



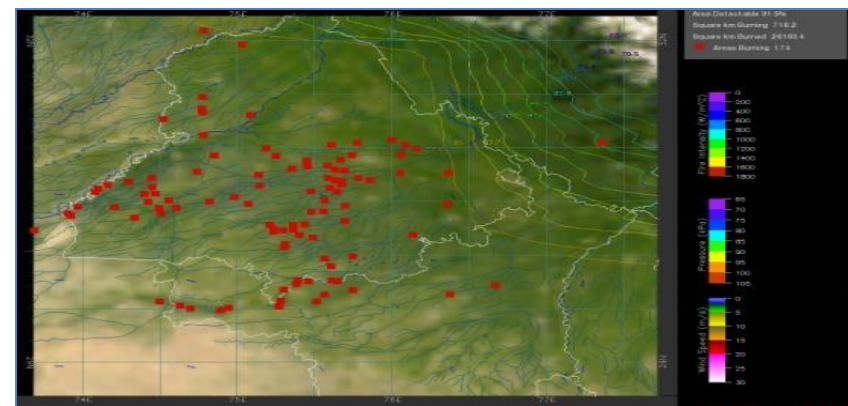
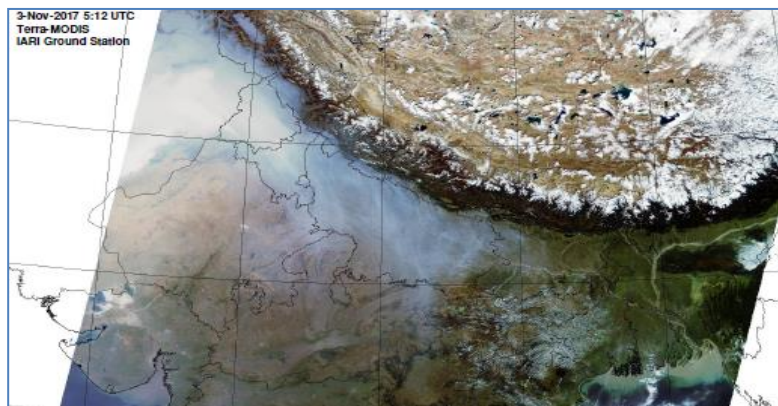
**Bulletin
No. 24**

**Events Date:
08-Oct-2023**

**Issued on:
08-Oct-2023**



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



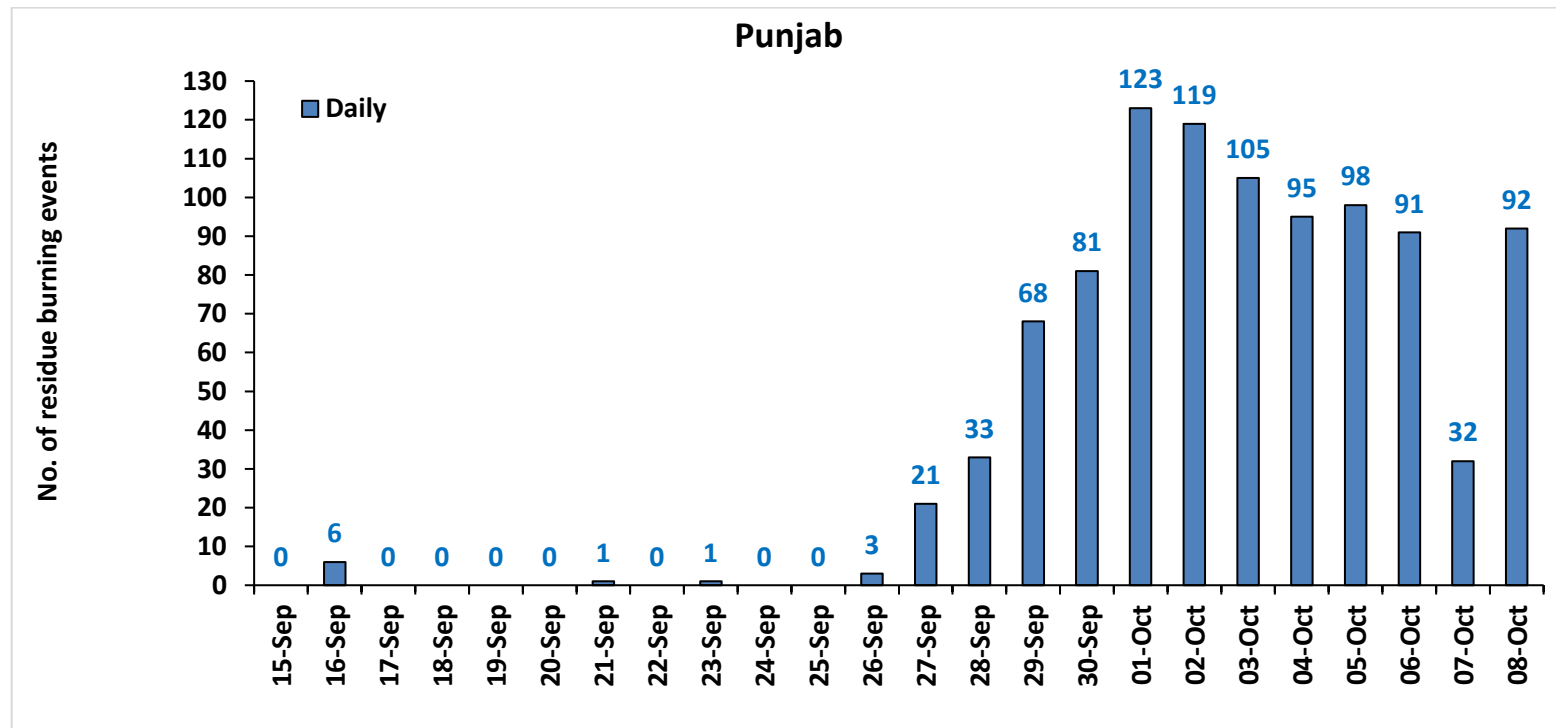
**Consortium for Research on Agroecosystem Monitoring and Modeling from Space (CREAMS) Laboratory,
Division of Agricultural Physics, ICAR – Indian Agricultural Research Institute, New Delhi – 110012**

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

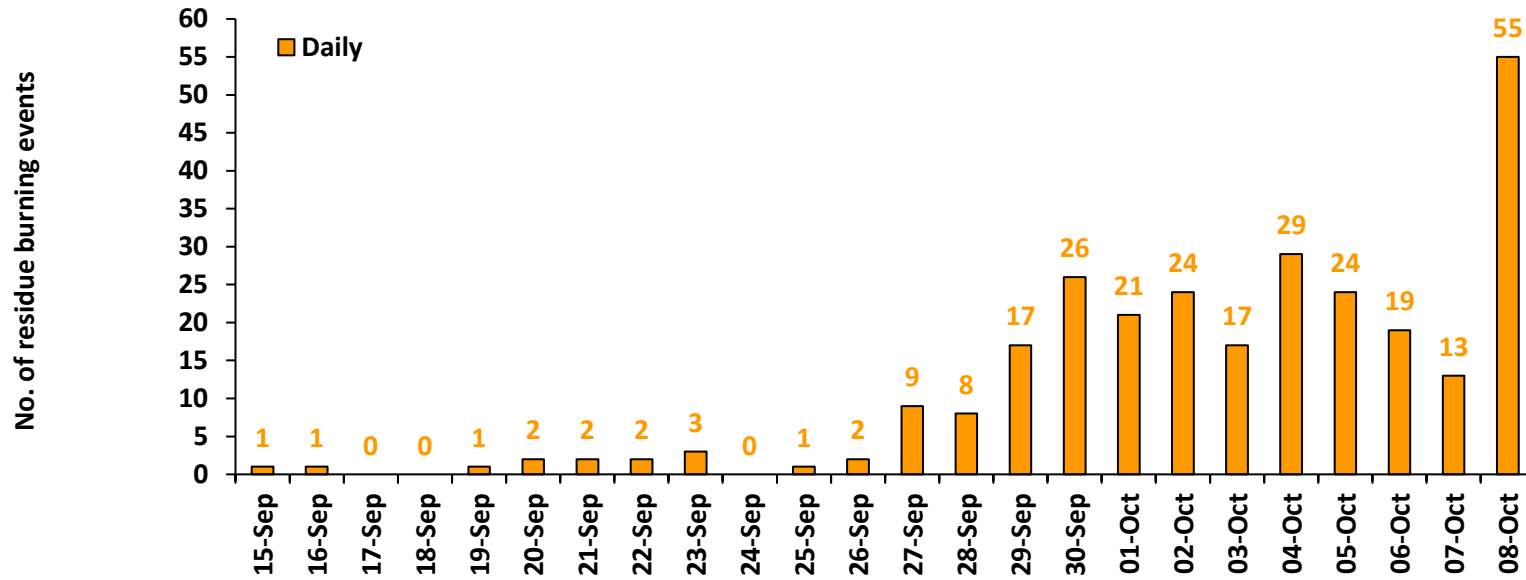
Highlights for 08-Oct-2023

- 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 **201** residue burning events in the six study States on 08-Oct-2023.
- The state wise events detected on 08-Oct-2023 were **92** in Punjab, **55** in Haryana, **09** in UP, **00** in Delhi, **09** in Rajasthan and **18** in MP.
- Total **1565** burning events were detected in the six states between 15-Sept-2023 and 08-Oct-2023, which are distributed as **969**, **277**, **138**, **01**, **81** and **99** in Punjab, Haryana, UP, Delhi, Rajasthan and MP, respectively.

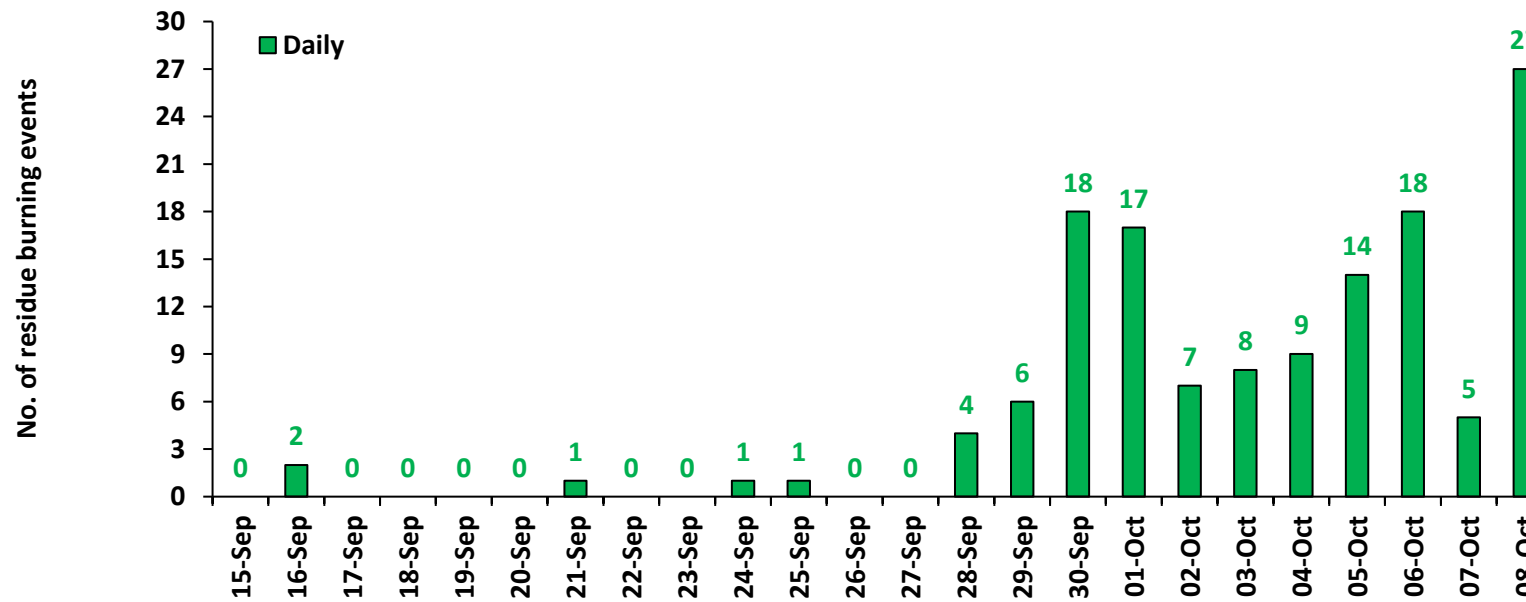
Temporal distribution of rice residue burning events for the study States in 2023



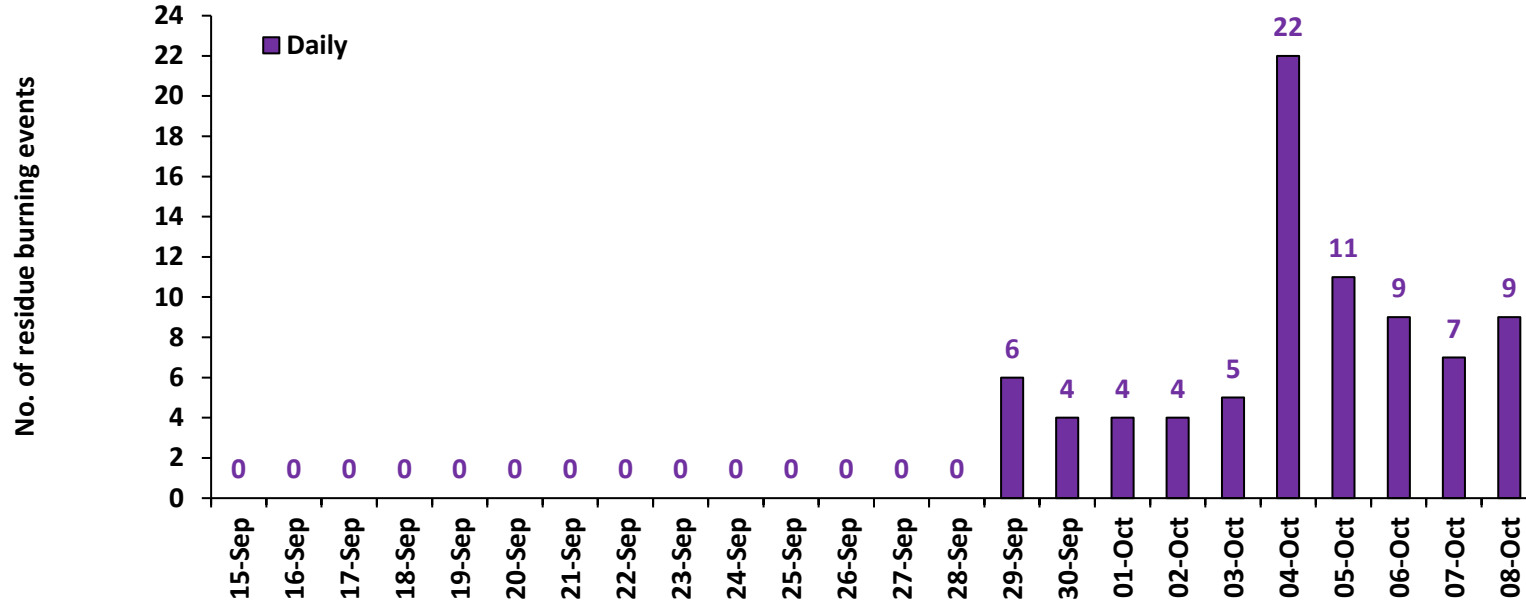
Haryana



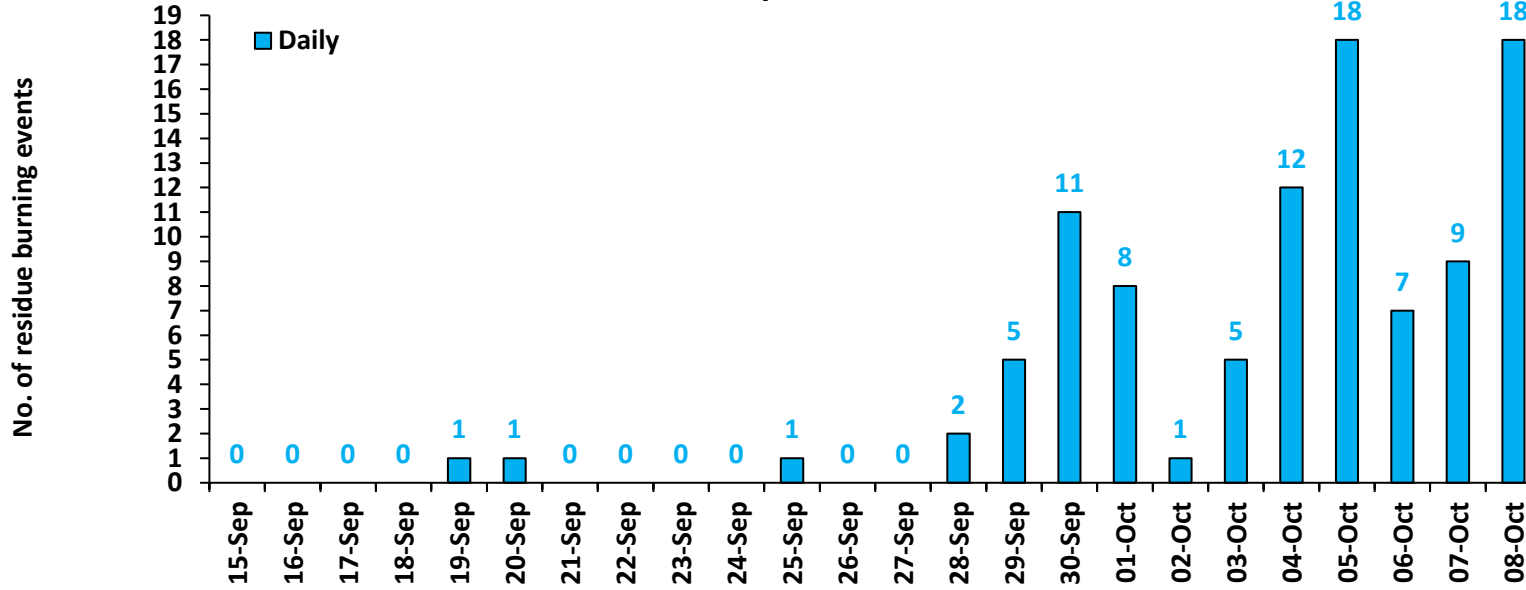
Uttar Pradesh

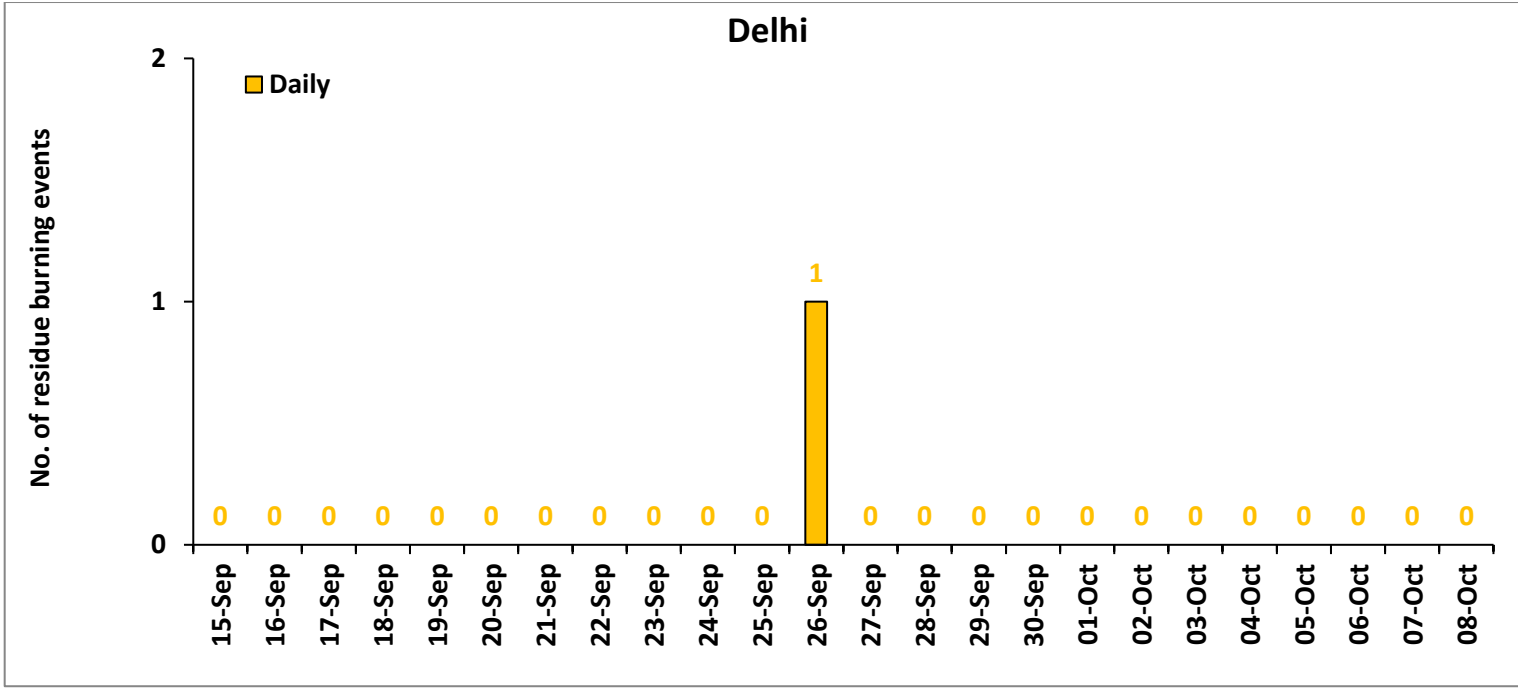


Rajasthan

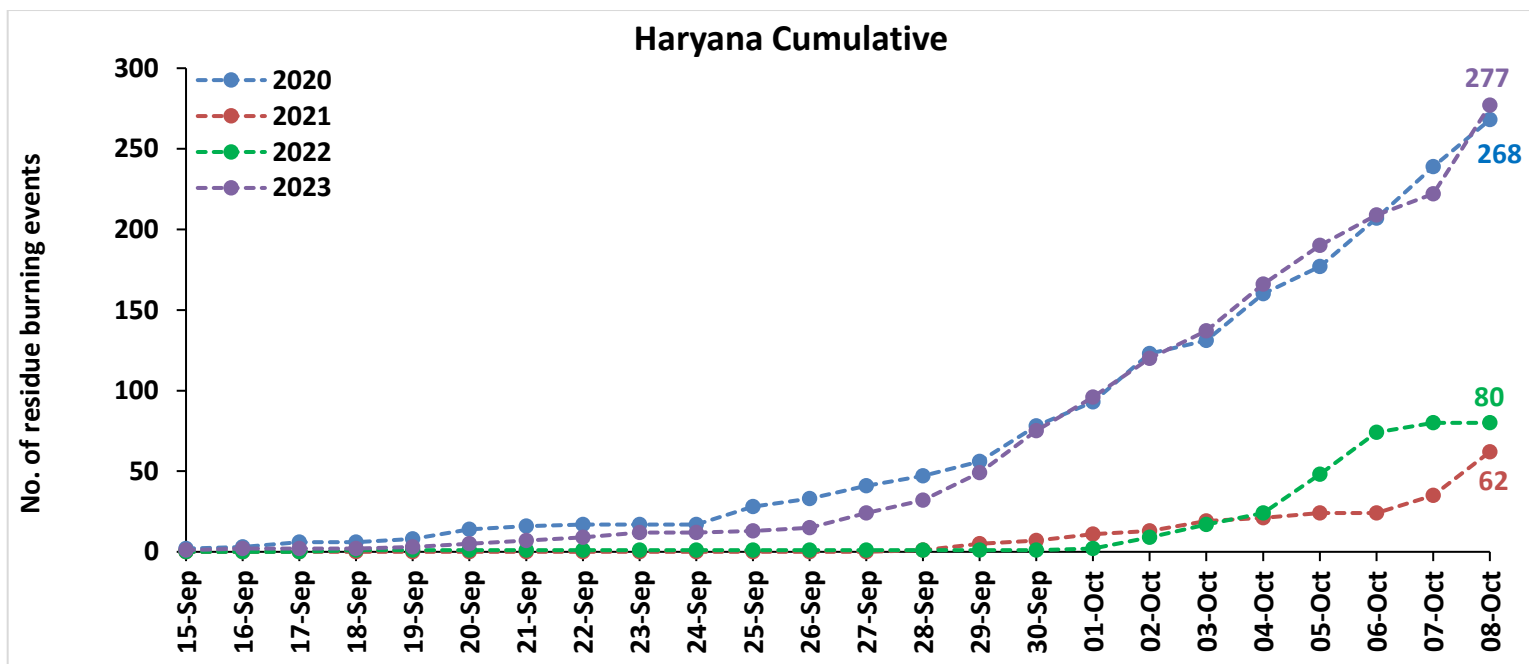
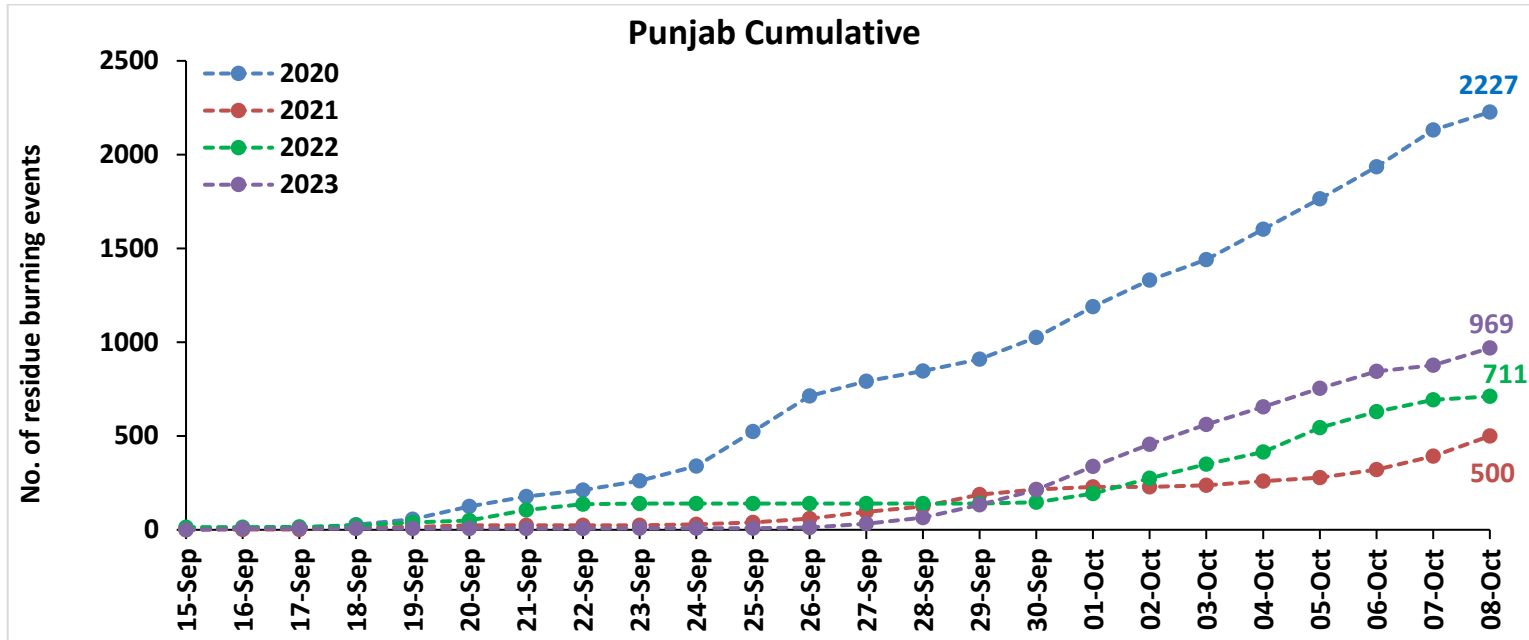


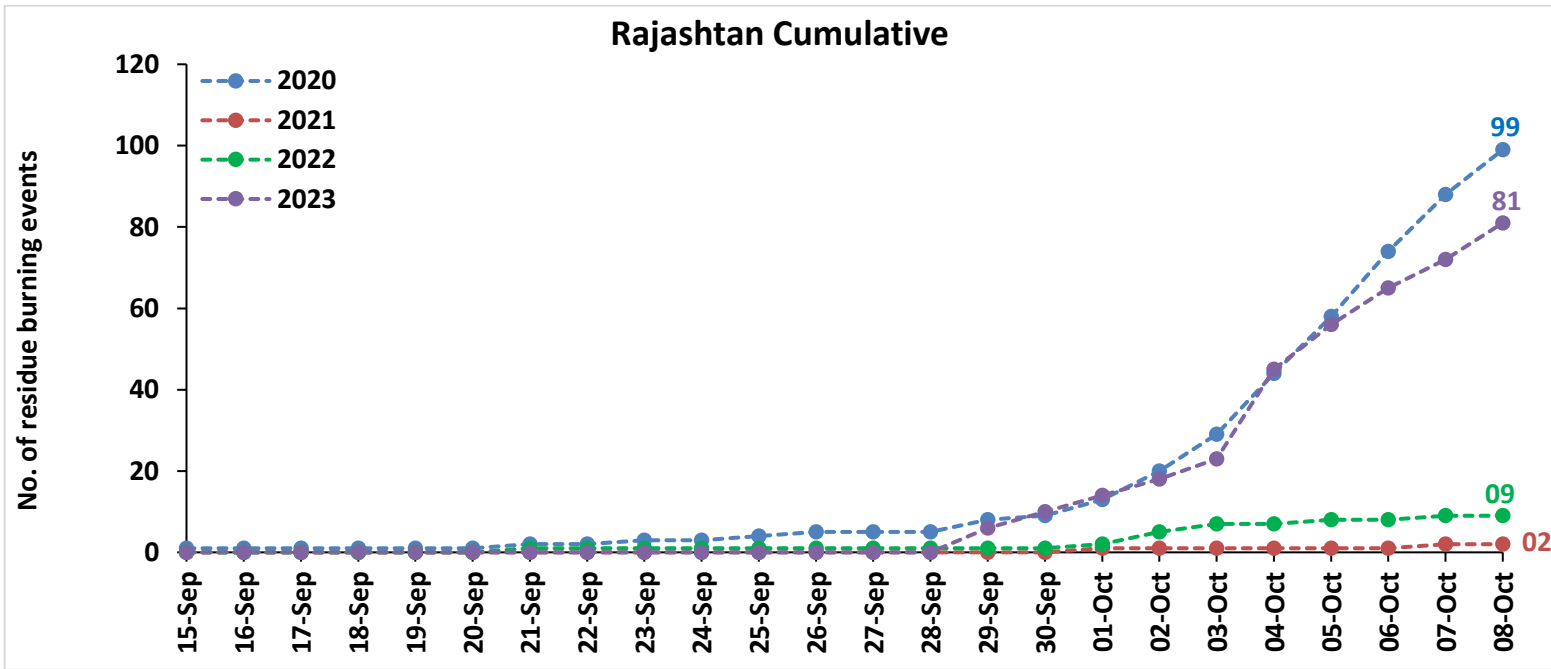
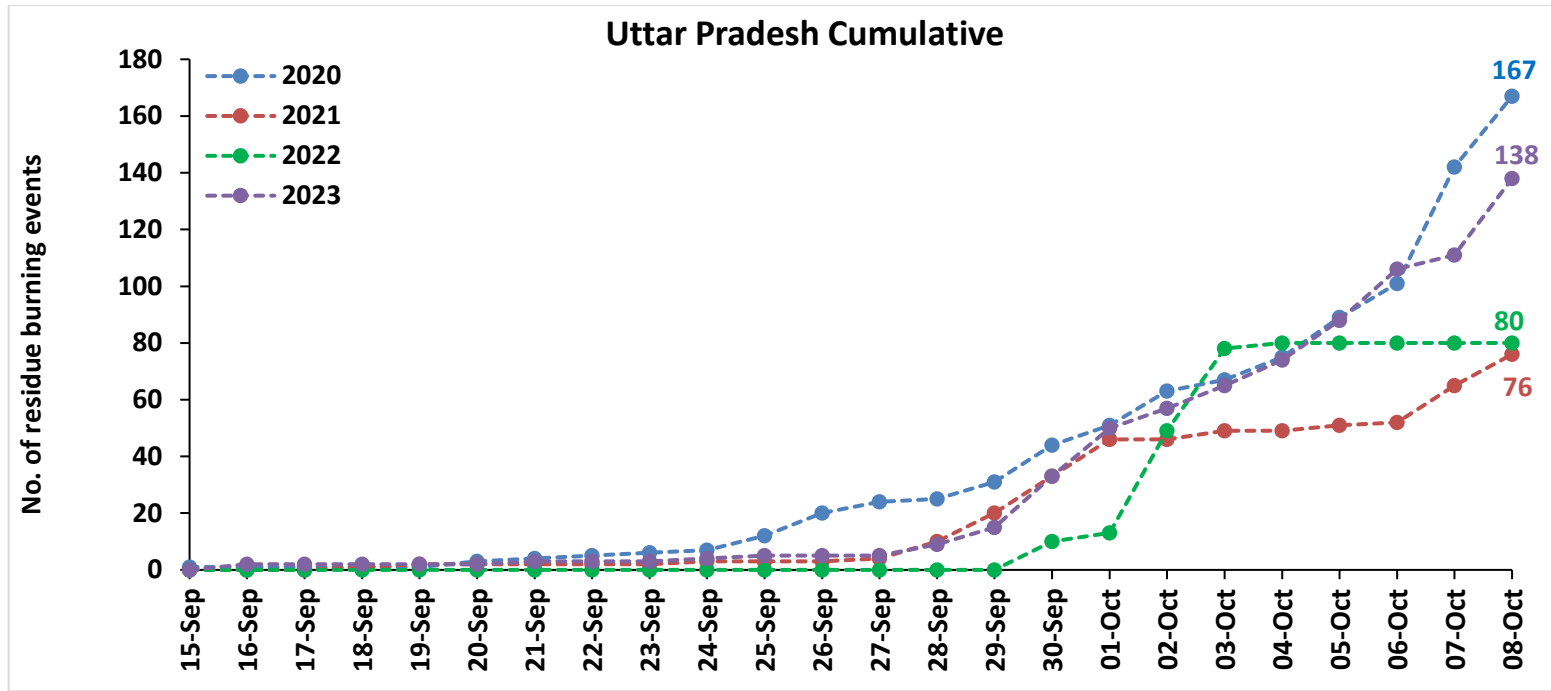
Madhya Pradesh

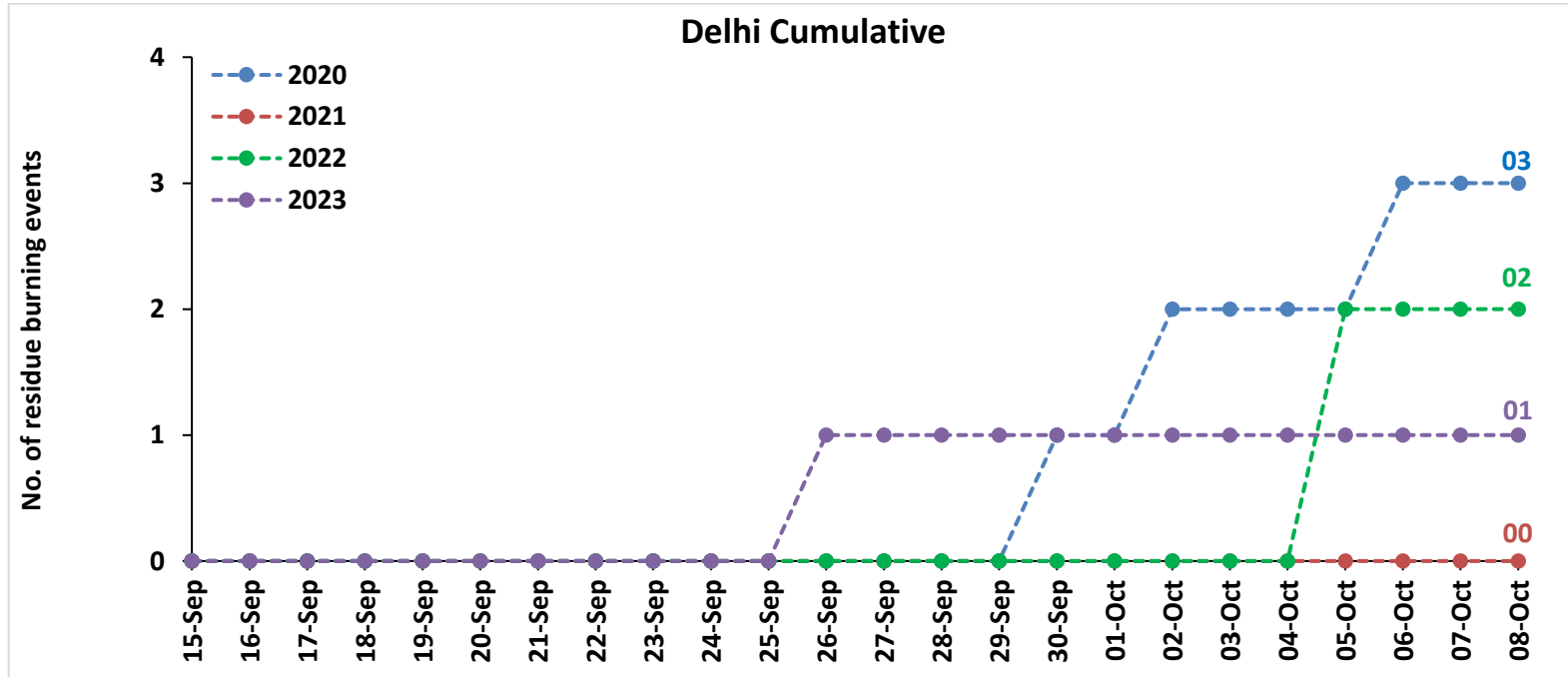
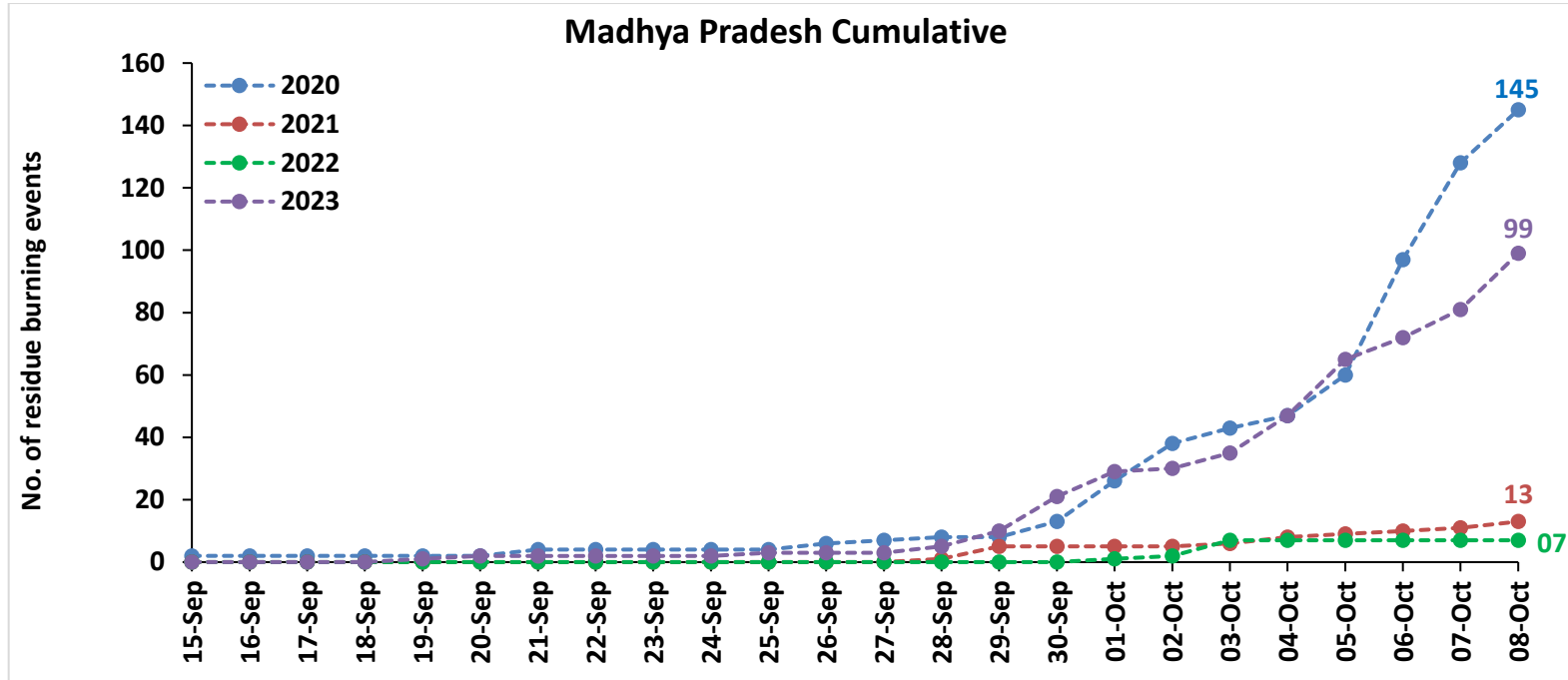




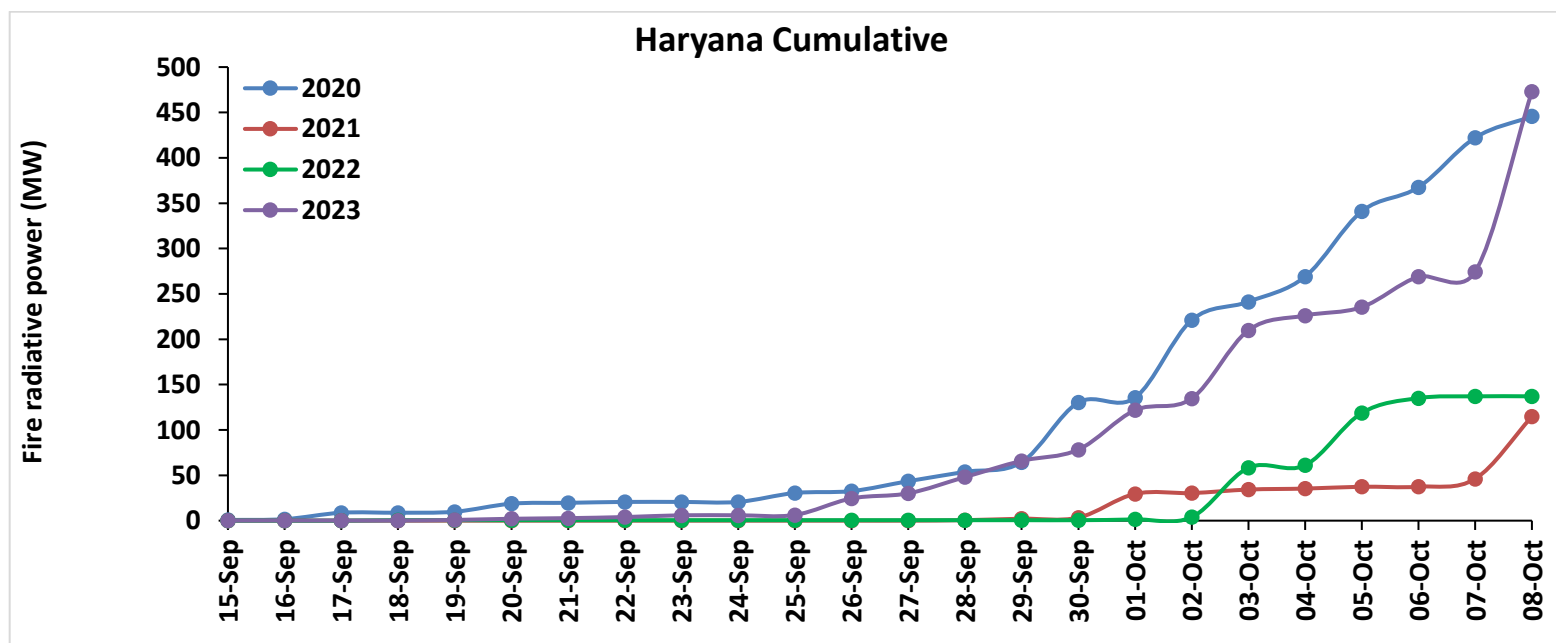
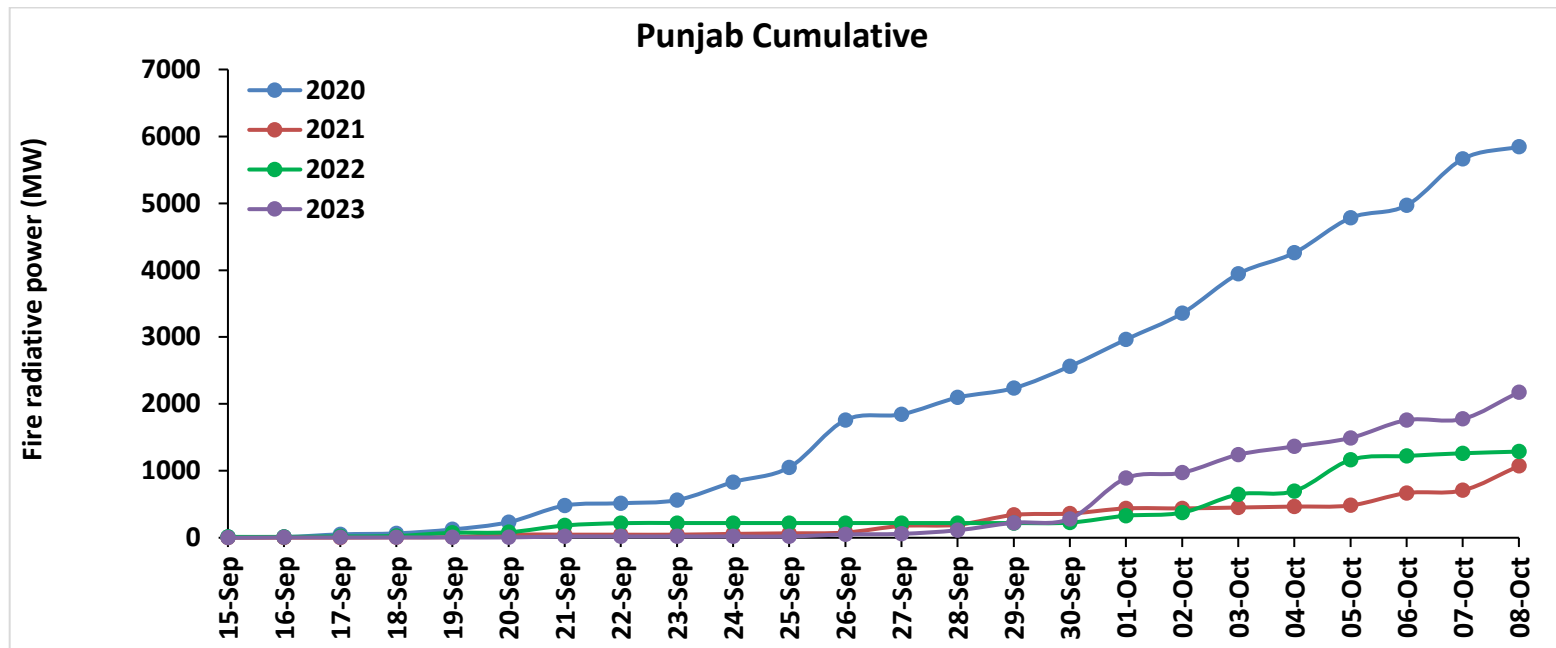
Comparison of residue burning events in current year (2023) with previous years (2020, 2021 and 2022) for the study State

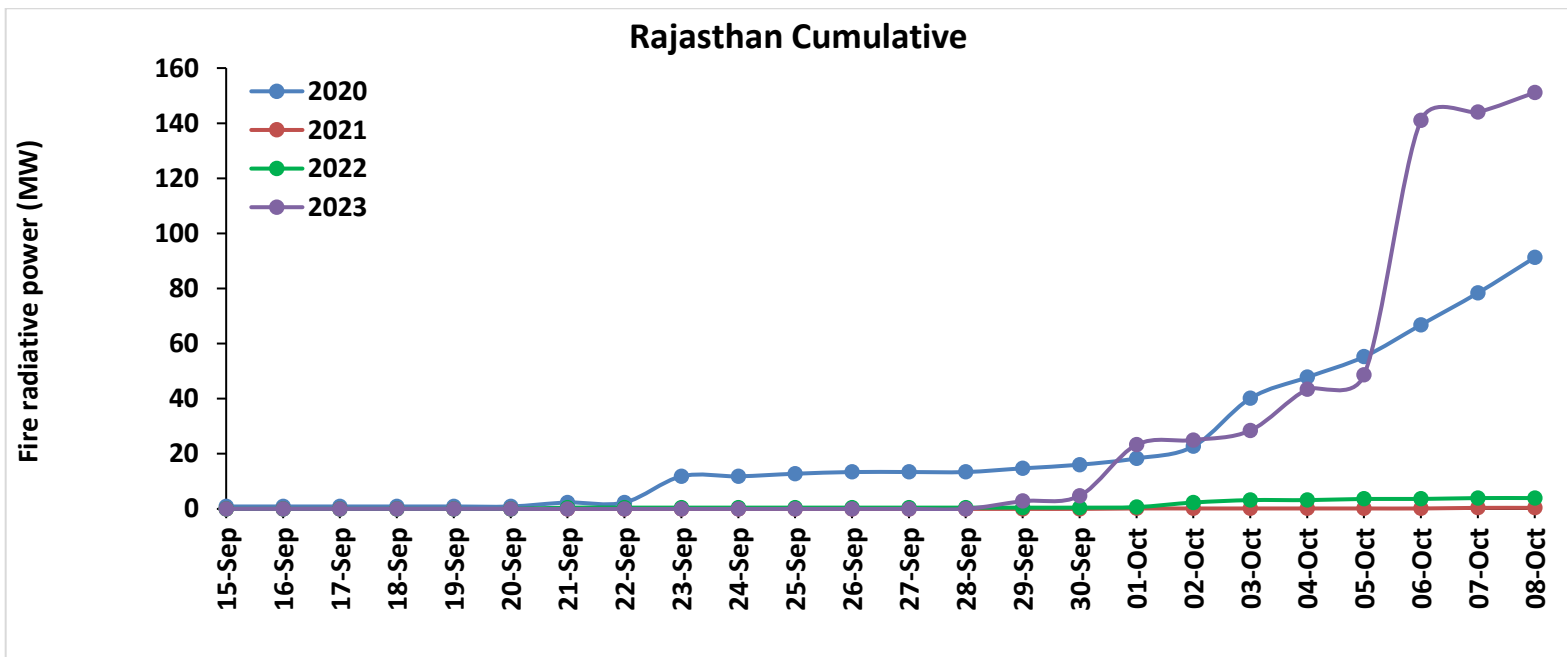
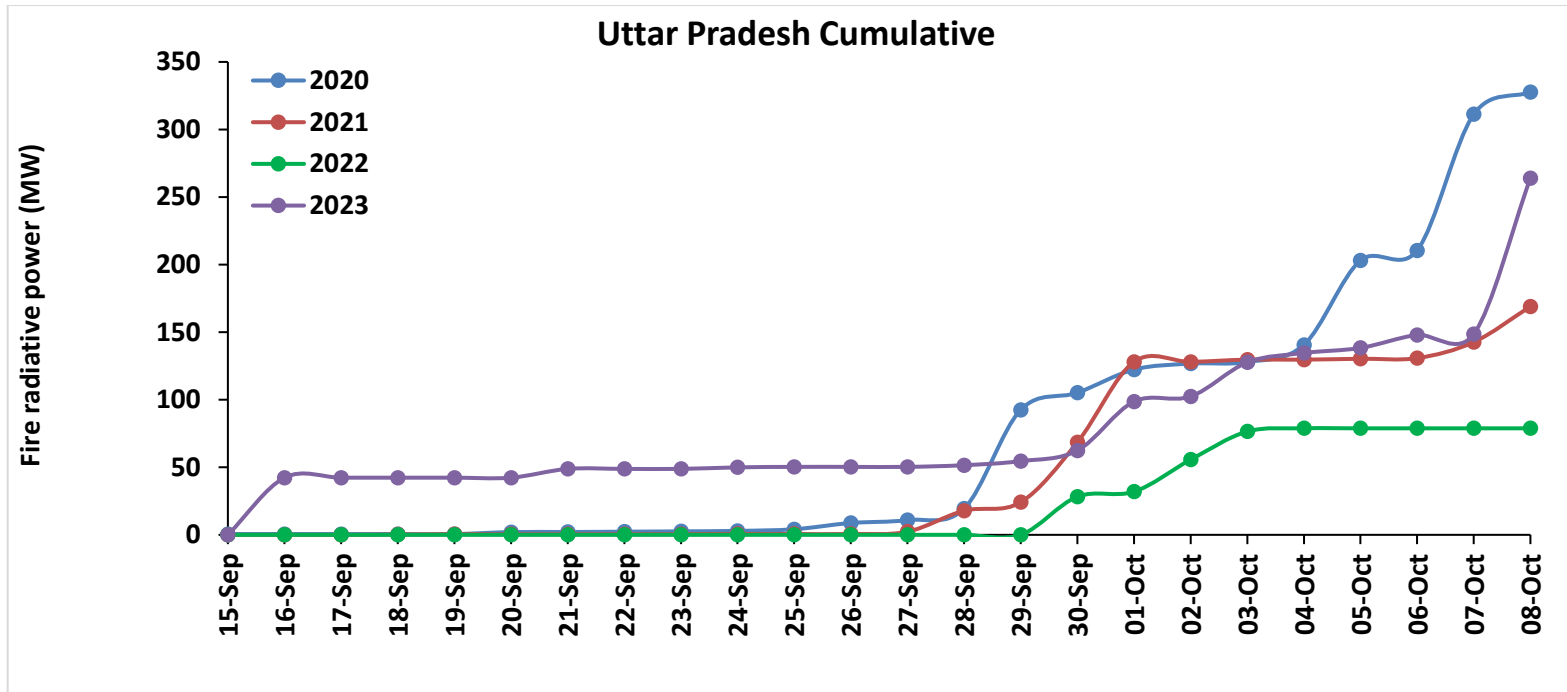


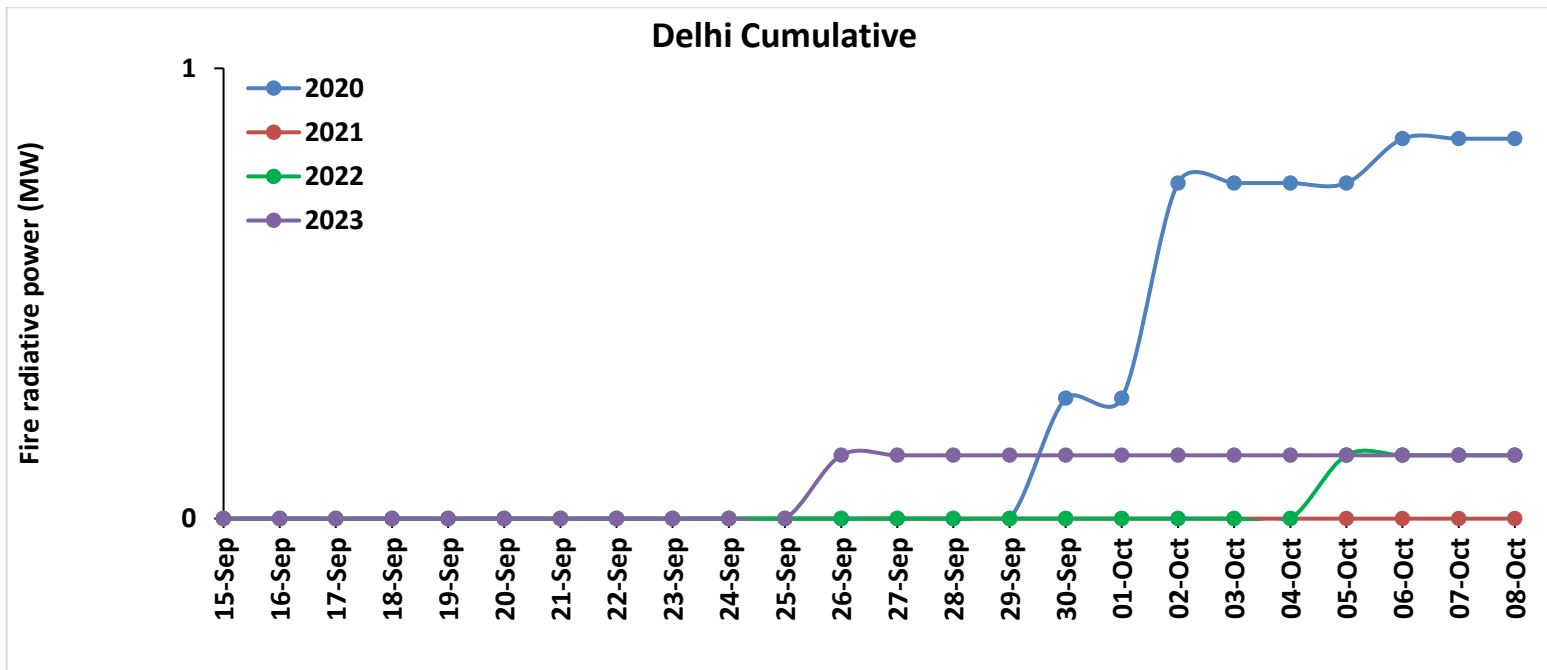
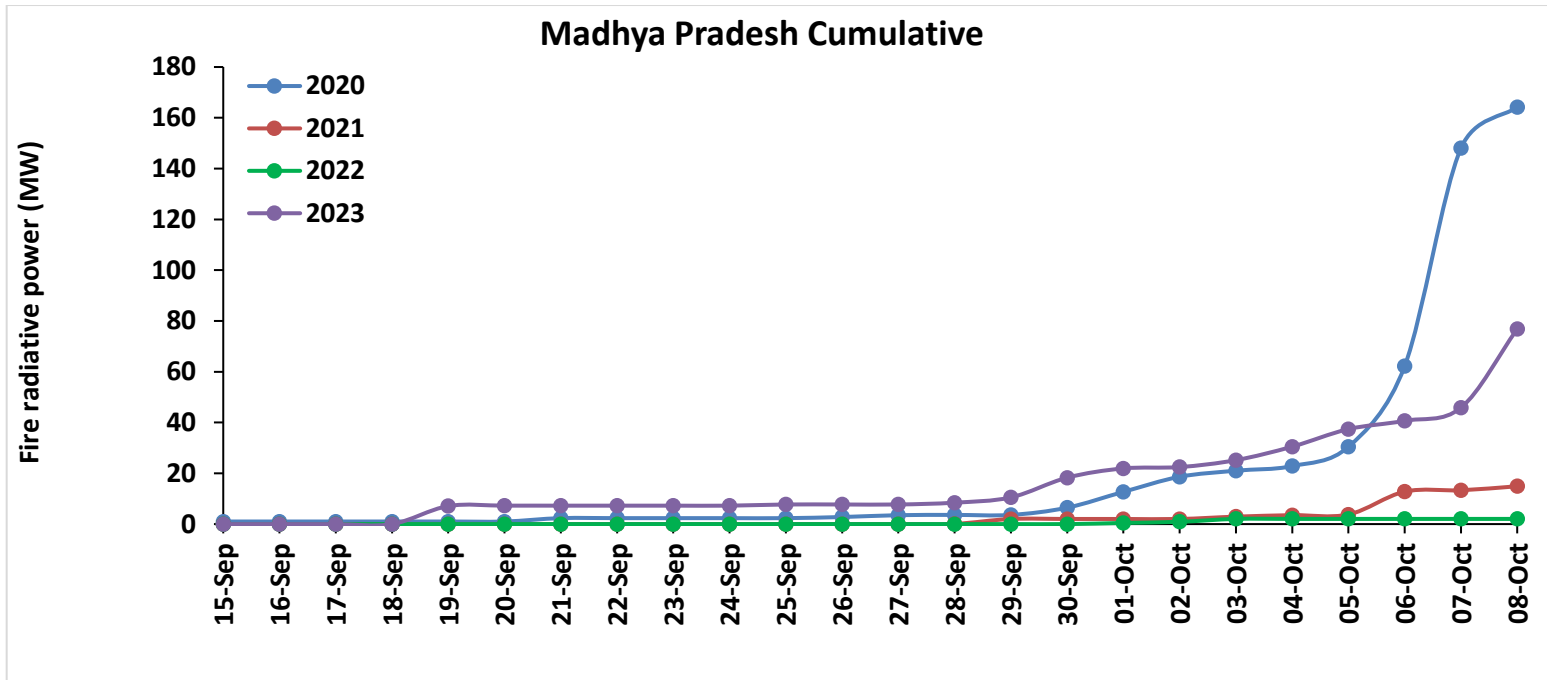




Comparison of residue burning fire power in current year (2023) with previous years (2020, 2021 and 2022) for the study States

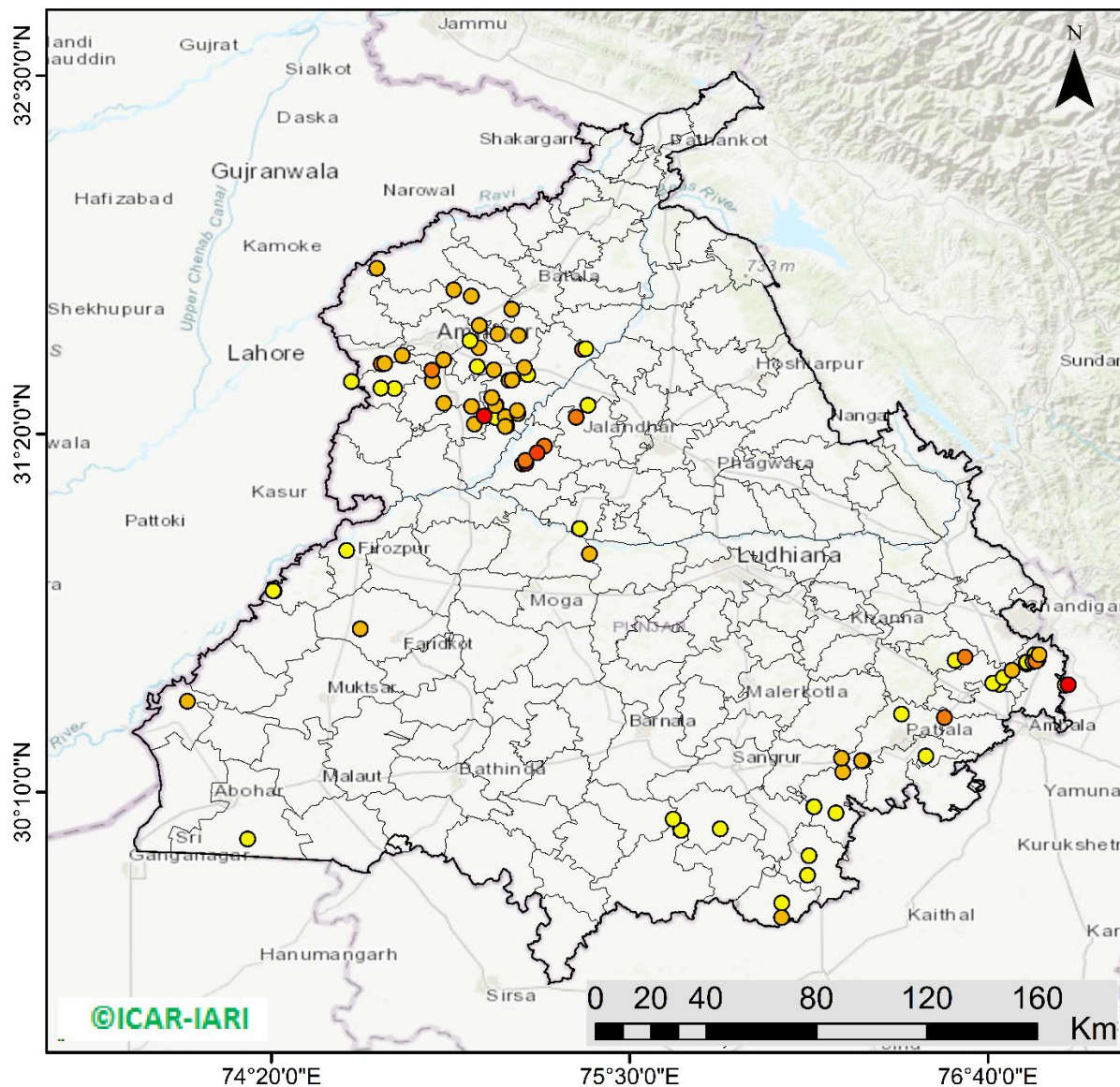






Punjab

RICE RESIDUE BURNING IN PUNJAB



92 burning events detected in Punjab during (08th Oct 2023)

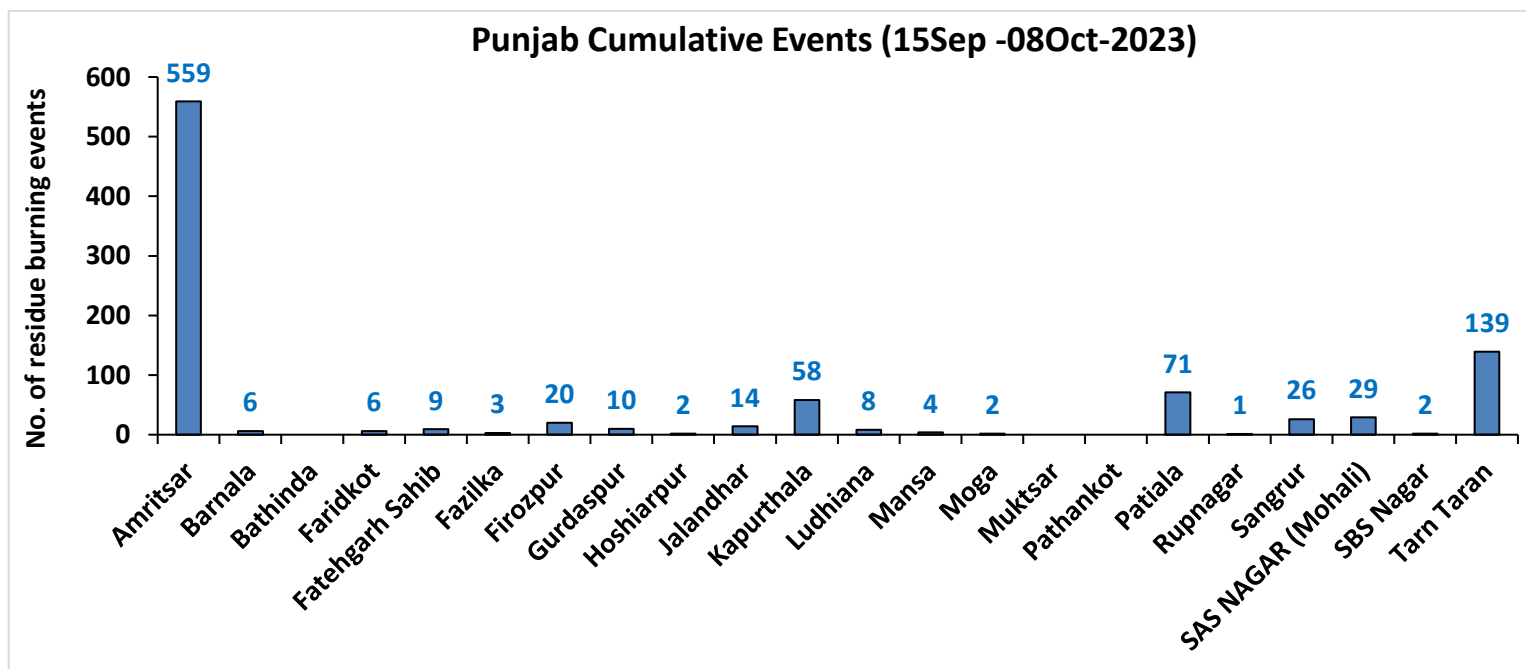
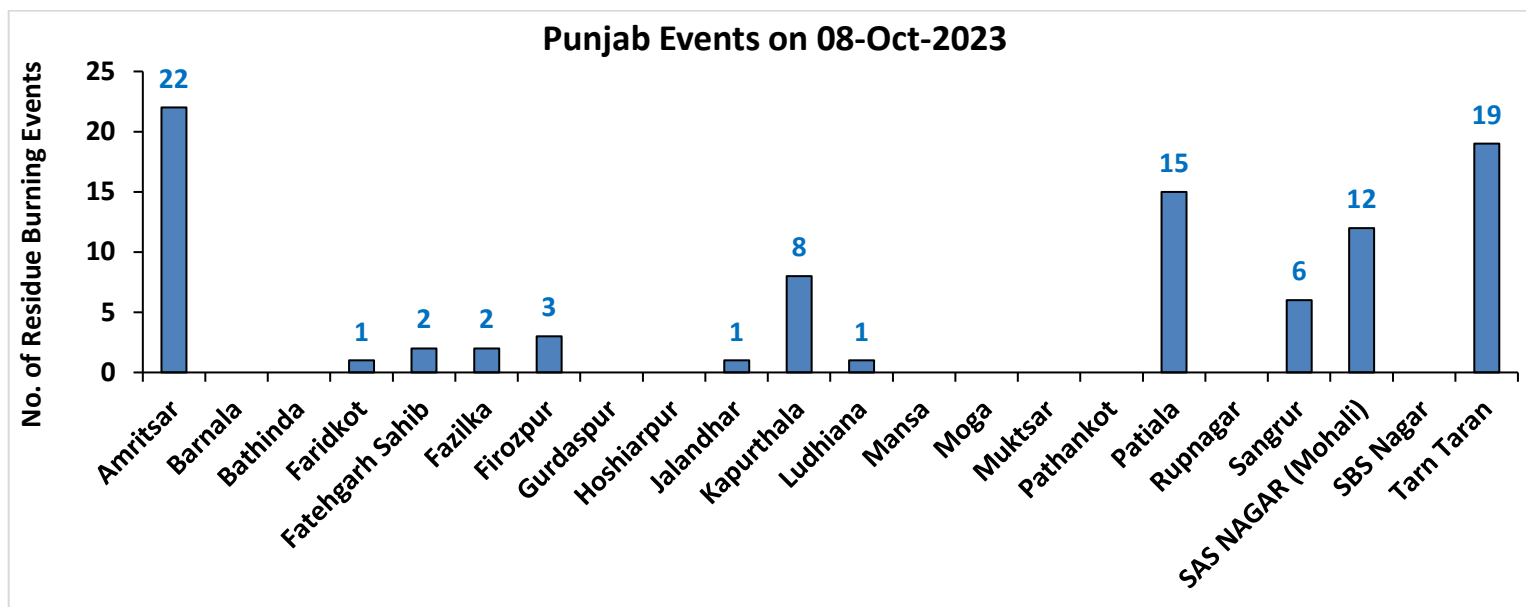
Fire Intensity (W/m²)

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



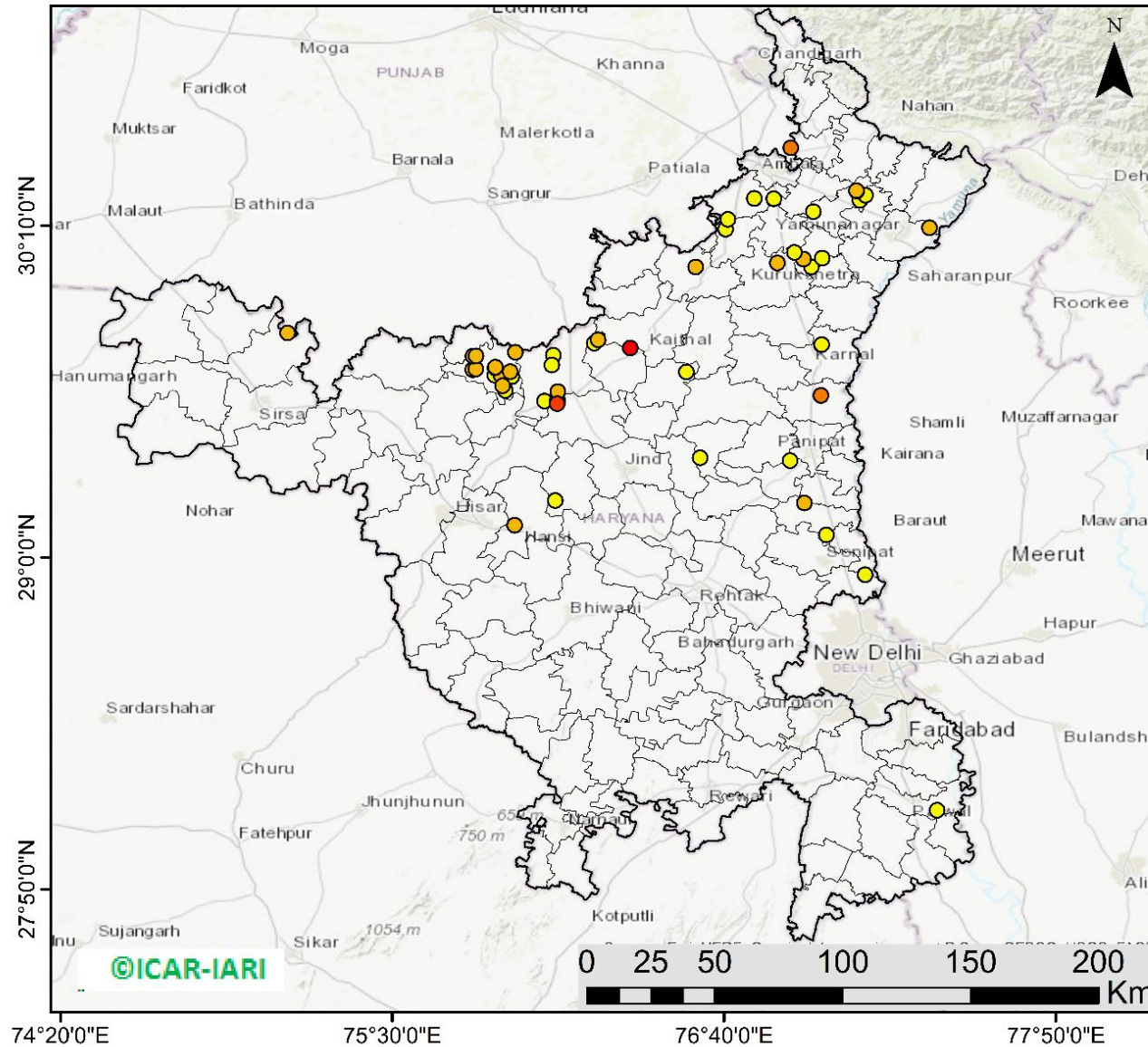
<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

District-wise cumulative number of residues burning events in Punjab (15Sep- 08Oct-2023)



Haryana

RICE RESIDUE BURNING IN HARYANA



55 burning events detected in Haryana on (08th Oct 2023)

Fire Intensity (W/m²)

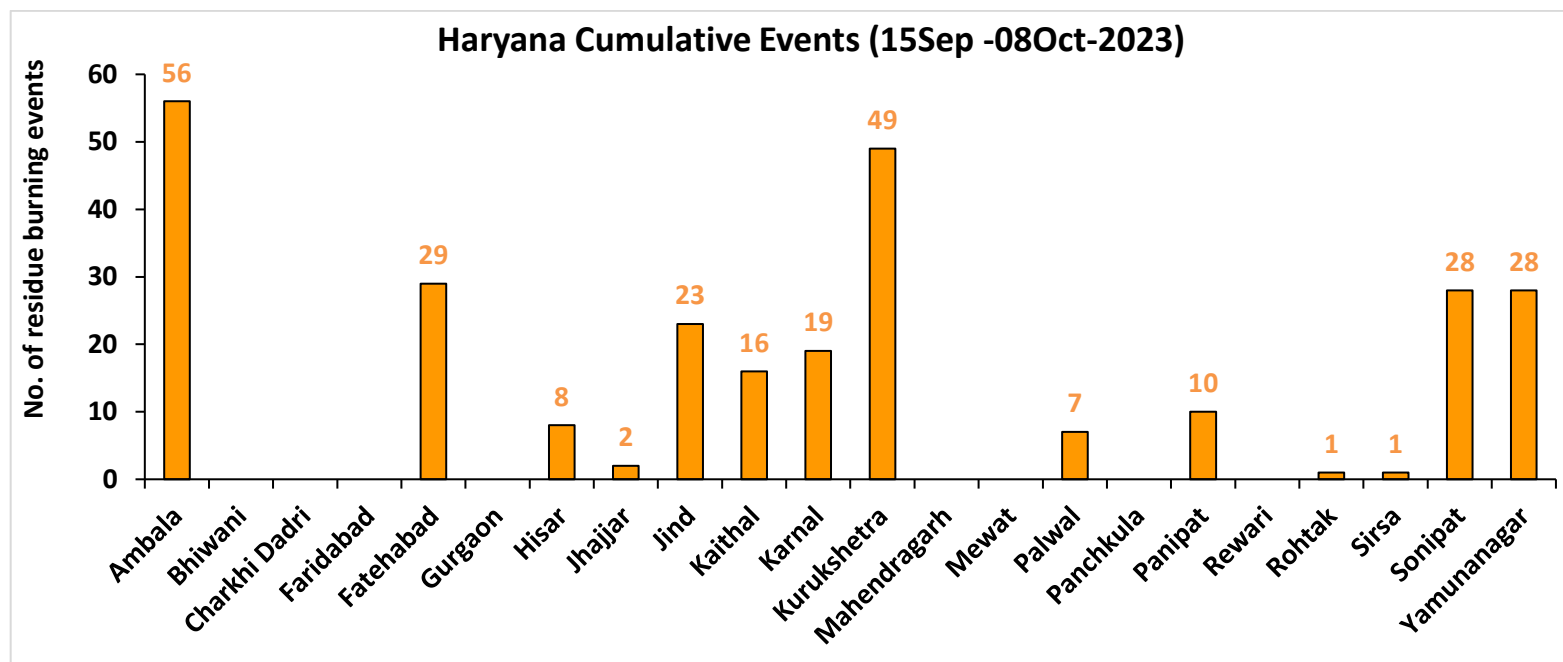
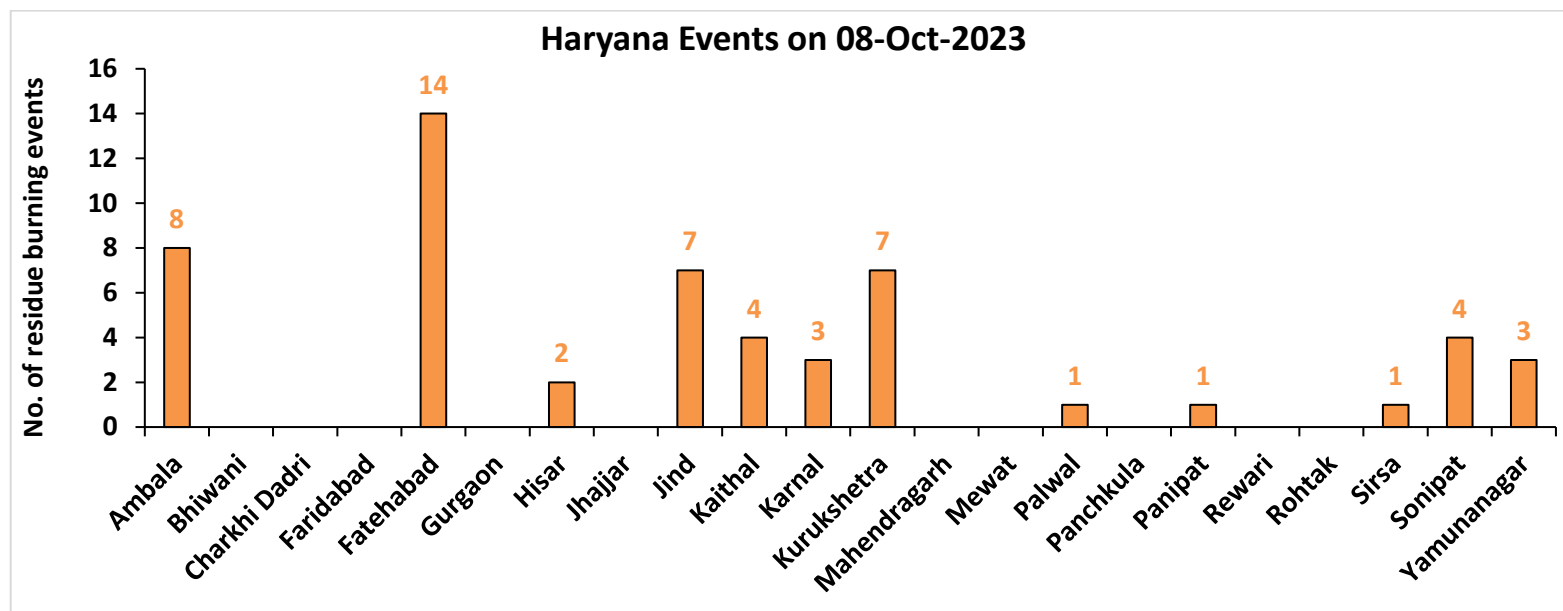
- 0 - 5
- 6 - 10
- 11 - 15
- 16 - 20
- >20

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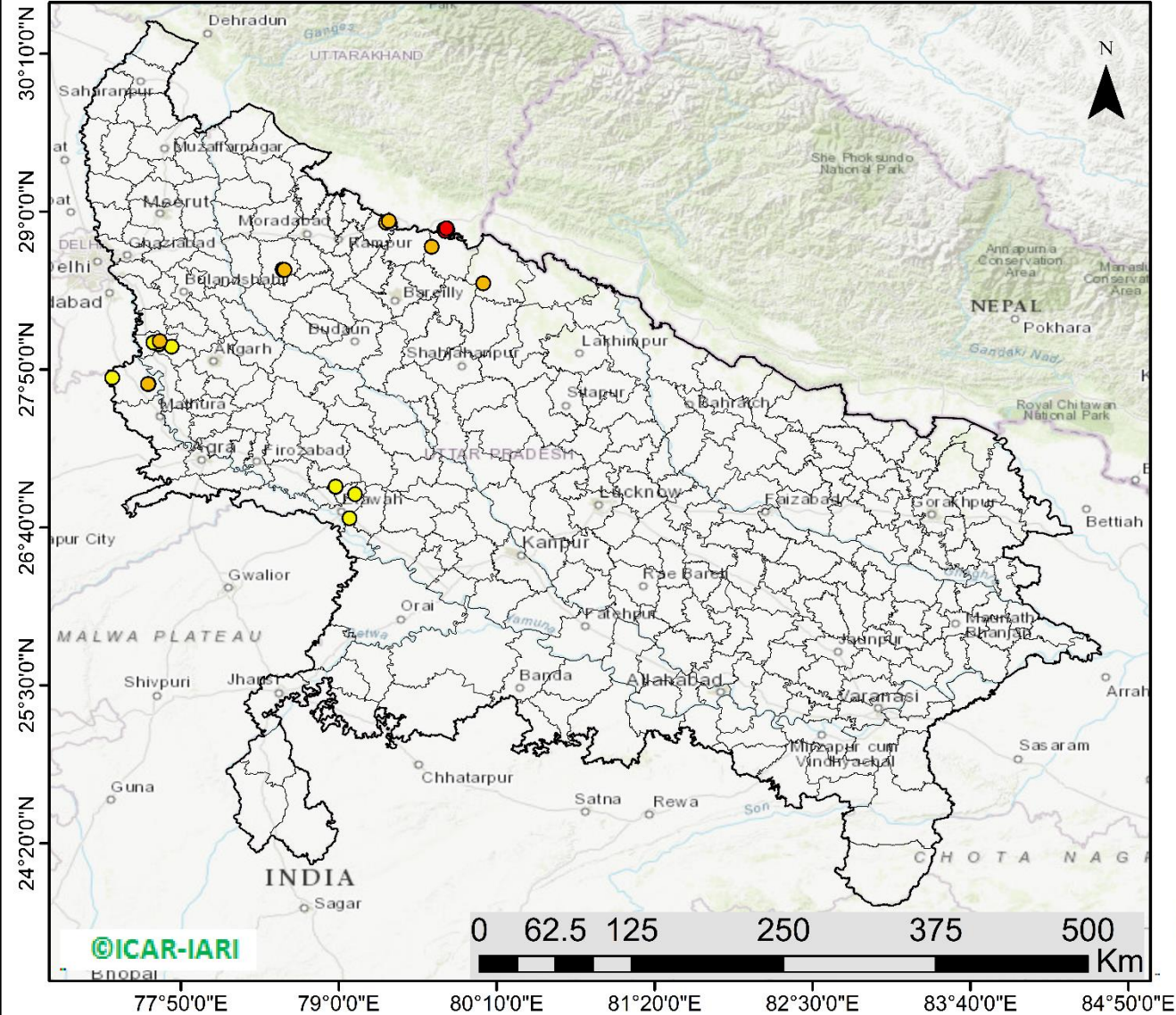
<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

District-wise cumulative number of residues burning events in Haryana (15Sep-08Oct -2023)



Uttar Pradesh

RICE RESIDUE BURNING IN UTTAR PRADESH



27 burning events detected in Uttar Pradesh on (08th Oct 2023)

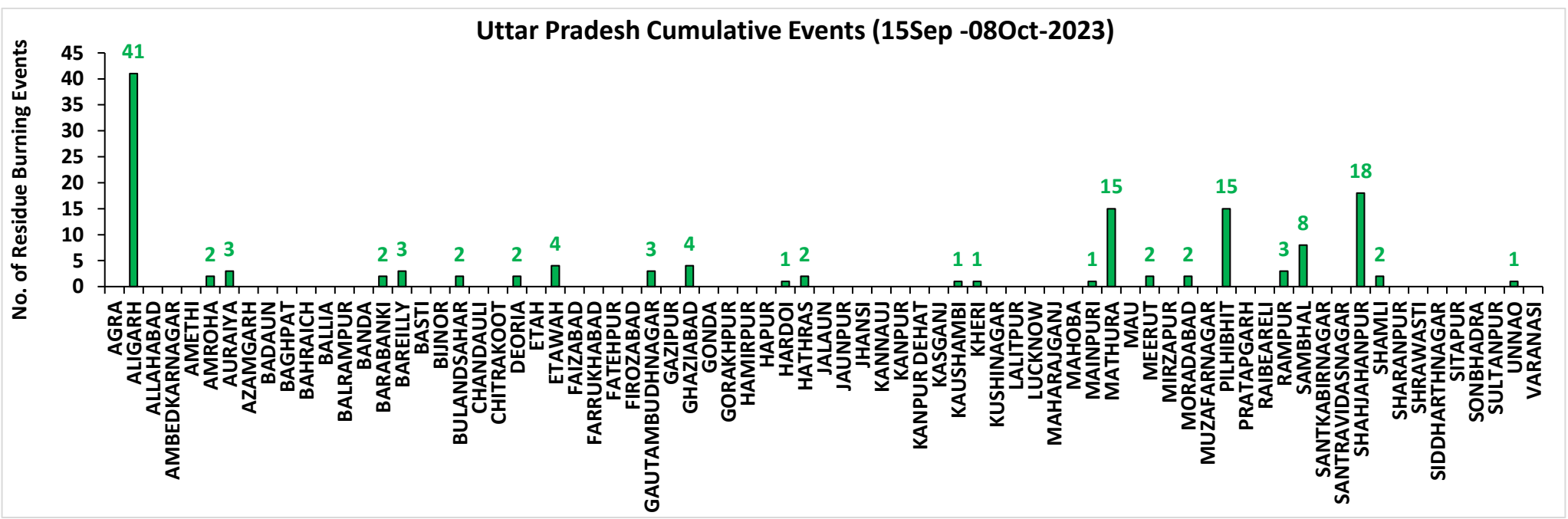
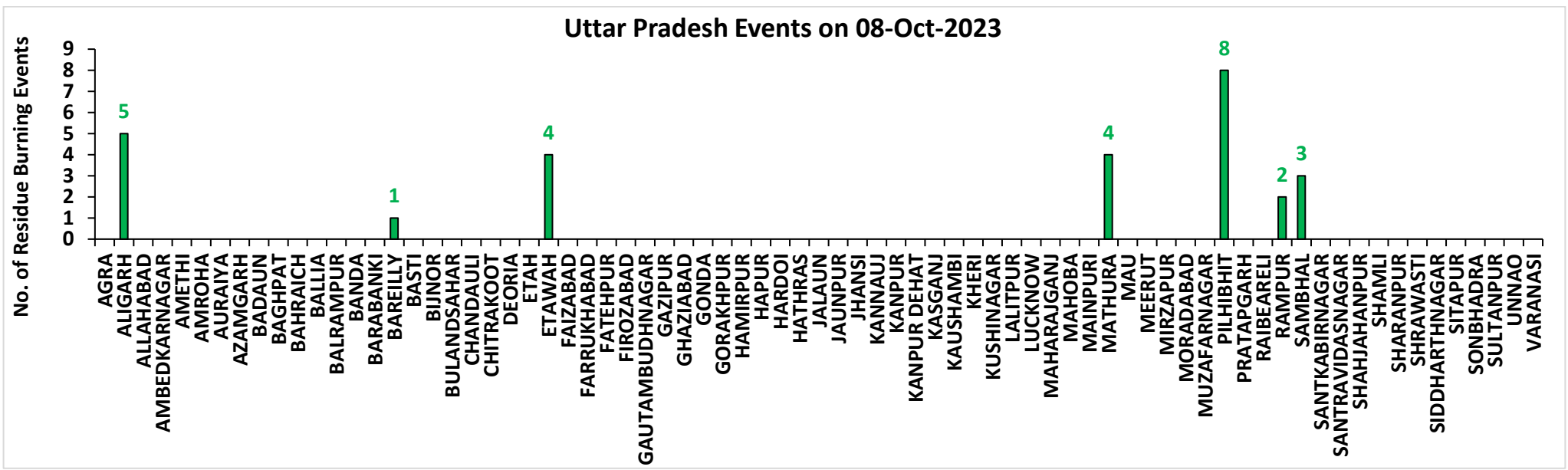
Fire Intensity (W/m2)

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



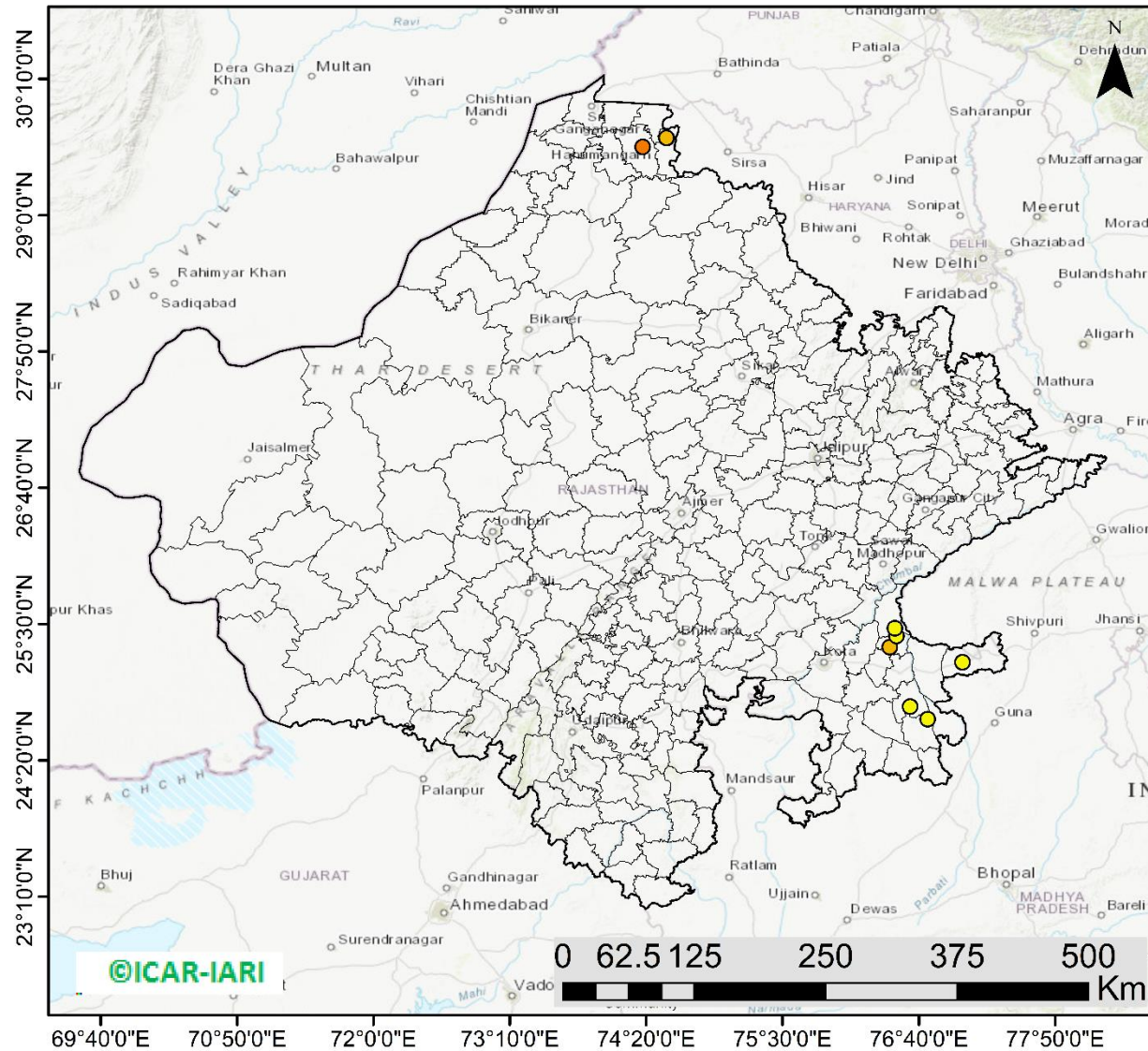
<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

District-wise cumulative number of residues burning events in Uttar Pradesh (15Sep-08Oct -2023)



Rajasthan

RICE RESIDUE BURNING IN RAJASTHAN



09 burning events
detected in Rajasthan on
(08th Oct 2023)

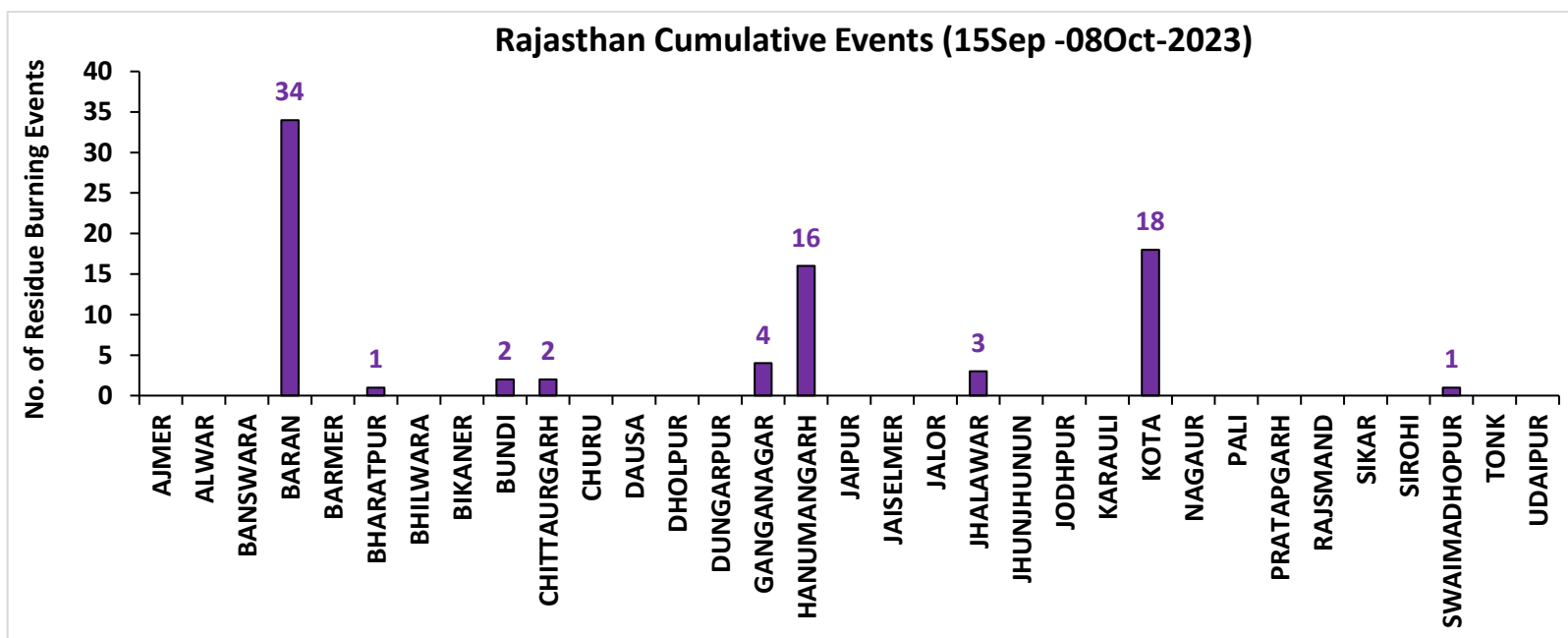
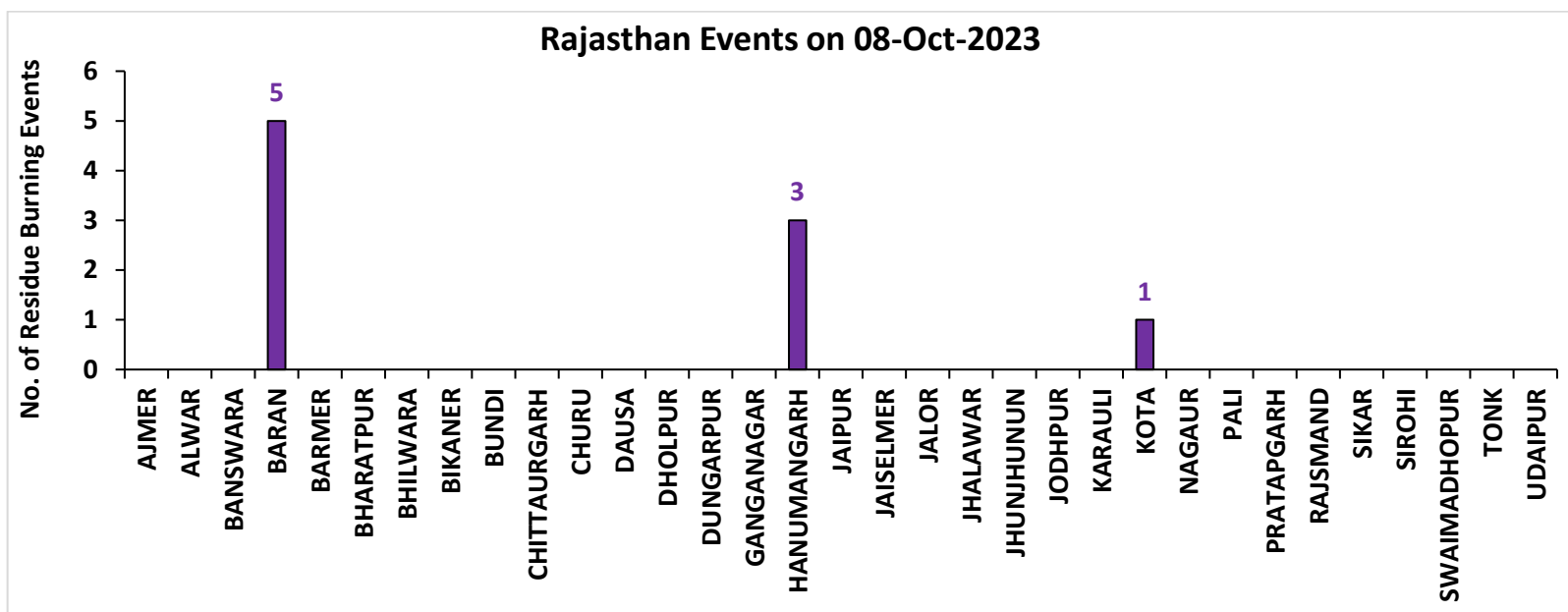
Fire Intensity (W/m²)

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



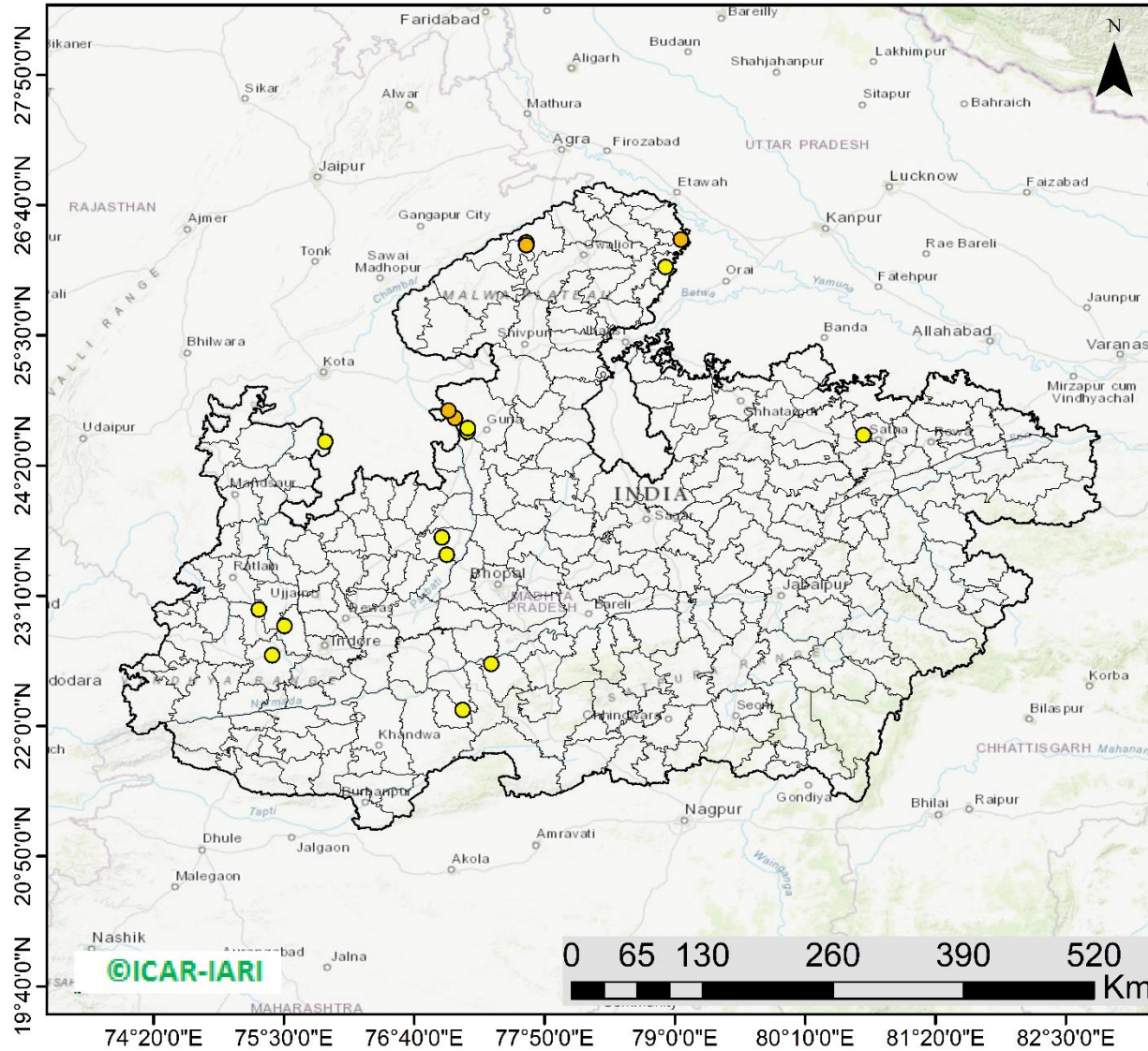
<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

District-wise cumulative number of residues burning events in Rajasthan (15Sep-08Oct -2023)



Madhya Pradesh

RICE RESIDUE BURNING IN MADHYA PRADESH



18 burning events detected in MP on (08th Oct 2023)

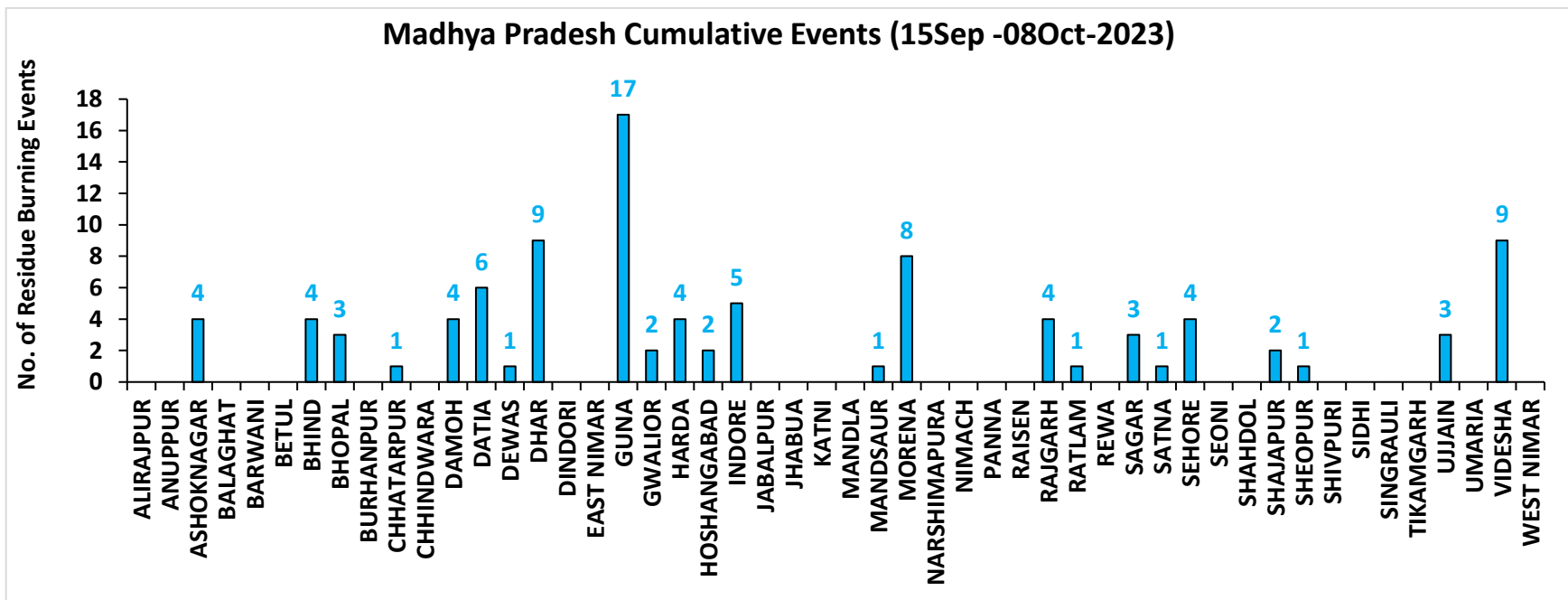
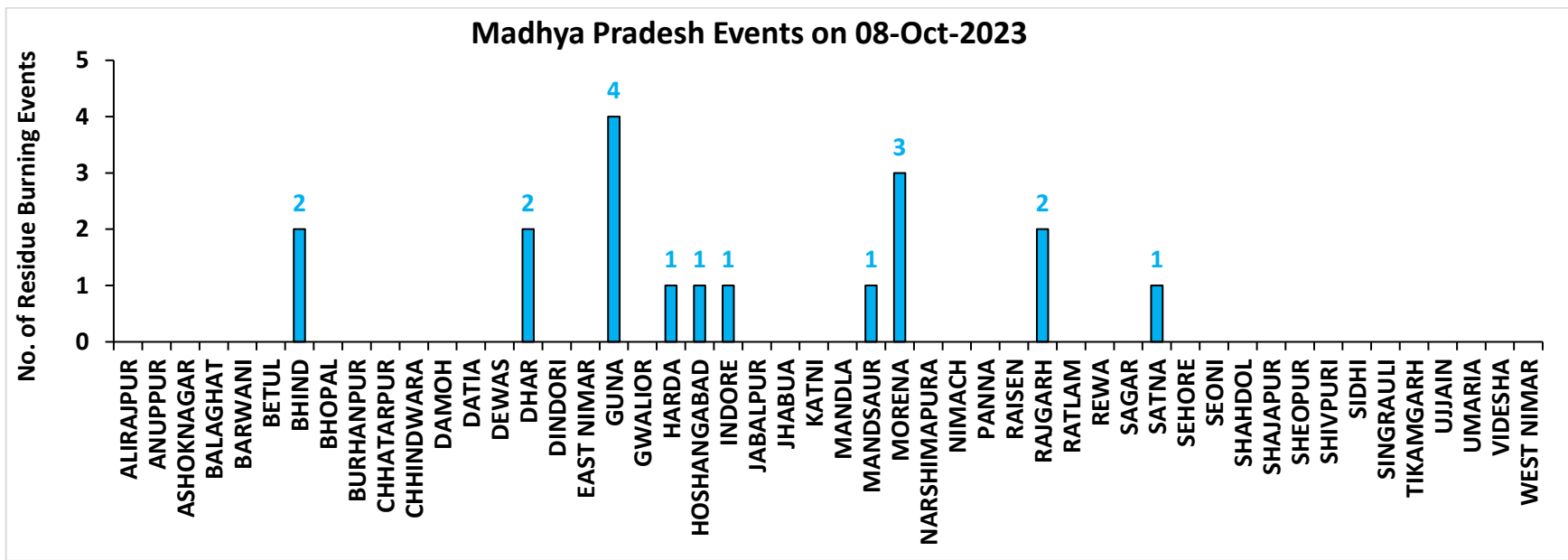
Fire Intensity (W/m²)

- 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-08Oct -2023)



District-wise cumulative number of residues burning events detected in 2020, 2021, 2022 and 2023
(Period: 15 September-08 October)

(a) Punjab

District	15 Sep-08 Oct			
	2020	2021	2022	2023
Amritsar	1243	248	454	559
Barnala	5	0	3	6
Bathinda	0	0	0	0
Faridkot	14	14	3	6
Fatehgarh Sahib	28	8	4	9
Fazilka	1	1	0	3
Firozpur	59	13	16	20
Gurdaspur	101	8	9	10
Hoshiarpur	4	0	0	2
Jalandhar	21	10	13	14
Kapurthala	35	15	22	58
Ludhiana	59	33	9	8
Mansa	4	1	1	4
Moga	14	2	2	2
Muktsar	1	1	1	0
Pathankot	0	0	0	0
Patiala	118	28	26	71
Rupnagar	6	2	0	1
Sangrur	48	5	12	26
SAS NAGAR (Mohali)	11	8	4	29
SBS Nagar	5	1	2	2
Tarn Taran	450	102	130	139
Total	2227	500	711	969

(b) Haryana

District	15 Sep-08 Oct			
	2020	2021	2022	2023
AMBALA	37	3	9	56
BHIWANI	0	0	0	0
CHARKHI DADRI	0	0	0	0
FARIDABAD	0	0	0	0
FATEHABAD	19	1	3	29
GURGAON	0	0	0	0
HISAR	3	0	0	8
JHAJJAR	1	0	0	2
JIND	3	2	8	23
KAITHAL	39	10	9	16
KARNAL	67	21	20	19
KURUKSHETRA	62	20	27	49
MAHENDRAGARH	0	0	0	0
MEWAT	0	0	0	0
PALWAL	5	1	0	7
PANCHKULA	0	0	0	0
PANIPAT	6	1	1	10
REWARI	0	0	0	0
ROHTAK	0	0	0	1
SIRSA	2	0	0	1
SONIPAT	6	1	2	28
YAMUNANAGAR	18	2	1	28
Total	268	62	80	277

(c) Uttar Pradesh

District	15 Sep-08 Oct													
	2020	2021	2022	2023	GAUTAMBUDHNAGAR	1	0	0	3	MUZAFARNAGAR	2	0	0	0
AGRA	0	0	0	0	GAZIPUR	0	0	0	0	PILHIBHIT	3	2	2	15
ALIGARH	15	0	1	41	GHAZIABAD	1	1	1	4	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	5	7	0	3
AMETHI	0	0	0	0	HAMIRPUR	0	0	0	0	SAMBHAL	6	0	4	8
AMROHA	1	0	0	2	HAPUR	2	0	0	0	SANTKABIRNAGAR	0	0	0	0
AURAIYA	12	0	4	3	HARDOI	0	0	0	1	SANTRAVIDASNAGAR	0	0	0	0
AZAMGARH	0	0	0	0	HATHRAS	0	0	0	2	SHAHJAHANPUR	10	55	53	18
BADAUN	0	0	0	0	JALAUN	0	0	0	0	SHAMLI	17	2	2	2
BAGHPAT	1	0	0	0	JAUNPUR	0	0	0	0	SHARANPUR	11	0	0	0
BAHRAICH	2	0	0	0	JHANSI	5	0	0	0	SHRAWASTI	0	0	0	0
BALLIA	0	0	0	0	KANNAUJ	2	0	0	0	SIDDHARTHANAGAR	0	0	0	0
BALRAMPUR	0	0	0	0	KANPUR	0	1	0	0	SITAPUR	4	1	0	0
BANDA	0	0	0	0	KANPUR DEHAT	1	0	0	0	SONBHADRA	0	0	0	0
BARABANKI	6	0	0	2	KASGANJ	1	0	0	0	SULTANPUR	0	0	0	0
BAREILLY	5	1	0	3	KAUSHAMBI	6	0	0	1	UNNAO	2	0	0	1
BASTI	0	0	0	0	KHERI	13	3	8	1	VARANASI	0	0	0	0
BIJNOR	3	0	1	0	KUSHINAGAR	0	0	0	0	Total	167	76	80	138
BULANDSAHAR	1	0	2	2	LALITPUR	0	1	2	0					
CHANDAULI	0	0	0	0	LUCKNOW	1	0	0	0					
CHITRAKOOT	0	0	0	0	MAHARAJGANJ	0	0	0	0					
DEORIA	0	0	0	2	MAHOBA	0	0	0	0					
ETAH	4	0	0	0	MAINPURI	0	1	0	1					
ETAWAH	0	0	0	4	MATHURA	3	1	0	15					
FAIZABAD	0	0	0	0	MAU	0	0	0	0					
FARRUKHABAD	0	0	0	0	MEERUT	8	0	0	2					
FATEHPUR	5	0	0	0	MIRZAPUR	5	0	0	0					
FIROZABAD	1	0	0	0	MORADABAD	1	0	0	2					

(d) Delhi

District	15 Sep-08 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	1
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	1

(e) Rajasthan

District	15 Sep-08 Oct			
	2020	2021	2022	2023
AJMER	0	0	0	0
ALWAR	1	0	0	0
BANSWARA	0	0	0	0
BARAN	48	0	3	34
BARMER	2	0	0	0
BHARATPUR	0	0	0	1
BHILWARA	2	0	0	0
BIKANER	0	0	0	0
BUNDI	1	0	3	2
CHITTAURGARH	0	1	0	2
CHURU	0	0	0	0
DAUSA	0	0	0	0
DHOLPUR	0	0	0	0
DUNGARPUR	0	0	0	0
GANGANAGAR	2	0	0	4
HANUMANGARH	23	1	2	16
JAIPUR	0	0	0	0
JAISELMER	2	0	0	0
JALOR	0	0	0	0
JHALAWAR	0	0	0	3
JHUNJHUNUN	1	0	0	0
JODHPUR	1	0	0	0
KARAULI	1	0	0	0
KOTA	13	0	1	18
NAGAU	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	0	0	0	0
SWAIMADHOPUR	0	0	0	1
TONK	1	0	0	0
UDAIPUR	0	0	0	0
Total	99	2	9	81

(f) Madhya Pradesh

District	15 Sep-08 Oct								
	2020	2021	2022	2023					
					PANNA	1	0	0	0
ALIRAJPUR	0	0	0	0	RAISEN	2	0	0	0
ANUPPUR	0	0	0	0	RAJGARH	1	0	2	4
ASHOKNAGAR	7	0	0	4	RATLAM	0	0	0	1
BALAGHAT	0	0	0	0	REWA	1	0	0	0
BARWANI	0	0	0	0	SAGAR	8	2	1	3
BETUL	0	0	0	0	SATNA	3	0	0	1
BHIND	0	0	0	4	SEHORE	4	0	1	4
BHOPAL	2	0	0	3	SEONI	2	0	0	0
BURHANPUR	0	0	0	0	SHAHDOL	0	0	0	0
CHHATARPUR	2	0	0	1	SHAJAPUR	4	0	0	2
CHHINDWARA	0	0	0	0	SHEOPUR	2	0	0	1
DAMOH	6	0	0	4	SHIVPURI	1	0	0	0
DATIA	5	0	0	6	SIDHI	0	0	0	0
DEWAS	3	0	0	1	SINGRAULI	0	0	0	0
DHAR	13	0	0	9	TIKAMGARH	1	0	0	0
DINDORI	0	0	0	0	UJJAIN	5	0	0	3
EAST NIMAR	0	1	0	0	UMARIA	0	0	0	0
GUNA	7	1	1	17	VIDESHA	26	2	1	9
GWALIOR	14	0	1	2	WEST NIMAR	1	0	0	0
HARDA	8	7	0	4	Total	145	13	7	99
HOSHANGABAD	3	0	0	2					
INDORE	2	0	0	5					
JABALPUR	5	0	0	0					
JHABUA	0	0	0	0					
KATNI	0	0	0	0					
MANDLA	0	0	0	0					
MANDSAUR	0	0	0	1					
MORENA	5	0	0	8					
NARSHIMAPURA	1	0	0	0					
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-08 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
Total	2227	500	711	969	268	62	80	277	167	76	80	138

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
Total	3	0	2	1	99	2	9	81	145	13	7	99

Details of residue burning events in Punjab on 08-Oct-2023

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m2)
1	AMRITSAR	AJNALA	AQUA	31.87200	74.67700	13:53:46	D	5.60
2	AMRITSAR	ATTARI	S-NPP	31.50331	74.59420	14:06:29	D	5.00
3	AMRITSAR	ATTARI	S-NPP	31.58846	74.75911	14:06:29	D	6.50
4	AMRITSAR	ATTARI	AQUA	31.54000	74.85600	13:53:46	D	12.30
5	AMRITSAR	ATTARI	AQUA	31.56100	74.69100	13:53:46	D	10.40
6	AMRITSAR	ATTARI	AQUA	31.56200	74.70200	13:53:46	D	5.40
7	AMRITSAR	ATTARI	AQUA	31.57400	74.89400	13:53:46	D	7.60
8	AMRITSAR	HARSHA CHHINA	AQUA	31.80200	74.92700	13:53:46	D	7.80
9	AMRITSAR	JANDIALA GURU	S-NPP	31.54116	75.05775	14:06:29	D	5.80
10	AMRITSAR	JANDIALA GURU	S-NPP	31.55187	75.00382	14:06:29	D	5.00
11	AMRITSAR	JANDIALA GURU	S-NPP	31.61317	75.00909	14:06:29	D	6.40
12	AMRITSAR	JANDIALA GURU	S-NPP	31.63593	74.98030	14:06:29	D	3.70
13	AMRITSAR	JANDIALA GURU	AQUA	31.68600	75.01000	13:53:46	D	5.60
14	AMRITSAR	MAJITHA	S-NPP	31.78181	74.98411	14:06:29	D	7.30
15	AMRITSAR	MAJITHA	AQUA	31.73900	75.11600	13:53:46	D	6.00
16	AMRITSAR	RAYYA	S-NPP	31.52538	75.16792	14:06:29	D	4.00
17	AMRITSAR	RAYYA	S-NPP	31.54904	75.15689	14:06:29	D	6.50
18	AMRITSAR	RAYYA	AQUA	31.50800	75.11700	13:53:46	D	7.30
19	AMRITSAR	RAYYA	AQUA	31.60800	75.34600	13:53:46	D	10.10
20	AMRITSAR	RAYYA	AQUA	31.61000	75.35700	13:53:46	D	4.80
21	AMRITSAR	TARSIKKA	S-NPP	31.65346	75.13789	14:06:29	D	5.30
22	AMRITSAR	TARSIKKA	S-NPP	31.65820	75.07053	14:06:29	D	5.80
23	FARIDKOT	FARIDKOT	AQUA	30.69800	74.62300	13:53:46	D	6.60
24	FATEHGARH SAHIB	KHERA	S-NPP	30.59496	76.55943	14:06:29	D	3.40
25	FATEHGARH SAHIB	KHERA	AQUA	30.60600	76.59200	13:53:46	D	11.70
26	FAZILKA	ABOHAR	S-NPP	30.01370	74.25579	14:06:29	D	2.90
27	FAZILKA	FAZILKA	S-NPP	30.46210	74.05997	14:06:29	D	5.30
28	FIROZPUR	FIROZPUR	S-NPP	30.95320	74.57861	14:06:29	D	3.40
29	FIROZPUR	MAMDOT	S-NPP	30.82115	74.34216	14:06:29	D	4.80
30	FIROZPUR	MAMDOT	S-NPP	30.82171	74.33942	14:06:29	D	4.90

31	JALANDHAR	SHAHKOT	AQUA	31.02500	75.33700	13:53:46	D	4.90
32	KAPURTHALA	KAPURTHALA	S-NPP	31.38677	75.32578	14:06:29	D	10.90
33	KAPURTHALA	KAPURTHALA	AQUA	31.42600	75.36400	13:53:46	D	5.00
34	KAPURTHALA	SULTANPUR LODHI	S-NPP	31.29223	75.22057	14:06:29	D	8.00
35	KAPURTHALA	SULTANPUR LODHI	S-NPP	31.29311	75.22228	14:06:29	D	10.30
36	KAPURTHALA	SULTANPUR LODHI	AQUA	31.23500	75.15100	13:53:46	D	9.70
37	KAPURTHALA	SULTANPUR LODHI	AQUA	31.23700	75.16200	13:53:46	D	27.30
38	KAPURTHALA	SULTANPUR LODHI	AQUA	31.24600	75.16000	13:53:46	D	11.40
39	KAPURTHALA	SULTANPUR LODHI	AQUA	31.27100	75.19900	13:53:46	D	18.10
40	LUDHIANA	SIDHWAN BET	S-NPP	30.94176	75.36880	14:06:29	D	9.00
41	PATIALA	PATIALA	S-NPP	30.26831	76.26084	14:06:29	D	3.20
42	PATIALA	PATIALA	S-NPP	30.40932	76.52509	14:06:29	D	11.10
43	PATIALA	PATIALA	S-NPP	30.42032	76.38508	14:06:29	D	3.00
44	PATIALA	PATIALA	AQUA	30.23200	76.19400	13:53:46	D	9.40
45	PATIALA	PATIALA	AQUA	30.26900	76.25500	13:53:46	D	8.00
46	PATIALA	PATRAN	S-NPP	29.89564	76.07919	14:06:29	D	1.90
47	PATIALA	PATRAN	S-NPP	29.95920	76.08397	14:06:29	D	1.90
48	PATIALA	RAJPURA	S-NPP	30.51691	76.70285	14:06:29	D	3.10
49	PATIALA	RAJPURA	S-NPP	30.52090	76.68244	14:06:29	D	4.20
50	PATIALA	RAJPURA	S-NPP	30.53982	76.71680	14:06:29	D	1.90
51	PATIALA	RAJPURA	AQUA	30.56300	76.74500	13:53:46	D	5.50
52	PATIALA	SAMANA	S-NPP	30.09823	76.17162	14:06:29	D	3.70
53	PATIALA	SAMANA	S-NPP	30.11870	76.09895	14:06:29	D	1.50
54	PATIALA	SAMANA	S-NPP	30.11881	76.10022	14:06:29	D	1.90
55	PATIALA	SANAUR	S-NPP	30.28354	76.46421	14:06:29	D	3.00
56	SANGRUR	ANDANA	S-NPP	29.80525	75.99528	14:06:29	D	3.90
57	SANGRUR	ANDANA	AQUA	29.75800	75.99500	13:53:46	D	7.10
58	SANGRUR	BHAWANIGARH	AQUA	30.27700	76.19000	13:53:46	D	5.50
59	SANGRUR	SUNAM	S-NPP	30.04162	75.66771	14:06:29	D	3.80
60	SANGRUR	SUNAM	S-NPP	30.04690	75.79463	14:06:29	D	2.10
61	SANGRUR	SUNAM	S-NPP	30.07832	75.64183	14:06:29	D	2.70
62	SAS NAGAR (MOHALI)	DERABASSI	S-NPP	30.58391	76.79276	14:06:29	D	3.50
63	SAS NAGAR (MOHALI)	DERABASSI	S-NPP	30.58395	76.79369	14:06:29	D	4.30
64	SAS NAGAR (MOHALI)	DERABASSI	S-NPP	30.58938	76.79225	14:06:29	D	3.50

65	SAS NAGAR (MOHALI)	DERABASSI	S-NPP	30.58942	76.79319	14:06:29	D	4.20
66	SAS NAGAR (MOHALI)	DERABASSI	S-NPP	30.59763	76.82909	14:06:29	D	2.10
67	SAS NAGAR (MOHALI)	DERABASSI	S-NPP	30.60284	76.82776	14:06:29	D	4.80
68	SAS NAGAR (MOHALI)	DERABASSI	S-NPP	30.61324	76.81865	14:06:29	D	2.70
69	SAS NAGAR (MOHALI)	DERABASSI	AQUA	30.51500	76.91800	13:53:46	D	8.20
70	SAS NAGAR (MOHALI)	DERABASSI	AQUA	30.51600	76.92800	13:53:46	D	25.40
71	SAS NAGAR (MOHALI)	DERABASSI	AQUA	30.59100	76.81300	13:53:46	D	8.80
72	SAS NAGAR (MOHALI)	DERABASSI	AQUA	30.59300	76.82300	13:53:46	D	14.30
73	SAS NAGAR (MOHALI)	DERABASSI	AQUA	30.61400	76.83300	13:53:46	D	5.80
74	TARN TARAN	CHOHLA SAHIB	S-NPP	31.35833	75.10014	14:06:29	D	4.20
75	TARN TARAN	CHOHLA SAHIB	S-NPP	31.36278	75.09306	14:06:29	D	3.90
76	TARN TARAN	CHOHLA SAHIB	S-NPP	31.38601	75.06293	14:06:29	D	3.50
77	TARN TARAN	CHOHLA SAHIB	AQUA	31.35700	75.09500	13:53:46	D	9.70
78	TARN TARAN	GANDIWIND TATLA	S-NPP	31.48046	74.73444	14:06:29	D	3.80
79	TARN TARAN	GANDIWIND TATLA	S-NPP	31.48181	74.69019	14:06:29	D	4.40
80	TARN TARAN	KHADUR SAHIB	S-NPP	31.38823	75.09698	14:06:29	D	14.50
81	TARN TARAN	KHADUR SAHIB	S-NPP	31.38853	75.09569	14:06:29	D	7.30
82	TARN TARAN	KHADUR SAHIB	S-NPP	31.42632	75.06519	14:06:29	D	5.40
83	TARN TARAN	KHADUR SAHIB	AQUA	31.39900	75.13600	13:53:46	D	7.40
84	TARN TARAN	KHADUR SAHIB	AQUA	31.40900	75.13400	13:53:46	D	5.80
85	TARN TARAN	KHADUR SAHIB	AQUA	31.42500	75.06300	13:53:46	D	8.20
86	TARN TARAN	KHADUR SAHIB	AQUA	31.45100	75.05100	13:53:46	D	6.00
87	TARN TARAN	KHADUR SAHIB	AQUA	31.50700	75.10700	13:53:46	D	5.90
88	TARN TARAN	NAUSHERA PANNUAN	S-NPP	31.36463	74.99442	14:06:29	D	8.20
89	TARN TARAN	NAUSHERA PANNUAN	AQUA	31.39100	75.02600	13:53:46	D	28.00
90	TARN TARAN	NAUSHERA PANNUAN	AQUA	31.42200	74.98500	13:53:46	D	8.30
91	TARN TARAN	TARN TARAN	S-NPP	31.43253	74.89495	14:06:29	D	8.70
92	TARN TARAN	TARN TARAN	AQUA	31.50500	74.85800	13:53:46	D	7.60

Details of residue burning events in Haryana on 08-Oct-2023

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m ²)
1	AMBALA	AMBALA-II	S-NPP	30.18843	76.68011	14:06:29	D	2.80
2	AMBALA	AMBALA-II	S-NPP	30.26058	76.84161	14:06:29	D	1.70
3	AMBALA	AMBALA-II	S-NPP	30.26091	76.77306	14:06:29	D	2.90
4	AMBALA	AMBALA-II	S-NPP	30.26218	76.77299	14:06:29	D	3.30
5	AMBALA	BARARA	S-NPP	30.21542	76.98062	14:06:29	D	2.30
6	AMBALA	BARARA	S-NPP	30.28764	77.13287	14:06:29	D	2.00
7	AMBALA	BARARA	AQUA	30.28900	77.13200	13:53:46	D	7.30
8	AMBALA	SHAHZADPUR	AQUA	30.44000	76.90100	13:53:46	D	14.20
9	FATEHABAD	JAKHAL	AQUA	29.70700	75.78400	13:53:46	D	7.60
10	FATEHABAD	TOHANA	S-NPP	29.58670	75.89757	14:06:29	D	4.80
11	FATEHABAD	TOHANA	S-NPP	29.63514	75.92045	14:06:29	D	1.80
12	FATEHABAD	TOHANA	S-NPP	29.63714	75.88197	14:06:29	D	2.00
13	FATEHABAD	TOHANA	S-NPP	29.64055	75.86082	14:06:29	D	3.50
14	FATEHABAD	TOHANA	S-NPP	29.64227	75.88145	14:06:29	D	8.10
15	FATEHABAD	TOHANA	S-NPP	29.66645	75.86169	14:06:29	D	5.30
16	FATEHABAD	TOHANA	S-NPP	29.66848	75.86300	14:06:29	D	5.40
17	FATEHABAD	TOHANA	AQUA	29.60300	75.88800	13:53:46	D	7.20
18	FATEHABAD	TOHANA	AQUA	29.65300	75.91500	13:53:46	D	5.50
19	FATEHABAD	TOHANA	AQUA	29.66000	75.78300	13:53:46	D	6.40
20	FATEHABAD	TOHANA	AQUA	29.66200	75.79400	13:53:46	D	7.60
21	FATEHABAD	TOHANA	AQUA	29.70800	75.79500	13:53:46	D	7.80
22	FATEHABAD	TOHANA	AQUA	29.72100	75.93300	13:53:46	D	8.20
23	HISAR	HANSI-I	S-NPP	29.11255	75.93045	14:06:29	D	5.20
24	HISAR	NARNAUND	S-NPP	29.19945	76.07359	14:06:29	D	3.20
25	JIND	NARWANA	S-NPP	29.54934	76.03543	14:06:29	D	2.30
26	JIND	NARWANA	S-NPP	29.58257	76.08232	12:26:54	D	5.70
27	JIND	NARWANA	S-NPP	29.71034	76.06628	14:06:29	D	2.20
28	JIND	NARWANA	AQUA	29.67600	76.06100	13:53:46	D	4.80
29	JIND	SAFIDON	S-NPP	29.35032	76.58255	14:06:29	D	2.70
30	JIND	UCHANA	S-NPP	29.55310	76.08117	14:06:29	D	2.10
31	JIND	UCHANA	AQUA	29.54000	76.08000	13:53:46	D	17.40

32	KAITHAL	KALAYAT	S-NPP	29.75315	76.21004	14:06:29	D	3.00
33	KAITHAL	KALAYAT	AQUA	29.73600	76.33700	13:53:46	D	24.10
34	KAITHAL	KALAYAT	AQUA	29.76500	76.22400	13:53:46	D	9.00
35	KAITHAL	RAJOUND	S-NPP	29.65188	76.53436	14:06:29	D	2.20
36	KARNAL	GHARAUNDA	AQUA	29.56900	77.00700	13:53:46	D	11.10
37	KARNAL	KARNAL	S-NPP	29.74738	77.00912	14:06:29	D	2.20
38	KARNAL	KARNAL	S-NPP	29.74780	77.01010	14:06:29	D	2.30
39	KURUKSHETRA	BABAIN	S-NPP	30.02127	76.97340	14:06:29	D	3.20
40	KURUKSHETRA	BABAIN	AQUA	30.04800	76.94600	13:53:46	D	6.30
41	KURUKSHETRA	BABAIN	AQUA	30.07200	76.91400	13:53:46	D	4.90
42	KURUKSHETRA	ISMAILABAD	S-NPP	30.15363	76.67220	14:06:29	D	2.10
43	KURUKSHETRA	LADWA	S-NPP	30.05179	77.01184	14:06:29	D	2.90
44	KURUKSHETRA	PEHOWA	AQUA	30.02100	76.56700	13:53:46	D	6.10
45	KURUKSHETRA	THANESAR	AQUA	30.03500	76.85400	13:53:46	D	8.20
46	PALWAL	PALWAL	S-NPP	28.11069	77.41579	14:06:29	D	3.00
47	PANIPAT	MADLAUDA	S-NPP	29.34025	76.89861	14:06:29	D	1.30
48	SIRSA	BARAGUNDA	AQUA	29.78900	75.13200	13:53:46	D	6.40
49	SONIPAT	GANAUR	AQUA	29.19100	76.94900	13:53:46	D	6.00
50	SONIPAT	MURTHAL	S-NPP	29.07854	77.02663	14:06:29	D	2.20
51	SONIPAT	RAI	S-NPP	28.93881	77.16228	14:06:29	D	2.60
52	SONIPAT	RAI	S-NPP	28.93913	77.16290	14:06:29	D	2.30
53	YAMUNANAGAR	CHHACHHRAULI	AQUA	30.15900	77.38900	13:53:46	D	7.60
54	YAMUNANAGAR	MUSTAFABAD	S-NPP	30.25485	77.14418	14:06:29	D	3.00
55	YAMUNANAGAR	MUSTAFABAD	S-NPP	30.27307	77.16378	14:06:29	D	4.50

Details of residue burning events in Uttar Pradesh on 08-Oct-2023

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m2)
1	ALIGARH	KHAIR	S-NPP	28.00069	77.76525	12:26:54	D	4.30
2	ALIGARH	KHAIR	S-NPP	28.01755	77.66987	14:06:29	D	5.00
3	ALIGARH	KHAIR	S-NPP	28.01949	77.66926	14:06:29	D	4.20
4	ALIGARH	KHAIR	S-NPP	28.03167	77.63058	14:06:29	D	2.40
5	ALIGARH	KHAIR	AQUA	28.04200	77.67700	13:53:46	D	8.40
6	BAREILLY	BAHERI	AQUA	28.73900	79.68600	13:53:46	D	7.10
7	ETAWAH	ETAWAH	S-NPP	26.73308	79.07915	14:06:29	D	4.10
8	ETAWAH	ETAWAH	S-NPP	26.91102	79.12043	12:26:54	D	4.50
9	ETAWAH	SAIFAI	S-NPP	26.96485	78.97695	14:06:29	D	4.90
10	ETAWAH	SAIFAI	S-NPP	26.96640	78.97757	14:06:29	D	4.70
11	MATHURA	CHHATA	S-NPP	27.72502	77.59502	14:06:29	D	2.30
12	MATHURA	CHHATA	S-NPP	27.77100	77.32612	14:06:29	D	3.10
13	MATHURA	CHHATA	S-NPP	27.77117	77.32621	14:06:29	D	2.60
14	MATHURA	CHHATA	AQUA	27.72500	77.59100	13:53:46	D	7.20
15	PILHIBHIT	PILHIBHIT	S-NPP	28.86092	79.78407	14:06:29	D	13.50
16	PILHIBHIT	PILHIBHIT	S-NPP	28.86193	79.80165	14:06:29	D	4.60
17	PILHIBHIT	PILHIBHIT	S-NPP	28.86732	79.78362	14:06:29	D	8.40
18	PILHIBHIT	PILHIBHIT	S-NPP	28.86814	79.78021	14:06:29	D	11.20
19	PILHIBHIT	PILHIBHIT	S-NPP	28.87546	79.79735	14:06:29	D	8.30
20	PILHIBHIT	PILHIBHIT	AQUA	28.85400	79.78700	13:53:46	D	22.80
21	PILHIBHIT	PILHIBHIT	AQUA	28.87400	79.79500	13:53:46	D	23.40
22	PILHIBHIT	PURANPUR	AQUA	28.46900	80.06800	13:53:46	D	6.50
23	RAMPUR	BILASPUR	AQUA	28.91700	79.35000	13:53:46	D	6.80
24	RAMPUR	BILASPUR	AQUA	28.92900	79.37000	13:53:46	D	7.10
25	SAMBHAL	SAMBHAL	S-NPP	28.57108	78.58577	14:06:29	D	1.70
26	SAMBHAL	SAMBHAL	AQUA	28.56600	78.58800	13:53:46	D	6.20
27	SAMBHAL	SAMBHAL	AQUA	28.56800	78.59900	13:53:46	D	7.30

Details of residue burning events in Rajasthan on 08-Oct-2023

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m2)
1	BARAN	ATRU	S-NPP	24.79234	76.59295	14:06:29	D	3.20
2	BARAN	CHHIPABAROD	S-NPP	24.68452	76.74303	14:06:29	D	2.60
3	BARAN	MANGROL	S-NPP	25.30116	76.41829	14:06:29	D	6.80
4	BARAN	MANGROL	S-NPP	25.39716	76.47636	14:06:29	D	3.50
5	BARAN	SHAHBAD	S-NPP	25.17136	77.04070	14:06:29	D	3.30
6	HANUMANGARH	HANUMANGARH	S-NPP	29.58437	74.30412	14:06:29	D	10.30
7	HANUMANGARH	TIBI	S-NPP	29.66045	74.50967	14:06:29	D	9.30
8	HANUMANGARH	TIBI	S-NPP	29.66174	74.50719	14:06:29	D	7.10
9	KOTA	PIPALDA	S-NPP	25.46246	76.46291	14:06:29	D	4.10

Details of residue burning events in Madhya Pradesh on 08-Oct-2023

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m ²)
1	BHIND	LAHAR	S-NPP	26.11265	78.91608	14:06:29	D	3.10
2	BHIND	ROUN	AQUA	26.35700	79.05500	13:53:46	D	7.00
3	DHAR	BADNAWAR	S-NPP	23.04232	75.27659	14:06:29	D	3.90
4	DHAR	DHAR	S-NPP	22.63295	75.39593	14:06:29	D	2.90
5	GUNA	GUNA	S-NPP	24.63607	77.14337	14:06:29	D	2.20
6	GUNA	GUNA	S-NPP	24.66817	77.14716	14:06:29	D	2.50
7	GUNA	GUNA	S-NPP	24.75766	77.03194	14:06:29	D	5.50
8	GUNA	GUNA	AQUA	24.82500	76.97400	13:53:46	D	8.70
9	HARDA	KHIRKIYAN	S-NPP	22.14326	77.10182	14:06:29	D	1.80
10	HOSHANGABAD	SEONI MALWA	S-NPP	22.55632	77.35667	14:06:29	D	2.80
11	INDORE	DEPALPUR	S-NPP	22.89482	75.50468	14:06:29	D	4.40
12	MANDSAUR	BHANPURA	S-NPP	24.54758	75.86987	02:56:29	N	1.00
13	MORENA	KAILARAS	S-NPP	26.30884	77.66921	14:06:29	D	3.40
14	MORENA	KAILARAS	S-NPP	26.33125	77.67112	14:06:29	D	2.20
15	MORENA	KAILARAS	AQUA	26.30800	77.67100	13:53:46	D	9.60
16	RAJGARH	NARSINGHGAR	S-NPP	23.53333	76.95834	14:06:29	D	0.60
17	RAJGARH	NARSINGHGAR	S-NPP	23.68900	76.91548	14:06:29	D	1.30
18	SATNA	NAGOD	S-NPP	24.60488	80.68797	14:06:29	D	2.80

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)**

Study Team

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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)
