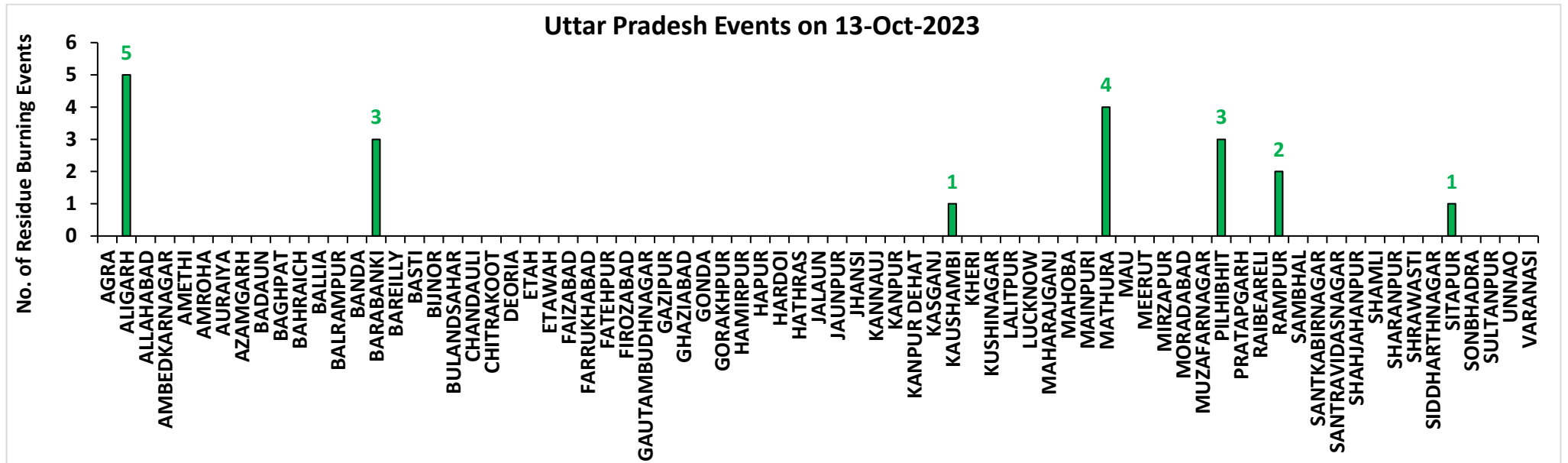
19 burning events detected in Uttar Pradesh on (13th Oct 2023)

Fire Intensity (W/m²)

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

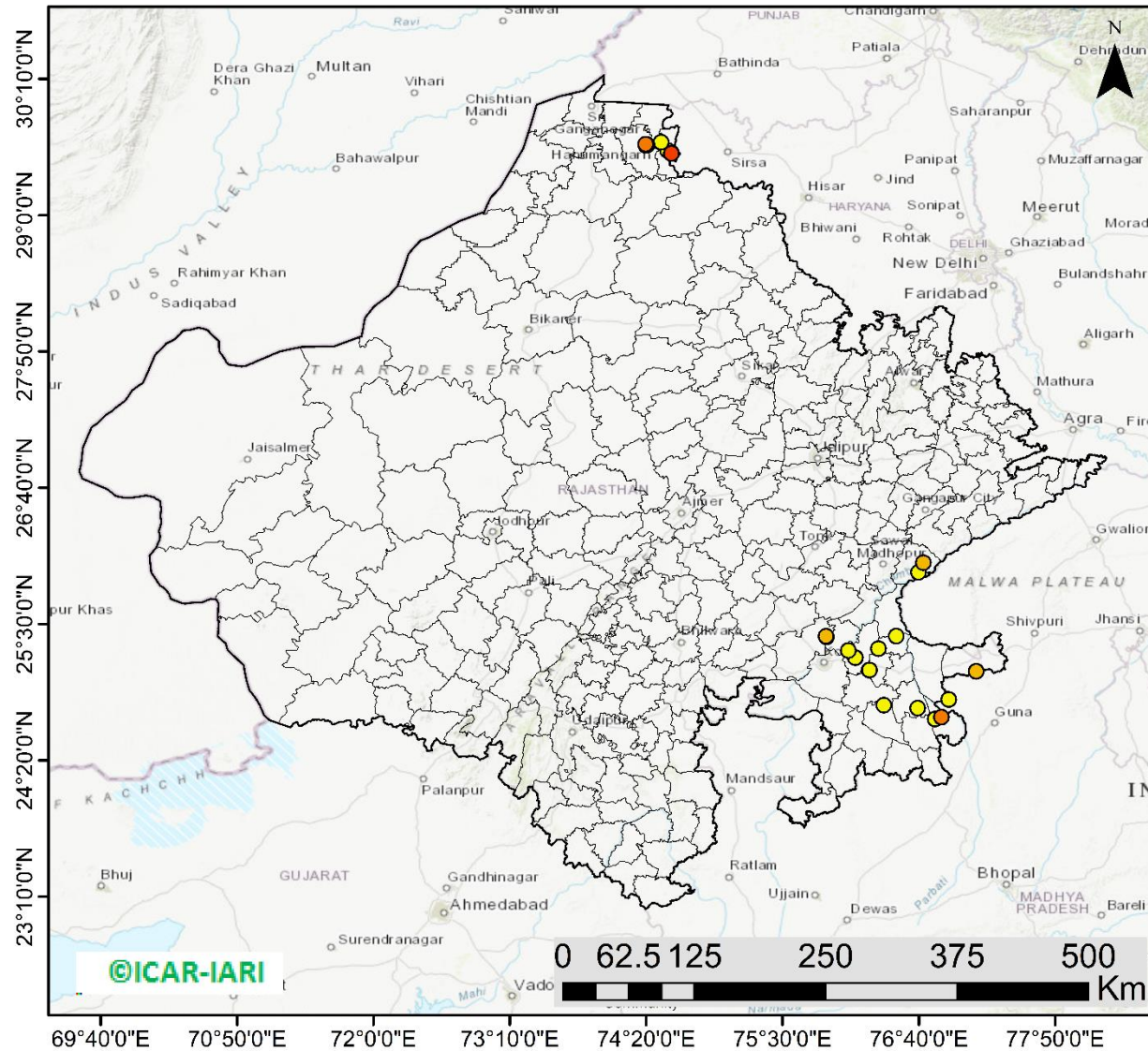
<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

District-wise cumulative number of residues burning events in Uttar Pradesh (15Sep-13Oct -2023)



Rajasthan

RICE RESIDUE BURNING IN RAJASTHAN



28 burning events
detected in Rajasthan on
(13th Oct 2023)

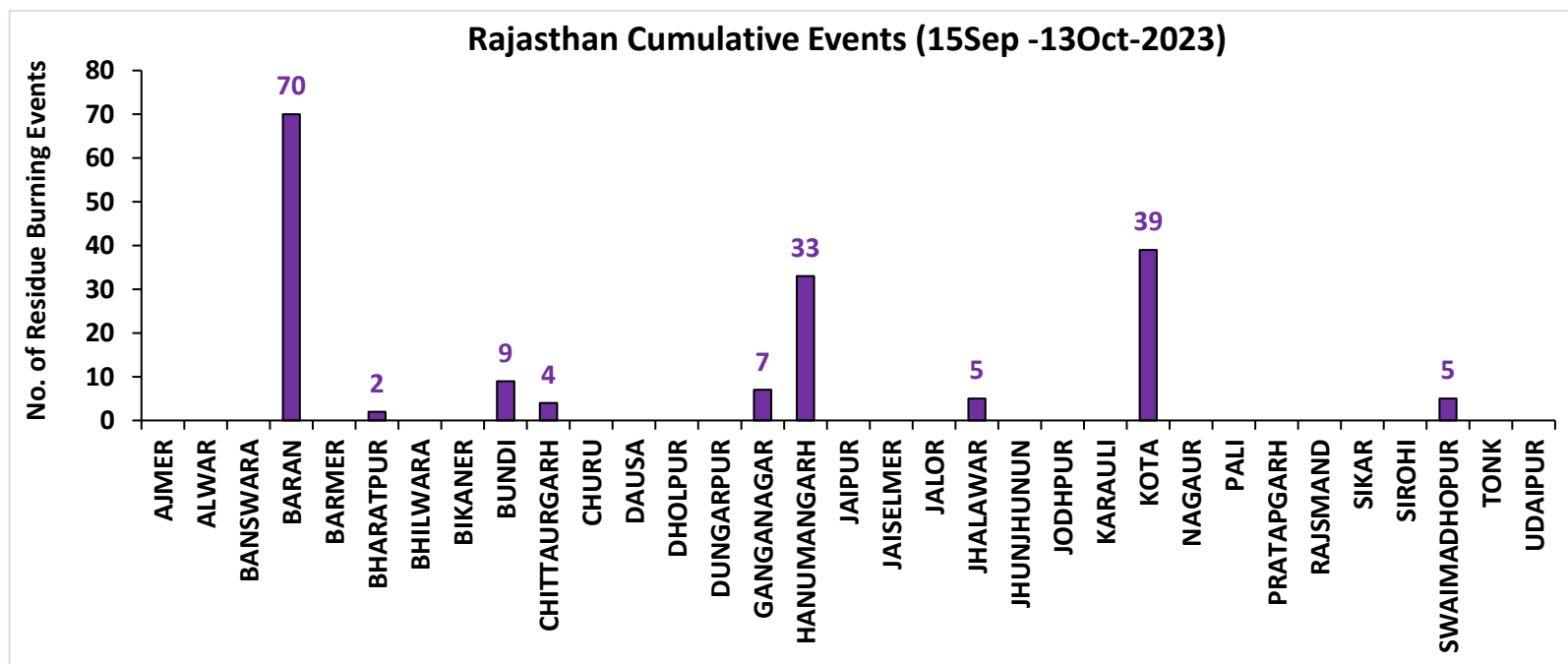
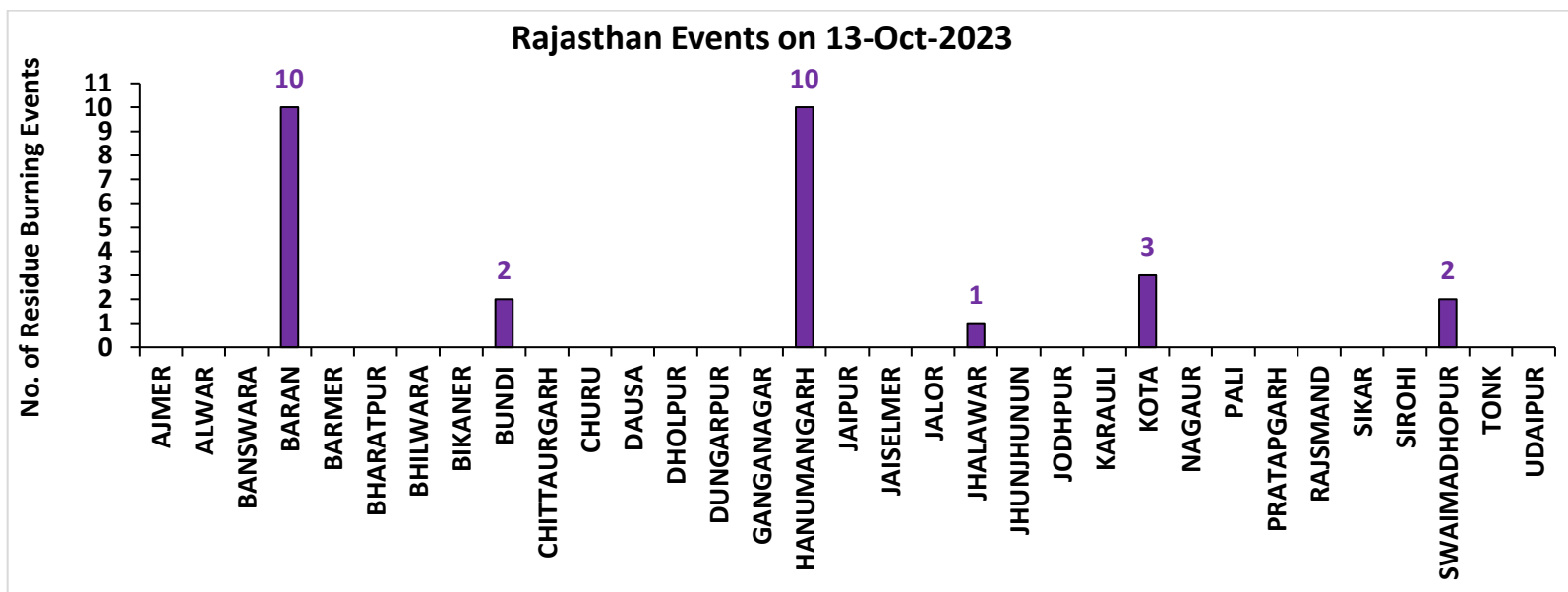
Fire Intensity (W/m²)

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



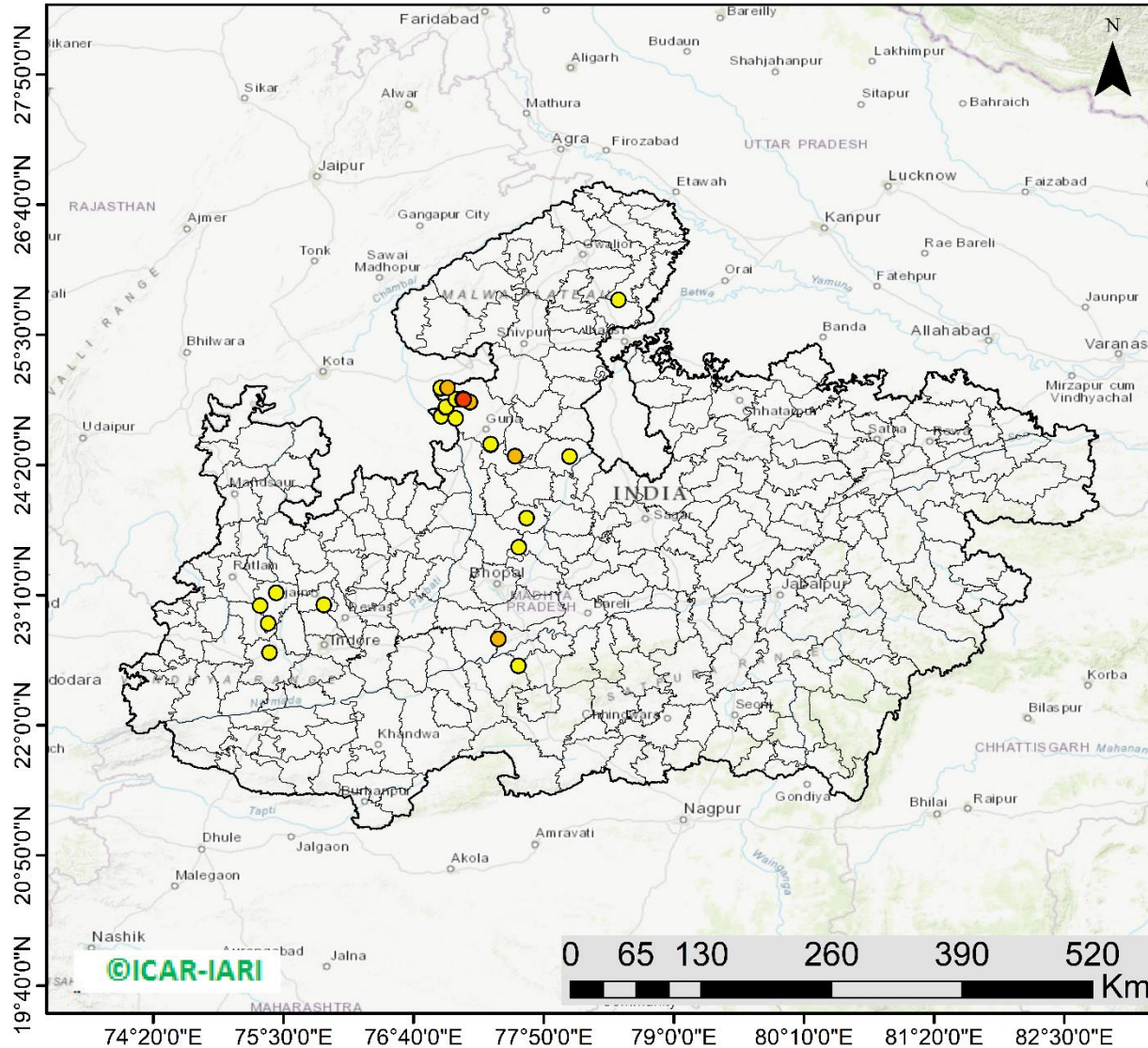
<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

District-wise cumulative number of residues burning events in Rajasthan (15Sep-13Oct -2023)



Madhya Pradesh

RICE RESIDUE BURNING IN MADHYA PRADESH



32 burning events detected in MP on (13th Oct 2023)

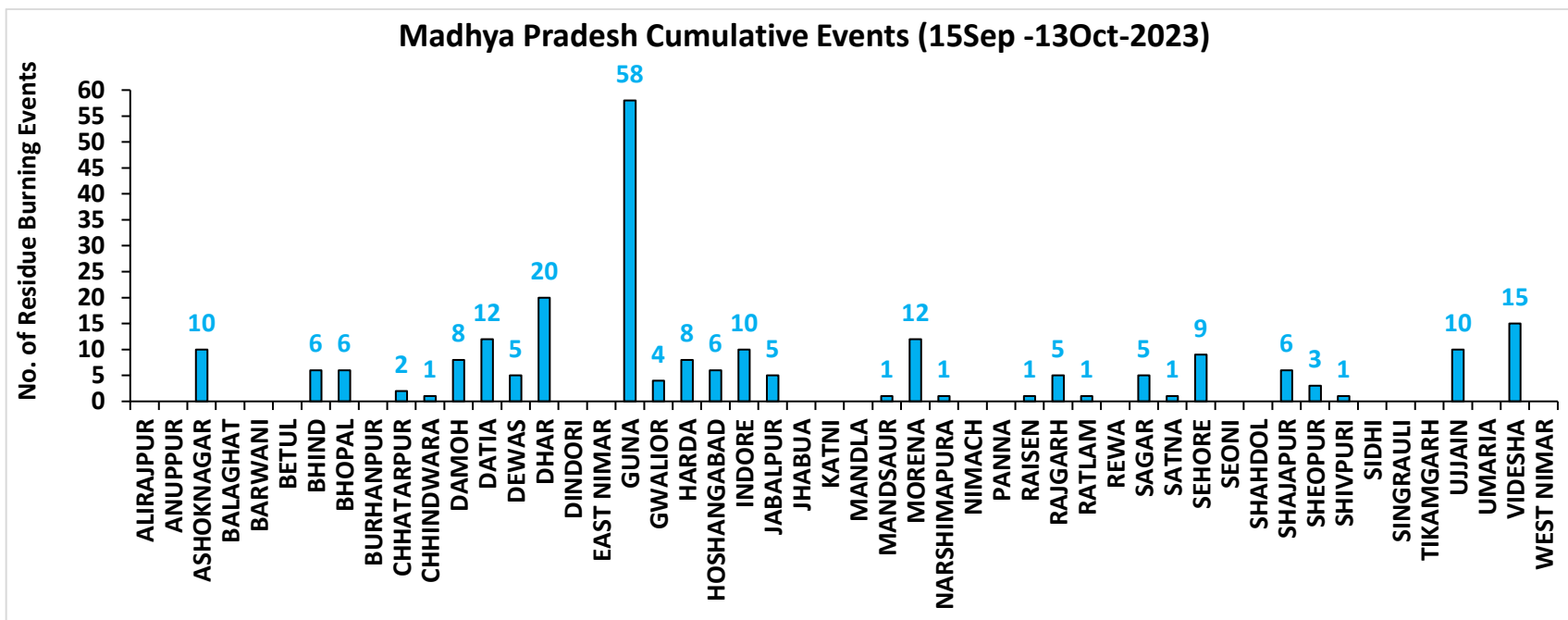
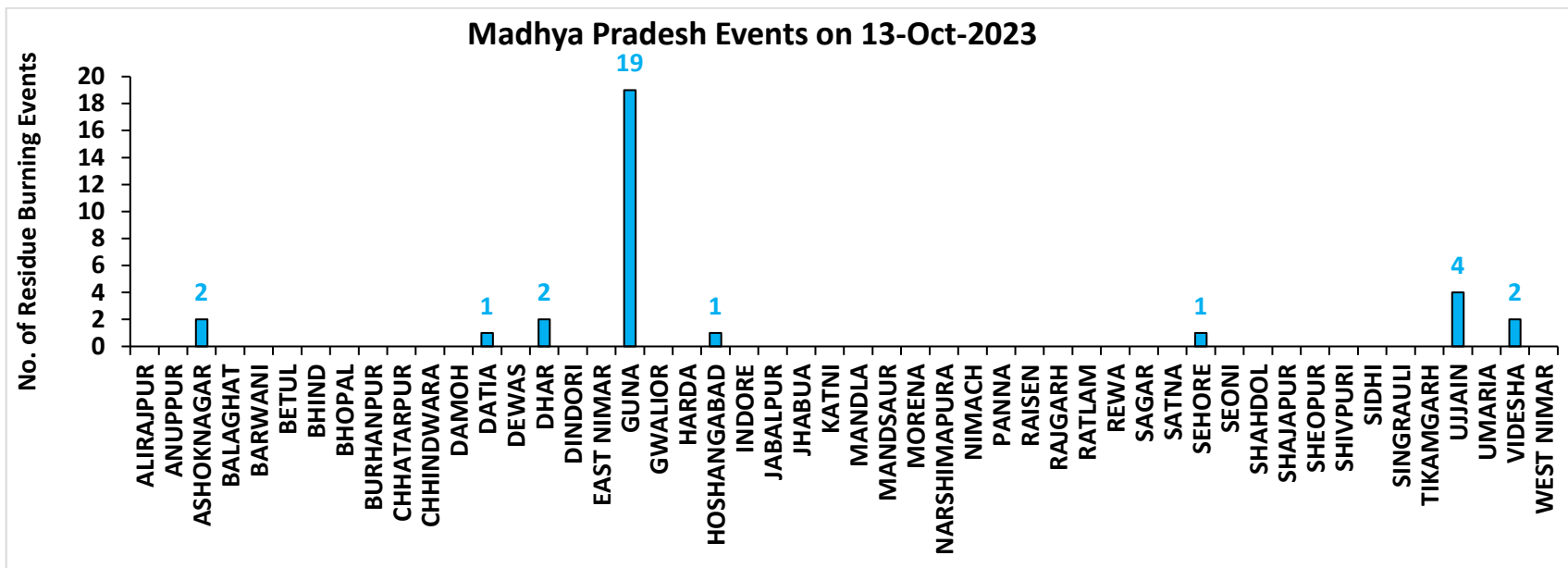
Fire Intensity (W/m²)

- 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-13Oct -2023)



District-wise cumulative number of residues burning events detected in 2020, 2021, 2022 and 2023
(Period: 15 September-13 October)

(a) Punjab

District	15 Sep-13 Oct			
	2020	2021	2022	2023
Amritsar	1532	381	521	629
Barnala	11	6	7	6
Bathinda	24	0	0	1
Faridkot	55	25	6	8
Fatehgarh Sahib	59	46	5	17
Fazilka	12	8	3	3
Firozpur	153	33	31	39
Gurdaspur	200	38	41	11
Hoshiarpur	11	1	0	2
Jalandhar	52	27	27	17
Kapurthala	81	42	42	76
Ludhiana	95	74	13	18
Mansa	19	1	1	12
Moga	27	11	14	5
Muktsar	9	5	1	0
Pathankot	0	0	0	0
Patiala	291	87	30	113
Rupnagar	11	6	0	1
Sangrur	89	14	23	49
SAS NAGAR (Mohali)	22	14	4	32
SBS Nagar	9	2	2	2
Tarn Taran	849	236	216	189
Total	3611	1057	987	1230

(b) Haryana

District	15 Sep-13 Oct			
	2020	2021	2022	2023
AMBALA	72	18	10	62
BHIWANI	0	0	0	1
CHARKHI DADRI	0	0	0	0
FARIDABAD	0	1	0	2
FATEHABAD	33	16	4	53
GURGAON	0	0	0	0
HISAR	6	0	1	16
JHAJJAR	1	0	0	2
JIND	15	10	9	41
KAITHAL	86	86	15	31
KARNAL	154	141	22	23
KURUKSHETRA	99	84	31	51
MAHENDRAGARH	0	0	0	0
MEWAT	0	0	0	0
PALWAL	5	10	0	12
PANCHKULA	0	0	0	0
PANIPAT	7	3	2	12
REWARI	0	0	0	0
ROHTAK	0	0	0	1
SIRSA	6	0	2	2
SONIPAT	8	1	2	34
YAMUNANAGAR	35	19	4	31
Total	527	389	102	374

(c) Uttar Pradesh

District	15 Sep-13 Oct													
	2020	2021	2022	2023	GAUTAMBUDHNAGAR	1	5	0	4	MUZAFARNAGAR	2	0	0	0
AGRA	1	0	0	0	GAZIPUR	0	0	0	0	PILHIBHIT	4	17	2	28
ALIGARH	21	6	1	53	GHAZIABAD	1	2	1	6	PRATAPGARH	0	0	0	0
ALLAHABAD	0	0	0	0	GONDA	0	0	0	0	RAIBEARELI	1	0	0	0
AMBEDKARNAGAR	0	0	0	0	GORAKHPUR	0	0	0	0	RAMPUR	14	23	0	13
AMETHI	0	1	0	1	HAMIRPUR	1	0	0	0	SAMBHAL	6	3	4	8
AMROHA	1	0	0	2	HAPUR	3	0	0	0	SANTKABIRNAGAR	0	0	0	0
AURAIYA	15	2	4	3	HARDOI	4	5	0	4	SANTRAVIDASNAGAR	0	0	0	0
AZAMGARH	0	0	0	0	HATHRAS	0	0	0	2	SHAHJAHANPUR	35	101	53	20
BADAUN	0	0	0	1	JALAUN	0	0	0	0	SHAMLI	18	9	2	2
BAGHPAT	2	0	0	1	JAUNPUR	0	0	0	0	SHARANPUR	18	4	0	0
BAHRAICH	2	2	0	0	JHANSI	6	0	0	2	SHRAWASTI	1	0	0	0
BALLIA	0	0	0	0	KANNAUJ	3	0	0	0	SIDDHARTHANAGAR	0	0	0	0
BALRAMPUR	0	0	0	0	KANPUR	0	1	0	2	SITAPUR	8	1	0	2
BANDA	0	0	0	0	KANPUR DEHAT	3	0	0	1	SONBHADRA	0	0	0	0
BARABANKI	10	0	0	16	KASGANJ	1	0	0	1	SULTANPUR	0	0	0	0
BAREILLY	10	5	0	7	KAUSHAMBI	7	1	0	5	UNNAO	2	0	0	2
BASTI	2	0	0	0	KHERI	29	24	8	3	VARANASI	0	0	0	0
BIJNOR	3	1	1	5	KUSHINAGAR	0	0	0	0	Total	296	243	80	259
BULANSAHAR	6	1	2	4	LALITPUR	0	1	2	0					
CHANDAULI	0	0	0	0	LUCKNOW	2	0	0	1					
CHITRAKOOT	0	0	0	0	MAHARAJGANJ	0	0	0	0					
DEORIA	0	0	0	2	MAHOBA	1	0	0	0					
ETAH	4	6	0	8	MAINPURI	4	2	0	4					
ETAWAH	2	3	0	8	MATHURA	7	10	0	31					
FAIZABAD	1	0	0	0	MAU	0	0	0	0					
FARRUKHABAD	0	0	0	0	MEERUT	9	0	0	2					
FATEHPUR	14	0	0	2	MIRZAPUR	5	5	0	0					
FIROZABAD	4	0	0	1	MORADABAD	2	2	0	2					

(d) Delhi

District	15 Sep-13 Oct			
	2020	2021	2022	2023
CENTRAL	0	0	0	0
EAST	0	0	0	0
NEW DELHI	0	0	0	0
NORTH	2	0	2	2
NORTH EAST	0	0	0	0
NORTH WEST DELHI	0	0	0	0
SHAHADRA	0	0	0	0
SOUTH	1	0	0	0
SOUTH EAST	0	0	0	0
SOUTH WEST DELHI	0	0	0	0
WEST DELHI	0	0	0	0
Total	3	0	2	2

(e) Rajasthan

District	15 Sep-13 Oct			
	2020	2021	2022	2023
AJMER	0	0	0	0
ALWAR	1	0	0	0
BANSWARA	0	0	0	0
BARAN	78	0	4	70
BARMER	2	0	0	0
BHARATPUR	0	0	0	2
BHILWARA	2	0	0	0
BIKANER	0	0	0	0
BUNDI	4	0	4	9
CHITTAURGARH	0	1	1	4
CHURU	0	0	0	0
DAUSA	0	0	0	0
DHOLPUR	0	0	0	0
DUNGARPUR	0	0	0	0
GANGANAGAR	2	0	1	7
HANUMANGARH	55	14	3	33
JAIPUR	0	0	0	0
JAISELMER	2	0	0	0
JALOR	0	0	0	0
JHALAWAR	1	0	0	5
JHUNJHUNUN	1	0	0	0
JODHPUR	1	0	0	0
KARAULI	1	0	0	0
KOTA	21	1	1	39
NAGOUR	0	0	0	0
PALI	1	0	0	0
PRATAPGARH	0	0	0	0
RAJSMAND	0	0	0	0
SIKAR	0	0	0	0
SIROHI	1	0	0	0
SWAIMADHOPUR	3	0	0	5
TONK	1	0	0	0
UDAIPUR	0	0	0	0
Total	177	16	14	174

(f) Madhya Pradesh

District	15 Sep-13 Oct								
	2020	2021	2022	2023					
					PANNA	2	0	0	0
ALIRAJPUR	0	0	0	0	RAISEN	10	0	0	1
ANUPPUR	0	0	0	0	RAJGARH	7	1	2	5
ASHOKNAGAR	9	0	0	10	RATLAM	0	0	0	1
BALAGHAT	0	0	0	0	REWA	3	0	0	0
BARWANI	0	0	0	0	SAGAR	13	3	1	5
BETUL	0	0	0	0	SATNA	3	0	0	1
BHIND	2	0	0	6	SEHORE	5	0	1	9
BHOPAL	4	2	1	6	SEONI	6	2	0	0
BURHANPUR	0	0	0	0	SHAHDOL	0	0	0	0
CHHATARPUR	4	0	0	2	SHAJAPUR	5	0	0	6
CHHINDWARA	0	0	0	1	SHEOPUR	6	0	0	3
DAMOH	14	1	0	8	SHIVPURI	4	0	6	1
DATIA	23	2	0	12	SIDHI	0	0	0	0
DEWAS	3	0	0	5	SINGRAULI	0	0	0	0
DHAR	19	0	0	20	TIKAMGARH	1	0	0	0
DINDORI	0	0	0	0	UJJAIN	5	0	0	10
EAST NIMAR	2	1	0	0	UMARIA	0	0	0	0
GUNA	13	1	1	58	VIDESHA	50	5	2	15
GWALIOR	21	0	1	4	WEST NIMAR	2	0	0	0
HARDA	8	8	0	8	Total	275	32	15	232
HOSHANGABAD	9	0	0	6					
INDORE	2	0	0	10					
JABALPUR	6	2	0	5					
JHABUA	0	0	0	0					
KATNI	0	0	0	0					
MANDLA	0	0	0	0					
MANDSAUR	3	0	0	1					
MORENA	10	3	0	12					
NARSHIMAPURA	1	1	0	1					
NIMACH	0	0	0	0					

State-wise and date-wise number of paddy residue burning events detected in 2020, 2021, 2022 and 2023
(Period: 15 September-13 October)

Number of Paddy Residue Burning Events Detected

Date	Punjab				Haryana				Uttar Pradesh			
	2020	2021	2022	2023	2020	2021	2022	2023	2020	2021	2022	2023
15-Sep	5	0	14	0	2	0	0	1	1	0	0	0
16-Sep	0	2	0	6	1	0	0	1	0	0	0	2
17-Sep	5	0	1	0	3	0	0	0	0	0	0	0
18-Sep	17	9	7	0	0	0	1	0	0	1	0	0
19-Sep	30	5	18	0	2	0	0	1	0	1	0	0
20-Sep	67	8	10	0	6	0	0	2	2	0	0	0
21-Sep	54	0	56	1	2	0	0	2	1	0	0	1
22-Sep	34	0	30	0	1	0	0	2	1	0	0	0
23-Sep	49	0	3	1	0	0	0	3	1	0	0	0
24-Sep	78	5	0	0	0	0	0	0	1	1	0	1
25-Sep	184	11	0	0	11	0	0	1	5	0	0	1
26-Sep	190	19	0	3	5	0	0	2	8	0	0	0
27-Sep	78	37	0	21	8	0	0	9	4	1	0	0
28-Sep	55	28	0	33	6	1	0	8	1	6	0	4
29-Sep	63	64	0	68	9	4	0	17	6	10	0	6
30-Sep	116	27	8	81	22	2	0	26	13	13	10	18
01-Oct	165	13	45	123	15	4	1	21	7	13	3	17
02-Oct	141	0	83	119	30	2	7	24	12	0	36	7
03-Oct	110	9	75	105	8	6	8	17	4	3	29	8
04-Oct	162	23	65	95	29	2	7	29	8	0	2	9
05-Oct	161	18	130	98	17	3	24	24	14	2	0	14
06-Oct	171	42	85	91	30	0	26	19	12	1	0	18
07-Oct	197	72	62	32	32	11	6	13	41	13	0	5
08-Oct	95	108	19	92	29	27	0	55	25	11	0	27
09-Oct	121	114	3	58	20	39	1	14	15	20	0	13
10-Oct	232	150	4	10	33	95	2	28	9	54	0	34
11-Oct	377	64	45	26	90	51	0	21	23	28	0	50

12-Oct	388	97	104	13	69	51	4	5	46	23	0	5
13-Oct	266	132	120	154	47	91	15	29	36	42	0	19
Total	3611	1057	987	1230	527	389	102	374	296	243	80	259

Number of Paddy Residue Burning Events Detected

Date	Delhi				Rajasthan				Madhya Pradesh			
	2020	2021	2022	2023	2020	2021	2022	2023	2020	2021	2022	2023
15-Sep	0	0	0	0	1	0	0	0	2	0	0	0
16-Sep	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
18-Sep	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	1
20-Sep	0	0	0	0	0	0	0	0	0	0	0	1
21-Sep	0	0	0	0	1	0	1	0	2	0	0	0
22-Sep	0	0	0	0	0	0	0	0	0	0	0	0
23-Sep	0	0	0	0	1	0	0	0	0	0	0	0
24-Sep	0	0	0	0	0	0	0	0	0	0	0	0
25-Sep	0	0	0	0	1	0	0	0	0	0	0	1
26-Sep	0	0	0	1	1	0	0	0	2	0	0	0
27-Sep	0	0	0	0	0	0	0	0	1	0	0	0
28-Sep	0	0	0	0	0	0	0	0	1	1	0	2
29-Sep	0	0	0	0	3	0	0	6	0	4	0	5
30-Sep	1	0	0	0	1	0	0	4	5	0	0	11
01-Oct	0	0	0	0	4	1	1	4	13	0	1	8
02-Oct	1	0	0	0	7	0	3	4	12	0	1	1
03-Oct	0	0	0	0	9	0	2	5	5	1	5	5
04-Oct	0	0	0	0	15	0	0	22	4	2	0	12
05-Oct	0	0	2	0	14	0	1	11	13	1	0	18
06-Oct	1	0	0	0	16	0	0	9	37	1	0	7
07-Oct	0	0	0	0	14	1	1	7	31	1	0	9
08-Oct	0	0	0	0	11	0	0	9	17	2	0	18
09-Oct	0	0	0	0	12	0	0	17	15	4	0	24
10-Oct	0	0	0	0	14	1	0	26	18	10	0	52

11-Oct	0	0	0	1	21	7	1	21	32	2	0	24
12-Oct	0	0	0	0	24	1	2	1	44	1	1	1
13-Oct	0	0	0	0	7	5	2	28	21	2	7	32
Total	3	0	2	2	177	16	14	174	275	32	15	232

Details of residue burning events in Punjab on 13-Oct-2023

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m2)
1	AMRITSAR	AJNALA	S-NPP	31.81565	74.81370	14:12:09	D	2.20
2	AMRITSAR	AJNALA	S-NPP	31.85326	74.65945	14:12:09	D	4.50
3	AMRITSAR	AJNALA	S-NPP	31.85355	74.66336	14:12:09	D	4.50
4	AMRITSAR	AJNALA	S-NPP	31.85572	74.66027	14:12:09	D	5.00
5	AMRITSAR	AJNALA	S-NPP	31.98029	74.88526	14:12:09	D	2.70
6	AMRITSAR	AJNALA	S-NPP	31.98167	74.88538	14:12:09	D	3.60
7	AMRITSAR	AJNALA	AQUA	31.85600	74.65400	14:05:40	D	15.70
8	AMRITSAR	AJNALA	AQUA	31.85700	74.66500	14:05:40	D	9.60
9	AMRITSAR	ATTARI	S-NPP	31.57927	74.75247	14:12:09	D	1.80
10	AMRITSAR	ATTARI	S-NPP	31.58204	74.79182	14:12:09	D	5.40
11	AMRITSAR	ATTARI	S-NPP	31.62795	74.56370	14:12:09	D	3.20
12	AMRITSAR	ATTARI	AQUA	31.57900	74.79000	14:05:40	D	38.00
13	AMRITSAR	CHOGAWAN	S-NPP	31.77807	74.58819	14:12:09	D	2.70
14	AMRITSAR	CHOGAWAN	S-NPP	31.83718	74.66092	14:12:09	D	3.60
15	AMRITSAR	CHOGAWAN	S-NPP	31.85062	74.66468	14:12:09	D	5.00
16	AMRITSAR	JANDIALA GURU	S-NPP	31.55123	75.07357	14:12:09	D	4.30
17	AMRITSAR	JANDIALA GURU	S-NPP	31.55188	75.07383	14:12:09	D	4.30
18	AMRITSAR	JANDIALA GURU	S-NPP	31.55671	75.07308	14:12:09	D	7.80
19	AMRITSAR	JANDIALA GURU	S-NPP	31.55730	75.08128	14:12:09	D	4.80
20	AMRITSAR	JANDIALA GURU	S-NPP	31.55736	75.07332	14:12:09	D	4.30
21	AMRITSAR	JANDIALA GURU	S-NPP	31.55762	75.07743	14:12:09	D	4.30
22	AMRITSAR	JANDIALA GURU	S-NPP	31.55790	75.08154	14:12:09	D	5.20
23	AMRITSAR	JANDIALA GURU	S-NPP	31.59730	75.01219	14:12:09	D	8.10
24	AMRITSAR	JANDIALA GURU	AQUA	31.52400	74.99200	14:05:40	D	4.90
25	AMRITSAR	JANDIALA GURU	AQUA	31.52700	75.07900	14:05:40	D	6.80
26	AMRITSAR	JANDIALA GURU	AQUA	31.55400	75.07400	14:05:40	D	17.30
27	AMRITSAR	JANDIALA GURU	AQUA	31.55500	75.08500	14:05:40	D	5.40
28	AMRITSAR	JANDIALA GURU	AQUA	31.57900	75.06400	14:05:40	D	8.40
29	AMRITSAR	JANDIALA GURU	AQUA	31.65700	75.02100	14:05:40	D	6.90

30	AMRITSAR	MAJITHA	S-NPP	31.68640	75.02419	14:12:09	D	3.60
31	AMRITSAR	MAJITHA	S-NPP	31.74957	74.96924	12:33:17	D	5.20
32	AMRITSAR	MAJITHA	S-NPP	31.75636	75.00158	14:12:09	D	3.10
33	AMRITSAR	MAJITHA	S-NPP	31.75665	75.00565	14:12:09	D	4.70
34	AMRITSAR	MAJITHA	S-NPP	31.75724	75.00174	14:12:09	D	4.20
35	AMRITSAR	MAJITHA	S-NPP	31.78622	74.94176	14:12:09	D	4.60
36	AMRITSAR	MAJITHA	S-NPP	31.79523	74.99421	14:12:09	D	4.60
37	AMRITSAR	MAJITHA	AQUA	31.73000	75.01800	14:05:40	D	7.10
38	AMRITSAR	RAYYA	S-NPP	31.51685	75.13447	14:12:09	D	2.60
39	AMRITSAR	RAYYA	S-NPP	31.57196	75.20907	14:12:09	D	1.90
40	AMRITSAR	RAYYA	S-NPP	31.57726	75.20903	14:12:09	D	3.90
41	AMRITSAR	RAYYA	S-NPP	31.66476	75.20107	14:12:09	D	3.60
42	AMRITSAR	RAYYA	S-NPP	31.66566	75.20132	14:12:09	D	3.10
43	AMRITSAR	TARSIKKA	S-NPP	31.60706	75.15608	14:12:09	D	3.40
44	AMRITSAR	TARSIKKA	S-NPP	31.61453	75.18475	14:12:09	D	2.50
45	AMRITSAR	TARSIKKA	S-NPP	31.63350	75.05828	14:12:09	D	5.30
46	AMRITSAR	TARSIKKA	S-NPP	31.68742	75.20750	14:12:09	D	4.00
47	AMRITSAR	TARSIKKA	S-NPP	31.68837	75.20782	14:12:09	D	3.30
48	AMRITSAR	TARSIKKA	AQUA	31.60000	75.14800	14:05:40	D	11.80
49	AMRITSAR	TARSIKKA	AQUA	31.60100	75.15900	14:05:40	D	18.20
50	AMRITSAR	TARSIKKA	AQUA	31.64100	75.04100	14:05:40	D	7.90
51	AMRITSAR	TARSIKKA	AQUA	31.68100	75.20400	14:05:40	D	6.70
52	AMRITSAR	VERKA	S-NPP	31.68455	74.75789	14:12:09	D	2.30
53	AMRITSAR	VERKA	S-NPP	31.70900	74.95258	14:12:09	D	5.70
54	AMRITSAR	VERKA	S-NPP	31.70927	74.95664	14:12:09	D	5.70
55	BATHINDA	GONIANA MANDI	S-NPP	30.27364	74.87929	14:12:09	D	2.70
56	FATEHGARH SAHIB	AMLOH	AQUA	30.58000	76.11900	14:05:40	D	5.40
57	FATEHGARH SAHIB	AMLOH	AQUA	30.58100	76.13100	14:05:40	D	12.00
58	FATEHGARH SAHIB	BASSI PATHANAN	AQUA	30.66400	76.43700	14:05:40	D	5.30
59	FATEHGARH SAHIB	BASSI PATHANAN	AQUA	30.69300	76.36100	14:05:40	D	7.20
60	FATEHGARH SAHIB	BASSI PATHANAN	AQUA	30.69400	76.37300	14:05:40	D	11.40
61	FIROZPUR	FIROZPUR	AQUA	30.93300	74.51000	14:05:40	D	15.80
62	FIROZPUR	GHALL KHURD	S-NPP	30.85711	74.88129	14:12:09	D	1.50

63	FIROZPUR	GHALL KHURD	S-NPP	30.96065	74.70647	14:12:09	D	4.60
64	FIROZPUR	GURUHAR SAHAI	S-NPP	30.64748	74.47028	14:12:09	D	6.70
65	FIROZPUR	GURUHAR SAHAI	S-NPP	30.64776	74.47393	14:12:09	D	6.90
66	FIROZPUR	MAMDOT	AQUA	30.79500	74.38900	14:05:40	D	5.50
67	FIROZPUR	ZIRA	S-NPP	31.04129	74.89298	14:12:09	D	2.80
68	GURDASPUR	DHARIWAL	AQUA	31.97700	75.28800	14:05:40	D	7.60
69	JALANDHAR	MEHATPUR	AQUA	30.99600	75.51200	14:05:40	D	5.10
70	KAPURTHALA	KAPURTHALA	S-NPP	31.35202	75.30632	14:12:09	D	2.10
71	KAPURTHALA	SULTANPUR LODHI	S-NPP	31.24723	75.15253	14:12:09	D	3.30
72	KAPURTHALA	SULTANPUR LODHI	S-NPP	31.24735	75.15315	14:12:09	D	5.30
73	KAPURTHALA	SULTANPUR LODHI	S-NPP	31.27389	75.22075	14:12:09	D	2.40
74	KAPURTHALA	SULTANPUR LODHI	S-NPP	31.27412	75.14185	14:12:09	D	2.20
75	KAPURTHALA	SULTANPUR LODHI	S-NPP	31.35957	75.17601	14:12:09	D	3.40
76	KAPURTHALA	SULTANPUR LODHI	AQUA	31.21300	75.27200	14:05:40	D	6.50
77	KAPURTHALA	SULTANPUR LODHI	AQUA	31.23400	75.16300	14:05:40	D	16.00
78	KAPURTHALA	SULTANPUR LODHI	AQUA	31.23500	75.17400	14:05:40	D	24.30
79	KAPURTHALA	SULTANPUR LODHI	AQUA	31.27600	75.13400	14:05:40	D	11.40
80	KAPURTHALA	SULTANPUR LODHI	AQUA	31.27800	75.14400	14:05:40	D	17.80
81	KAPURTHALA	SULTANPUR LODHI	AQUA	31.34700	75.24600	14:05:40	D	5.50
82	KAPURTHALA	SULTANPUR LODHI	AQUA	31.34800	75.25700	14:05:40	D	6.00
83	KAPURTHALA	SULTANPUR LODHI	AQUA	31.36200	75.22100	14:05:40	D	11.20
84	LUDHIANA	JAGRAON	S-NPP	30.71701	75.40151	14:12:09	D	4.00
85	LUDHIANA	MACHHIWARA	S-NPP	30.88205	76.28734	14:12:09	D	3.10
86	LUDHIANA	MACHHIWARA	AQUA	30.87700	76.29400	14:05:40	D	6.50
87	LUDHIANA	MACHHIWARA	AQUA	30.96100	76.22600	14:05:40	D	7.90
88	LUDHIANA	PAKHOWAL	S-NPP	30.69219	75.69466	14:12:09	D	3.20
89	LUDHIANA	SUDHAR	S-NPP	30.77292	75.66671	14:12:09	D	6.60
90	LUDHIANA	SUDHAR	S-NPP	30.77320	75.67104	14:12:09	D	7.40
91	LUDHIANA	SUDHAR	S-NPP	30.77548	75.67024	14:12:09	D	8.30
92	MANSA	BUDHLADA	AQUA	29.85100	75.62200	14:05:40	D	11.60
93	MANSA	SARDULGARH	S-NPP	29.63005	75.29668	14:12:09	D	4.30
94	MANSA	SARDULGARH	S-NPP	29.79501	75.21405	14:12:09	D	2.90
95	MANSA	SARDULGARH	AQUA	29.62200	75.28900	14:05:40	D	9.80

96	MOGA	KOT ISE KHAN AT DHARAMKOT	S-NPP	30.93929	75.33579	14:12:09	D	2.20
97	MOGA	KOT ISE KHAN AT DHARAMKOT	S-NPP	30.94435	75.33369	14:12:09	D	6.50
98	MOGA	KOT ISE KHAN AT DHARAMKOT	S-NPP	30.94482	75.33533	14:12:09	D	2.70
99	PATIALA	GHANAUR	S-NPP	30.38517	76.61716	14:12:09	D	3.50
100	PATIALA	GHANAUR	S-NPP	30.38862	76.61385	14:12:09	D	6.30
101	PATIALA	NABHA	S-NPP	30.34241	76.09566	12:33:17	D	4.20
102	PATIALA	NABHA	S-NPP	30.37959	76.26269	14:12:09	D	6.40
103	PATIALA	NABHA	S-NPP	30.37964	76.26404	14:12:09	D	8.00
104	PATIALA	PATIALA	AQUA	30.29400	76.26800	14:05:40	D	11.60
105	PATIALA	PATIALA	AQUA	30.29600	76.27900	14:05:40	D	10.30
106	PATIALA	PATRAN	S-NPP	29.96197	76.12103	14:12:09	D	3.60
107	PATIALA	PATRAN	S-NPP	29.97272	76.08947	14:12:09	D	3.70
108	PATIALA	PATRAN	AQUA	29.86600	76.21200	14:05:40	D	16.40
109	PATIALA	RAJPURA	S-NPP	30.51223	76.68357	14:12:09	D	6.20
110	PATIALA	RAJPURA	S-NPP	30.57361	76.76517	14:12:09	D	2.40
111	PATIALA	RAJPURA	S-NPP	30.57520	76.59543	14:12:09	D	3.20
112	PATIALA	RAJPURA	AQUA	30.51300	76.54600	14:05:40	D	5.90
113	PATIALA	RAJPURA	AQUA	30.57000	76.76500	14:05:40	D	8.30
114	PATIALA	RAJPURA	AQUA	30.57300	76.58900	14:05:40	D	6.00
115	PATIALA	SAMANA	S-NPP	30.18301	76.08916	12:33:17	D	11.60
116	PATIALA	SAMANA	AQUA	30.21200	76.26500	14:05:40	D	6.50
117	PATIALA	SHAMBU KALAN	S-NPP	30.40489	76.70295	12:33:17	D	4.50
118	PATIALA	SHAMBU KALAN	S-NPP	30.44137	76.69895	14:12:09	D	3.10
119	SANGRUR	ANDANA	S-NPP	29.79744	75.84311	14:12:09	D	8.30
120	SANGRUR	BHAWANIGARH	S-NPP	30.20353	76.06042	14:12:09	D	6.40
121	SANGRUR	BHAWANIGARH	AQUA	30.25200	76.16100	14:05:40	D	40.10
122	SANGRUR	BHAWANIGARH	AQUA	30.25400	76.17200	14:05:40	D	15.10
123	SANGRUR	DIRBA	S-NPP	30.17054	76.02152	14:12:09	D	3.30
124	SANGRUR	SUNAM	S-NPP	30.13724	75.83461	14:12:09	D	5.70
125	SAS NAGAR (MOHALI)	DERABASSI	S-NPP	30.50942	76.82961	14:12:09	D	2.40
126	SAS NAGAR (MOHALI)	DERABASSI	S-NPP	30.52744	76.79897	14:12:09	D	6.60
127	TARN TARAN	BHIKHIWIND	S-NPP	31.28680	74.63094	14:12:09	D	4.40
128	TARN TARAN	BHIKHIWIND	AQUA	31.28100	74.62700	14:05:40	D	11.20

129	TARN TARAN	BHIKHIWIND	AQUA	31.28200	74.63800	14:05:40	D	7.00
130	TARN TARAN	BHIKHIWIND	AQUA	31.42400	74.66300	14:05:40	D	4.50
131	TARN TARAN	CHOHLA SAHIB	S-NPP	31.38503	75.06211	14:12:09	D	9.40
132	TARN TARAN	GANDIWIND TATLA	AQUA	31.55200	74.79600	14:05:40	D	4.70
133	TARN TARAN	KHADUR SAHIB	S-NPP	31.38475	75.05803	14:12:09	D	8.20
134	TARN TARAN	KHADUR SAHIB	S-NPP	31.39006	75.13583	14:12:09	D	3.50
135	TARN TARAN	KHADUR SAHIB	S-NPP	31.40482	75.10963	14:12:09	D	5.90
136	TARN TARAN	KHADUR SAHIB	S-NPP	31.40681	75.13842	14:12:09	D	4.00
137	TARN TARAN	KHADUR SAHIB	S-NPP	31.43910	75.09886	12:33:17	D	3.90
138	TARN TARAN	KHADUR SAHIB	S-NPP	31.50109	75.06562	14:12:09	D	6.50
139	TARN TARAN	KHADUR SAHIB	AQUA	31.38600	75.13400	14:05:40	D	5.50
140	TARN TARAN	KHADUR SAHIB	AQUA	31.41300	75.12900	14:05:40	D	14.10
141	TARN TARAN	KHADUR SAHIB	AQUA	31.50200	75.02900	14:05:40	D	7.80
142	TARN TARAN	NAUSHERA PANNUAN	AQUA	31.40900	75.03100	14:05:40	D	6.20
143	TARN TARAN	PATTI	S-NPP	31.22567	74.93155	14:12:09	D	1.50
144	TARN TARAN	PATTI	S-NPP	31.22696	74.93058	14:12:09	D	2.50
145	TARN TARAN	TARN TARAN	S-NPP	31.37404	74.82551	14:12:09	D	2.20
146	TARN TARAN	TARN TARAN	S-NPP	31.44862	74.80685	14:12:09	D	6.10
147	TARN TARAN	TARN TARAN	S-NPP	31.53008	74.85632	14:12:09	D	8.80
148	TARN TARAN	TARN TARAN	AQUA	31.43100	74.91800	14:05:40	D	5.70
149	TARN TARAN	TARN TARAN	AQUA	31.51100	75.02700	14:05:40	D	6.60
150	TARN TARAN	TARN TARAN	AQUA	31.51200	75.03800	14:05:40	D	12.10
151	TARN TARAN	VALTOHA	S-NPP	31.10937	74.59166	14:12:09	D	2.40
152	TARN TARAN	VALTOHA	S-NPP	31.11058	74.59198	14:12:09	D	2.00
153	TARN TARAN	VALTOHA	S-NPP	31.14110	74.66128	14:12:09	D	2.90
154	TARN TARAN	VALTOHA	AQUA	31.18000	74.56800	14:05:40	D	6.60

Details of residue burning events in Haryana on 13-Oct-2023

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m2)
1	AMBALA	AMBALA-I	AQUA	30.32200	76.79500	14:05:40	D	6.70
2	AMBALA	BARARA	S-NPP	30.23219	77.00554	14:12:09	D	5.20
3	AMBALA	SAHA	S-NPP	30.28077	76.90443	14:12:09	D	4.40
4	FATEHABAD	BHUNA	S-NPP	29.49158	75.74241	14:12:09	D	3.30
5	FATEHABAD	BHUNA	S-NPP	29.49575	75.74258	14:12:09	D	4.10
6	FATEHABAD	BHUNA	S-NPP	29.56640	75.78728	14:12:09	D	2.80
7	FATEHABAD	BHUNA	AQUA	29.56100	75.79000	14:05:40	D	7.60
8	FATEHABAD	FATEHABAD	AQUA	29.51200	75.35700	14:05:40	D	7.20
9	FATEHABAD	TOHANA	S-NPP	29.69055	75.82131	14:12:09	D	5.00
10	HISAR	BARWALA	S-NPP	29.36556	75.99845	14:12:09	D	2.40
11	JIND	NARWANA	AQUA	29.60200	75.95800	14:05:40	D	7.50
12	JIND	SAFIDON	S-NPP	29.45204	76.60286	14:12:09	D	2.50
13	JIND	SAFIDON	S-NPP	29.45373	76.60221	14:12:09	D	3.80
14	JIND	SAFIDON	AQUA	29.40900	76.67700	14:05:40	D	6.90
15	KAITHAL	KAITHAL	S-NPP	29.70930	76.43056	14:12:09	D	8.90
16	KAITHAL	KAITHAL	AQUA	29.71000	76.42200	14:05:40	D	10.60
17	KAITHAL	KAITHAL	AQUA	29.71100	76.43400	14:05:40	D	9.70
18	KAITHAL	PUNDRI	AQUA	29.62800	76.58100	14:05:40	D	10.40
19	KAITHAL	SIWAN	S-NPP	29.89248	76.20403	14:12:09	D	2.20
20	KAITHAL	SIWAN	AQUA	29.89000	76.20300	14:05:40	D	9.40
21	KARNAL	ASSANDH	S-NPP	29.62646	76.58093	14:12:09	D	6.10
22	KARNAL	CHIRAO	AQUA	29.71900	76.79400	14:05:40	D	6.40
23	KURUKSHETRA	SHAHBAD	S-NPP	30.13138	76.91843	01:22:35	N	2.00
24	KURUKSHETRA	SHAHBAD	AQUA	30.13100	76.91700	14:05:40	D	8.30
25	PALWAL	HODAL	AQUA	27.89800	77.32900	14:05:40	D	13.70
26	PALWAL	HODAL	AQUA	27.90400	77.33300	14:05:40	D	11.10
27	SIRSA	BARAGUNDA	AQUA	29.78600	75.21400	14:05:40	D	6.80
28	YAMUNANAGAR	SADHAURA	S-NPP	30.35258	77.18021	14:12:09	D	3.70
29	YAMUNANAGAR	SADHAURA	S-NPP	30.41533	77.21120	12:33:17	D	1.80

Details of residue burning events in Uttar Pradesh on 13-Oct-2023

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m ²)
1	ALIGARH	IGLAS	S-NPP	27.74917	77.80210	14:12:09	D	4.90
2	ALIGARH	KHAIR	S-NPP	27.97385	77.57249	14:12:09	D	2.90
3	ALIGARH	KHAIR	S-NPP	27.97391	77.57526	14:12:09	D	4.90
4	ALIGARH	KHAIR	S-NPP	27.97417	77.57769	14:12:09	D	3.80
5	ALIGARH	KHAIR	S-NPP	28.01740	77.55838	12:33:17	D	5.80
6	BARABANKI	FATEHPUR	S-NPP	27.22352	81.20287	12:33:17	D	1.80
7	BARABANKI	RAMSANEHIGHAT	S-NPP	26.76971	81.47638	12:33:17	D	2.20
8	BARABANKI	SIRAULI GAUSPUR	S-NPP	26.94186	81.40866	12:33:17	D	2.30
9	KAUSHAMBI	MANJHANPUR	S-NPP	25.46515	81.34206	12:33:17	D	1.90
10	MATHURA	CHHATA	S-NPP	27.68041	77.50835	14:12:09	D	8.70
11	MATHURA	MAT	S-NPP	27.75410	77.79893	14:12:09	D	6.70
12	MATHURA	MAT	AQUA	27.75400	77.79800	14:05:40	D	26.20
13	MATHURA	MAT	AQUA	27.75600	77.81000	14:05:40	D	7.90
14	PILHIBHIT	BISALPUR	S-NPP	28.16313	79.93302	12:33:17	D	3.30
15	PILHIBHIT	PILHIBHIT	S-NPP	28.83307	79.77131	14:12:09	D	4.40
16	PILHIBHIT	PURANPUR	S-NPP	28.62265	80.13744	12:33:17	D	1.90
17	RAMPUR	BILASPUR	AQUA	28.86400	79.35900	14:05:40	D	12.30
18	RAMPUR	BILASPUR	AQUA	28.86600	79.35200	14:05:40	D	10.10
19	SITAPUR	MAHMUDABAD	S-NPP	27.29512	81.21411	12:33:17	D	3.90

Details of residue burning events in Rajasthan on 13-Oct-2023

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m ²)
1	BARAN	ANTA	S-NPP	25.10433	76.24157	14:12:09	D	1.80
2	BARAN	ANTA	S-NPP	25.10466	76.24548	14:12:09	D	1.80
3	BARAN	ATRU	S-NPP	24.77879	76.65738	14:12:09	D	3.70
4	BARAN	CHHABRA	S-NPP	24.68552	76.80708	14:12:09	D	3.40
5	BARAN	CHHABRA	AQUA	24.70200	76.86100	14:05:40	D	12.90
6	BARAN	KISHANGUNJ	S-NPP	24.85345	76.92300	14:12:09	D	3.80
7	BARAN	MANGROL	S-NPP	25.28863	76.32178	14:12:09	D	2.90
8	BARAN	MANGROL	S-NPP	25.39546	76.47366	14:12:09	D	2.10
9	BARAN	SHAHBAD	S-NPP	25.09304	77.15797	14:12:09	D	1.70
10	BARAN	SHAHBAD	S-NPP	25.09440	77.15884	12:33:17	D	5.50
11	BUNDI	KESHORAIPATAN	S-NPP	25.38938	75.87774	14:12:09	D	3.30
12	BUNDI	KESHORAIPATAN	S-NPP	25.39444	75.87348	14:12:09	D	8.90
13	HANUMANGARH	HANUMANGARH	S-NPP	29.60409	74.33453	14:12:09	D	3.90
14	HANUMANGARH	HANUMANGARH	S-NPP	29.60701	74.33508	14:12:09	D	4.10
15	HANUMANGARH	HANUMANGARH	AQUA	29.59800	74.33200	14:05:40	D	9.30
16	HANUMANGARH	HANUMANGARH	AQUA	29.59900	74.34200	14:05:40	D	8.00
17	HANUMANGARH	HANUMANGARH	AQUA	29.60700	74.33000	14:05:40	D	11.80
18	HANUMANGARH	TIBI	S-NPP	29.53023	74.55063	14:12:09	D	9.10
19	HANUMANGARH	TIBI	S-NPP	29.53070	74.55090	14:12:09	D	10.00
20	HANUMANGARH	TIBI	S-NPP	29.55418	74.51641	14:12:09	D	4.00
21	HANUMANGARH	TIBI	S-NPP	29.62440	74.46247	14:12:09	D	2.70
22	HANUMANGARH	TIBI	AQUA	29.52700	74.55000	14:05:40	D	16.70
23	JHALAWAR	KHANPUR	S-NPP	24.80482	76.36822	14:12:09	D	2.70
24	KOTA	DIGOD	S-NPP	25.21106	76.12562	14:12:09	D	2.50
25	KOTA	DIGOD	S-NPP	25.21144	76.12440	14:12:09	D	3.90
26	KOTA	DIGOD	S-NPP	25.27247	76.06441	14:12:09	D	1.90
27	SWAIMADHOPUR	KHANDAR	S-NPP	25.94201	76.66431	14:12:09	D	3.80
28	SWAIMADHOPUR	KHANDAR	AQUA	26.02400	76.70600	14:05:40	D	8.10

Details of residue burning events in Madhya Pradesh on 13-Oct-2023

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m2)
1	ASHOKNAGAR	ASHOKNAGAR	AQUA	24.41200	77.57800	14:05:40	D	7.30
2	ASHOKNAGAR	MUNGAOLI	S-NPP	24.40977	78.06521	12:33:17	D	2.40
3	DATIA	SEONDHA	S-NPP	25.81198	78.50408	12:33:17	D	1.80
4	DHAR	BADNAWAR	S-NPP	23.07161	75.29249	14:12:09	D	2.20
5	DHAR	DHAR	S-NPP	22.65077	75.37606	14:12:09	D	3.80
6	GUNA	GUNA	S-NPP	24.51362	77.35866	14:12:09	D	4.30
7	GUNA	GUNA	S-NPP	24.51947	77.35815	14:12:09	D	4.30
8	GUNA	GUNA	S-NPP	24.75108	77.04430	14:12:09	D	4.90
9	GUNA	GUNA	S-NPP	24.76810	76.91381	12:33:17	D	3.50
10	GUNA	GUNA	S-NPP	24.84647	76.96016	12:33:17	D	6.70
11	GUNA	GUNA	S-NPP	24.84719	76.95741	12:33:17	D	11.20
12	GUNA	GUNA	S-NPP	24.85307	76.95803	12:33:17	D	2.50
13	GUNA	GUNA	S-NPP	24.89582	77.17235	14:12:09	D	6.30
14	GUNA	GUNA	S-NPP	24.89630	77.17226	14:12:09	D	6.20
15	GUNA	GUNA	S-NPP	24.89671	77.17312	12:33:17	D	5.50
16	GUNA	GUNA	S-NPP	24.92001	77.10794	14:12:09	D	3.70
17	GUNA	GUNA	S-NPP	24.92093	77.04622	14:12:09	D	2.10
18	GUNA	GUNA	S-NPP	24.92579	77.10741	14:12:09	D	4.30
19	GUNA	GUNA	S-NPP	24.92614	77.11179	14:12:09	D	6.10
20	GUNA	GUNA	S-NPP	25.02002	76.91059	03:02:52	N	1.10
21	GUNA	GUNA	S-NPP	25.02322	76.91117	03:02:52	N	0.70
22	GUNA	GUNA	S-NPP	25.02492	76.97183	12:33:17	D	5.70
23	GUNA	GUNA	AQUA	24.91900	77.10600	14:05:40	D	41.00
24	GUNA	GUNA	AQUA	24.92000	77.11600	14:05:40	D	16.40
25	HOSHANGABAD	SEONI MALWA	S-NPP	22.53172	77.60669	14:12:09	D	4.60
26	SEHORE	BUDHNI	S-NPP	22.77295	77.42608	12:33:17	D	6.50
27	UJJAIN	BARNAGAR	S-NPP	22.91259	75.36305	14:12:09	D	1.20
28	UJJAIN	BARNAGAR	S-NPP	23.18654	75.43645	14:12:09	D	4.10
29	UJJAIN	UJJAIN	S-NPP	23.07821	75.86323	14:12:09	D	2.30
30	UJJAIN	UJJAIN	S-NPP	23.07860	75.86330	14:12:09	D	2.80
31	VIDESHA	NATERAN	S-NPP	23.85604	77.68092	01:22:35	N	0.60
32	VIDESHA	VIDESHA	S-NPP	23.59473	77.61073	14:12:09	D	3.10

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 (ISRO)**

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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](#)
