



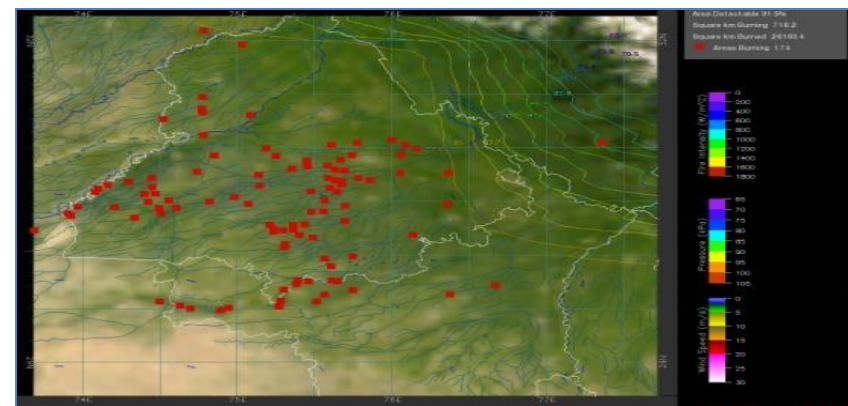
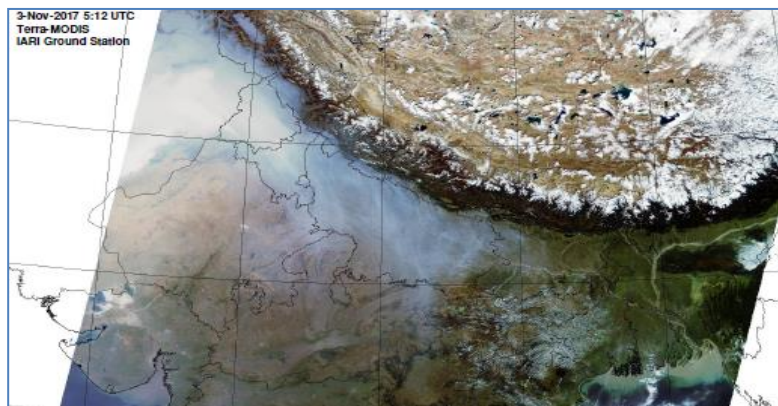
**Bulletin
No. 22**

**Events Date:
06-Oct-2023**

**Issued on:
06-Oct-2023**



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



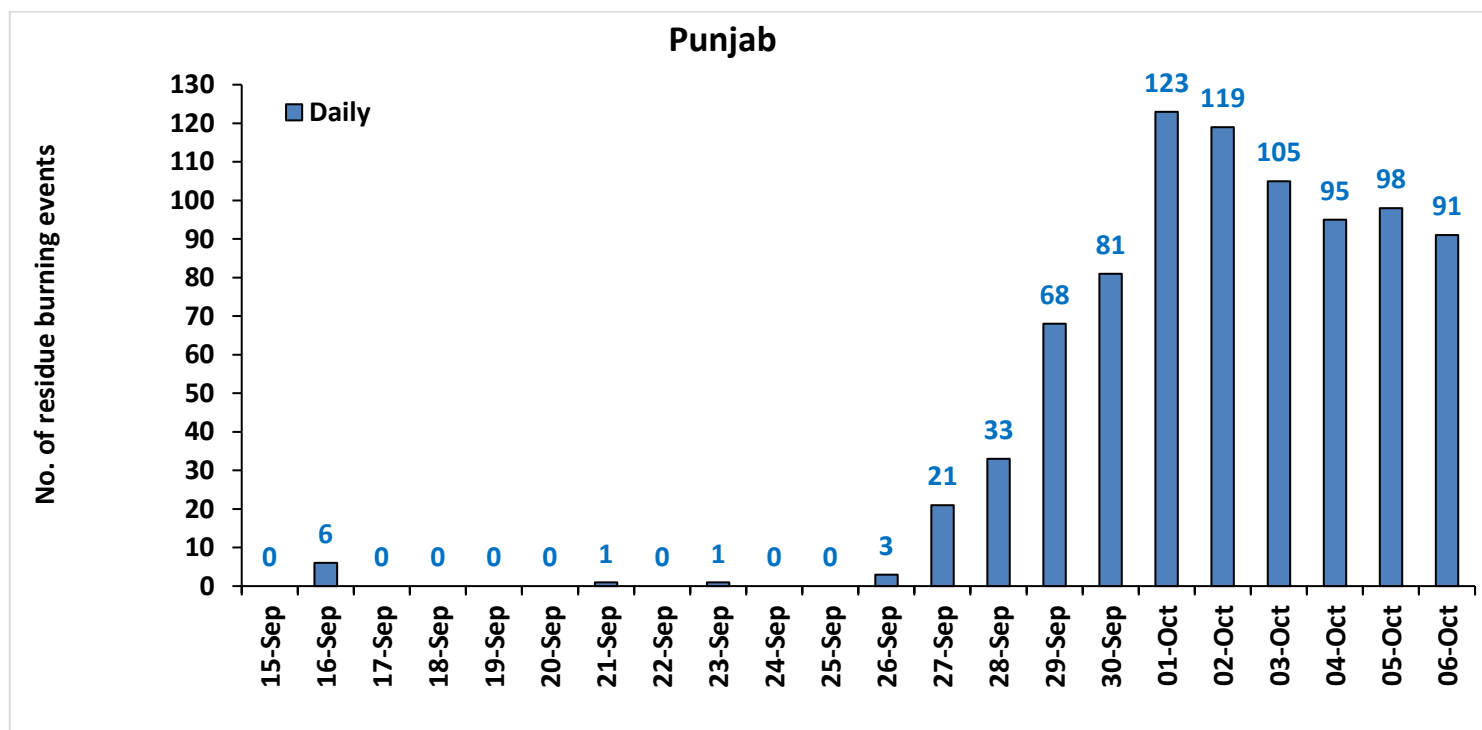
**Consortium for Research on Agroecosystem Monitoring and Modeling from Space (CREAMS) Laboratory,
Division of Agricultural Physics, ICAR – Indian Agricultural Research Institute, New Delhi – 110012**

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

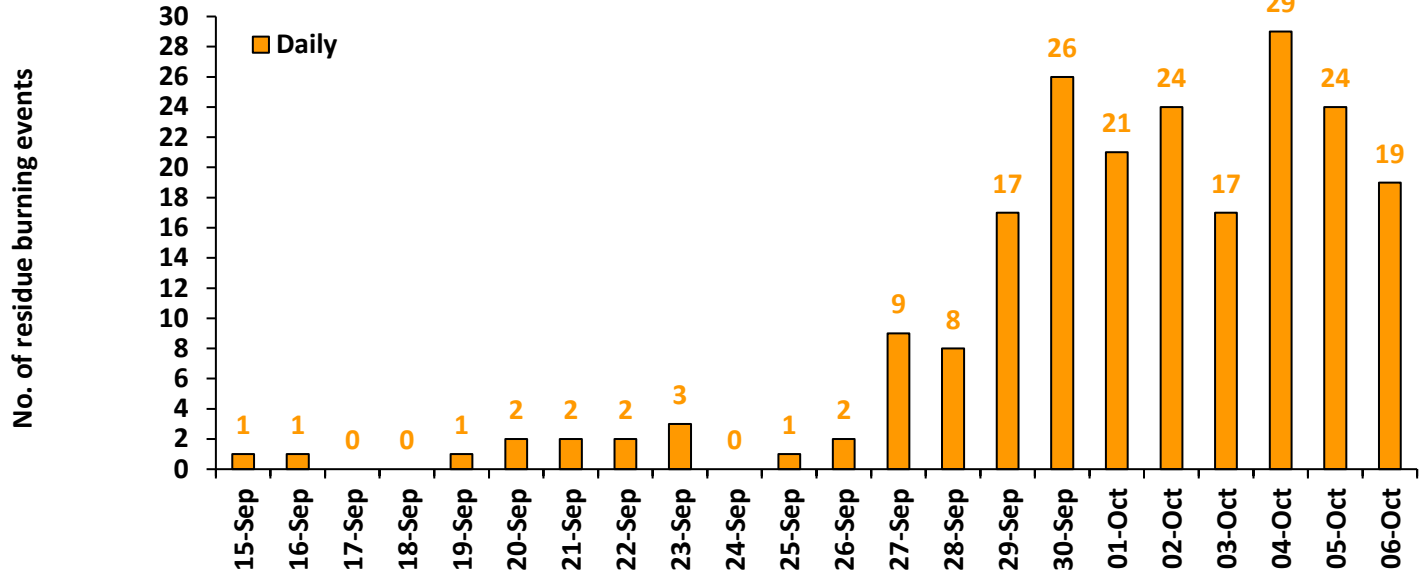
Highlights for 06-Oct-2023

- 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 **144** residue burning events in the six study States on 06-Oct-2023.
- The state wise events detected on 06-Oct-2023 were **91** in Punjab, **19** in Haryana, **18** in UP, **00** in Delhi, **09** in Rajasthan and **07** in MP.
- Total **1298** burning events were detected in the six states between 15-Sept-2023 and 06-Oct-2023, which are distributed as **845**, **209**, **106**, **01**, **65** and **72** in Punjab, Haryana, UP, Delhi, Rajasthan and MP, respectively.
- Detection of residue burning events was hampered by the presence of clouds over eastern Uttar Pradesh state.

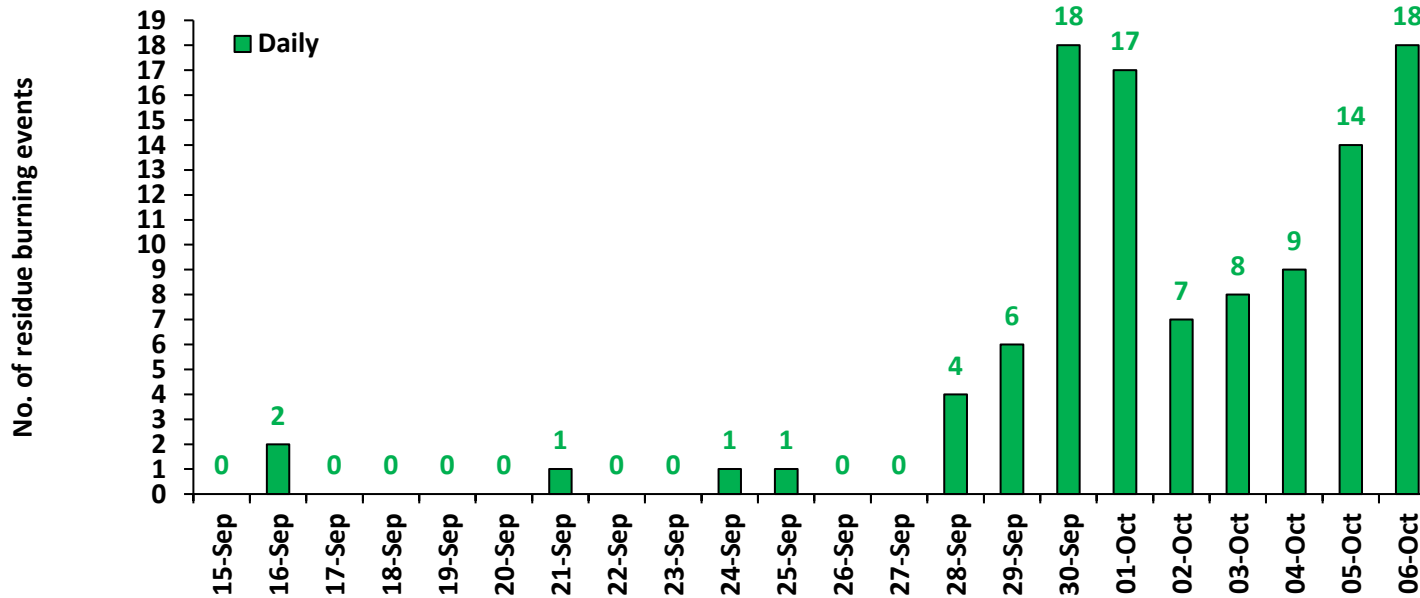
Temporal distribution of rice residue burning events for the study States in 2023



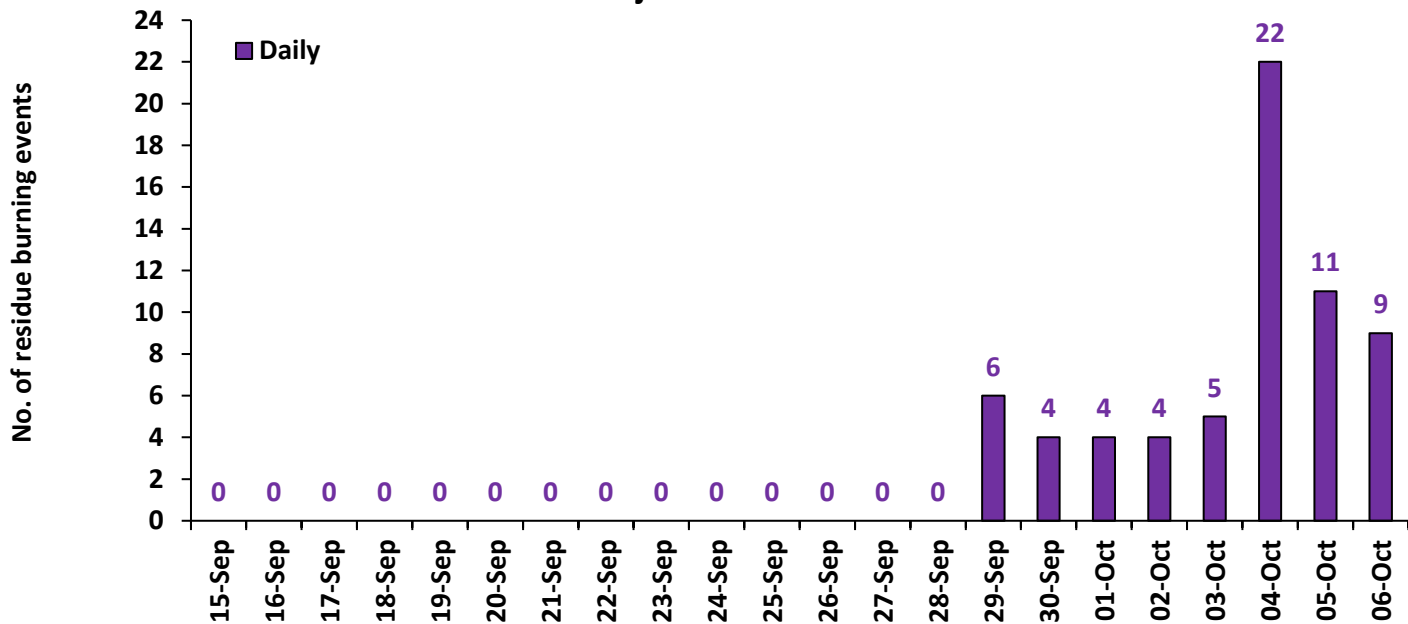
Haryana



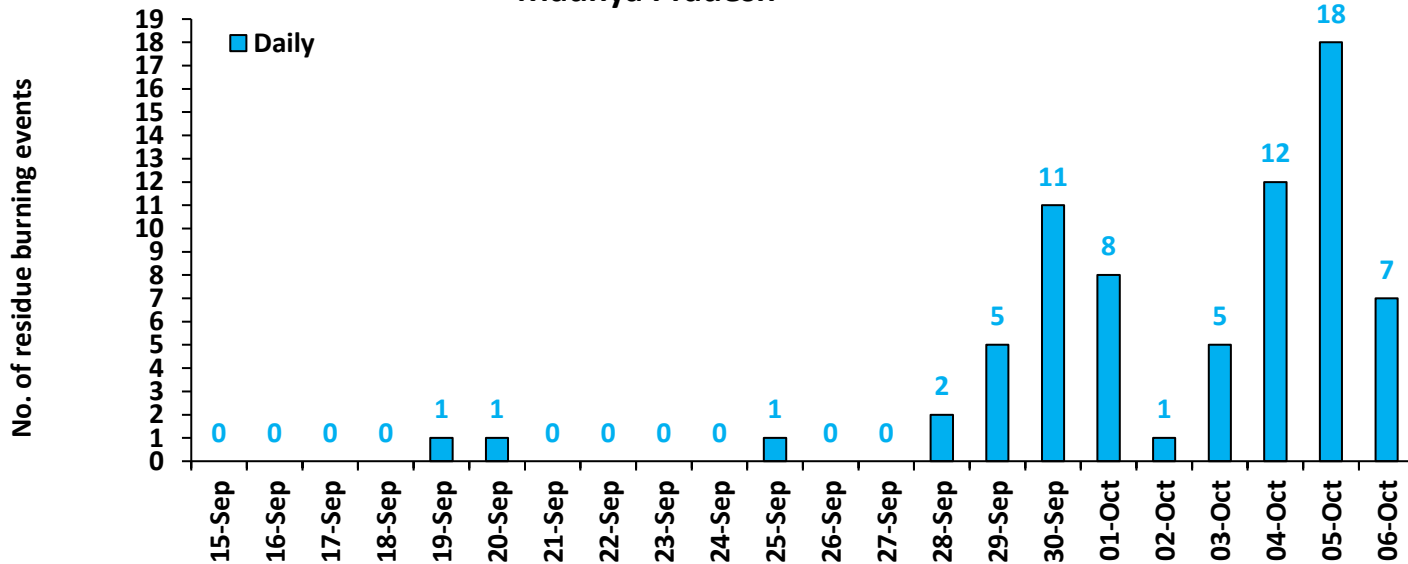
Uttar Pradesh

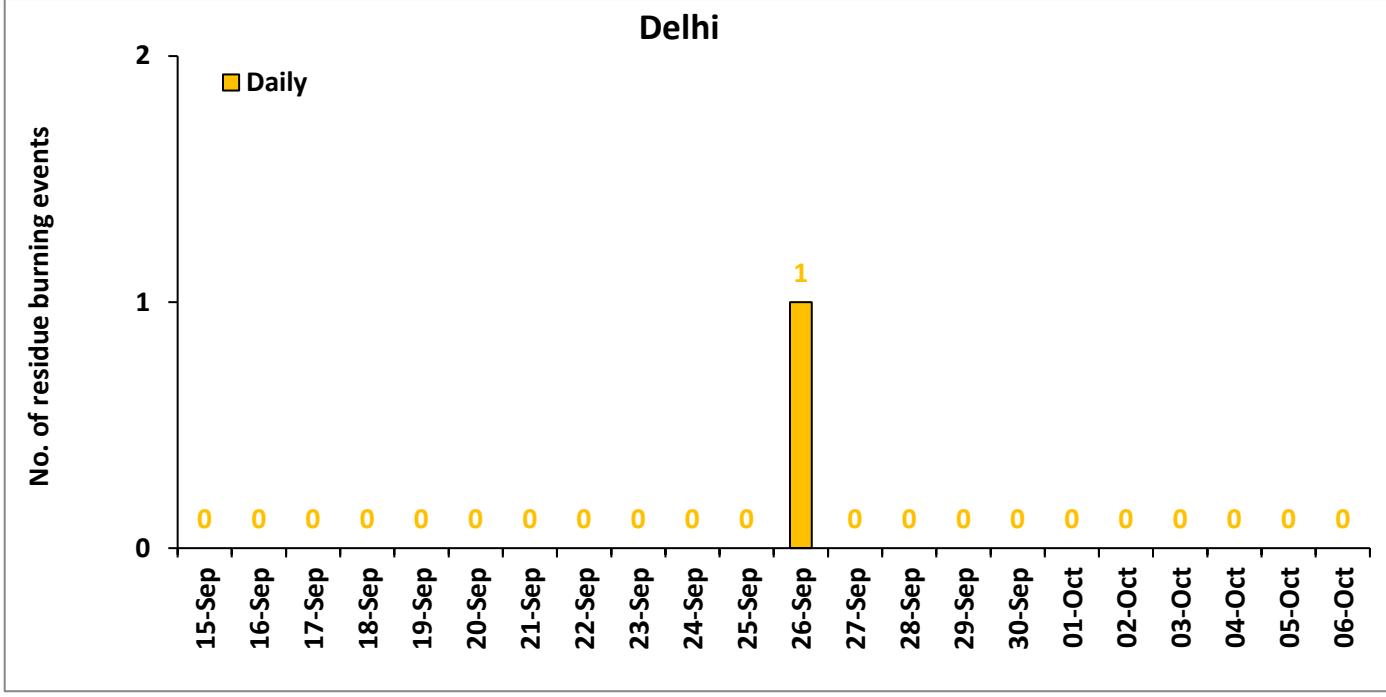


Rajasthan

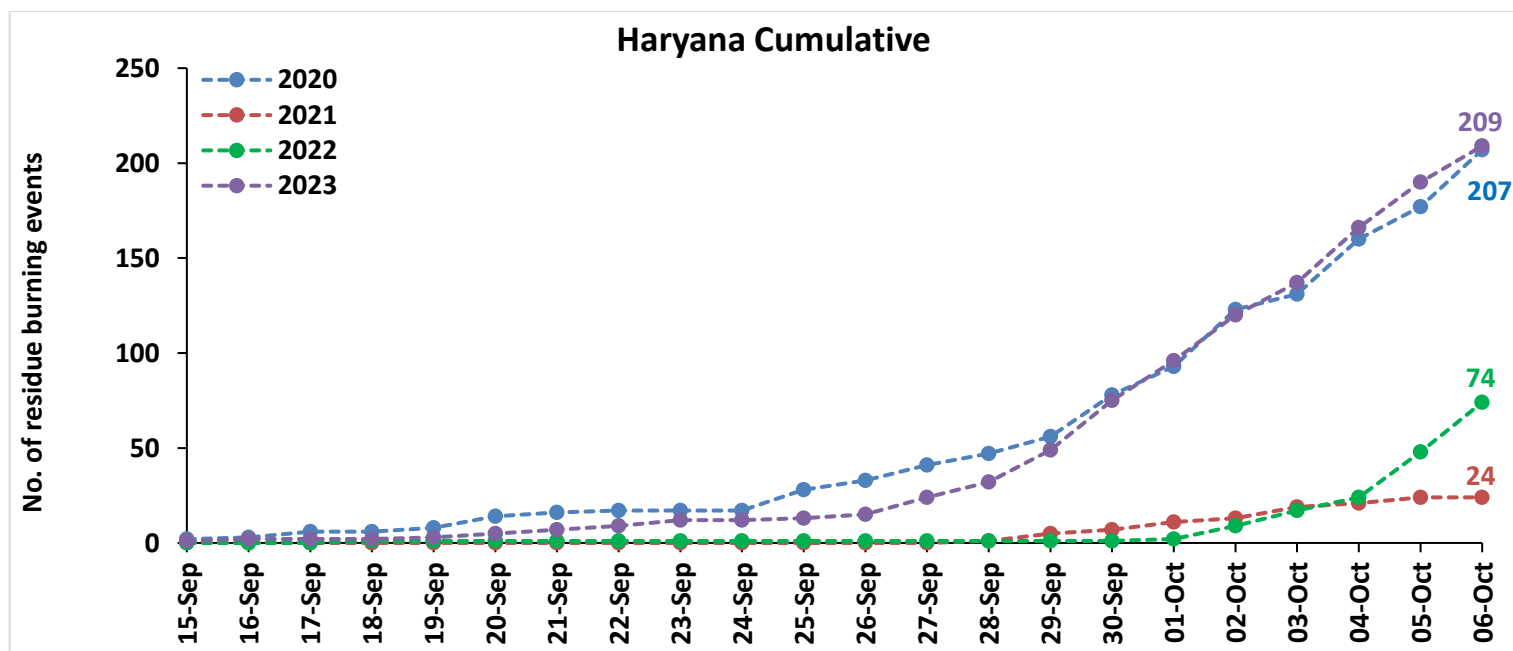
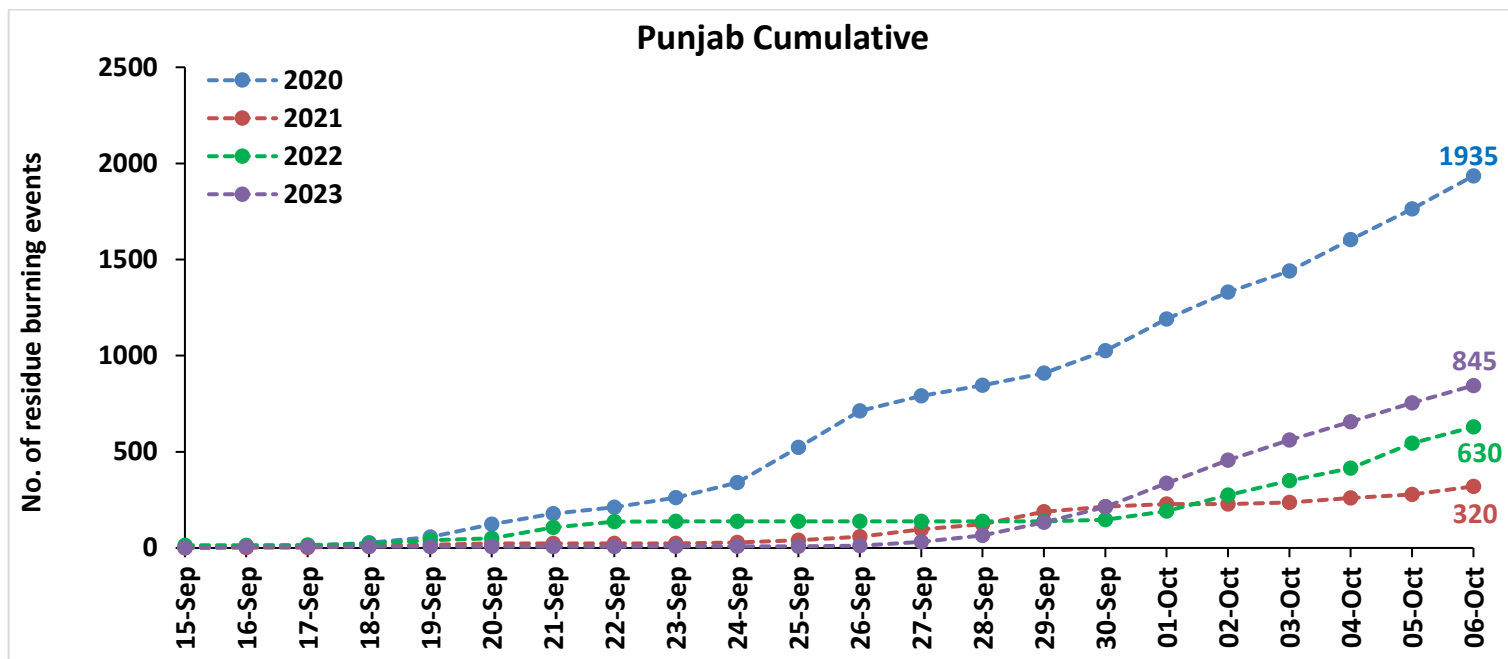


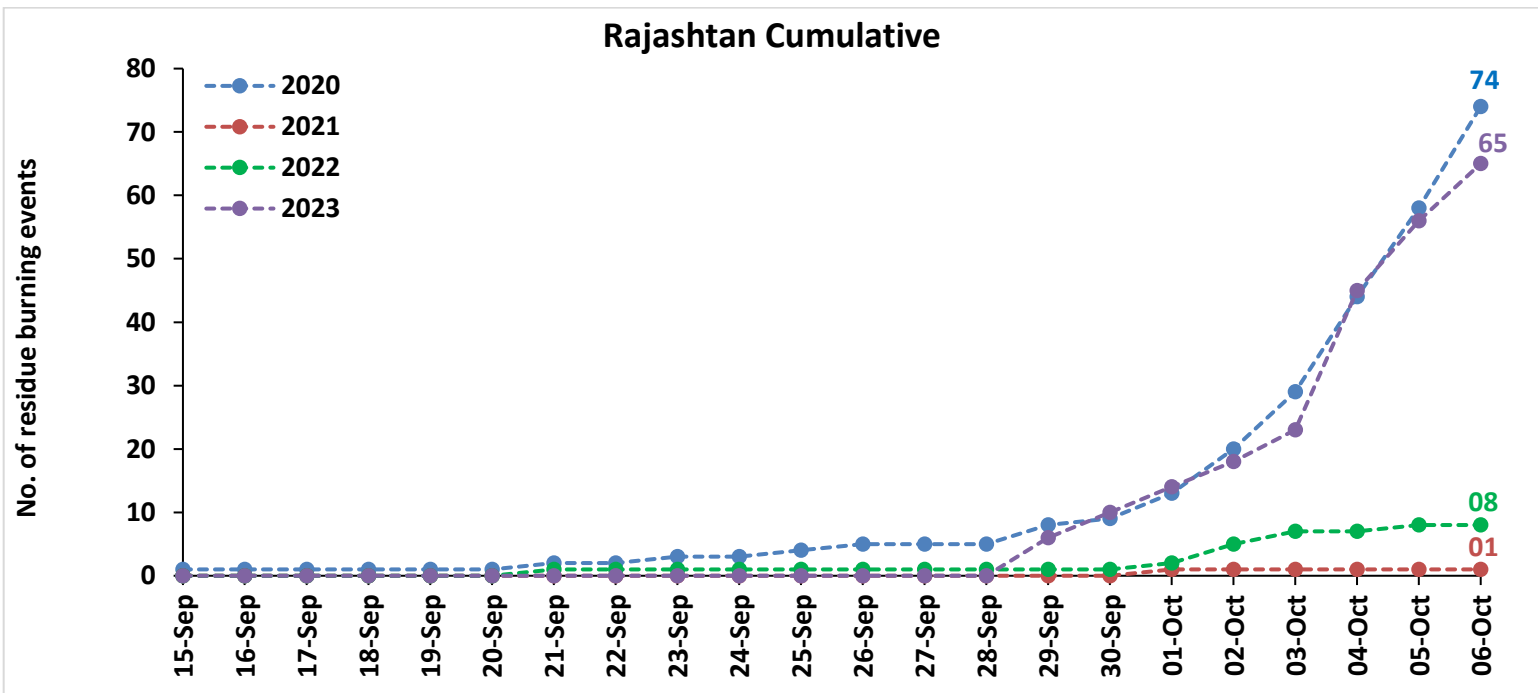
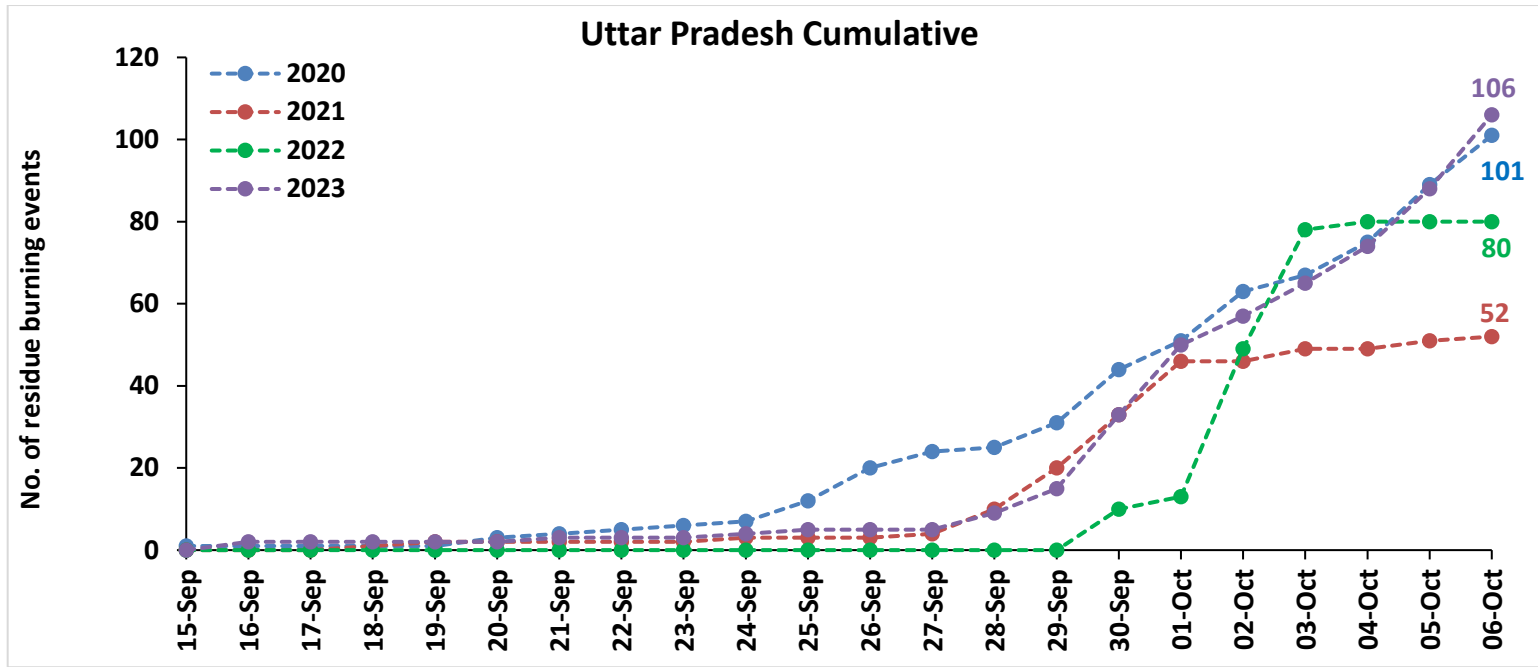
Madhya Pradesh

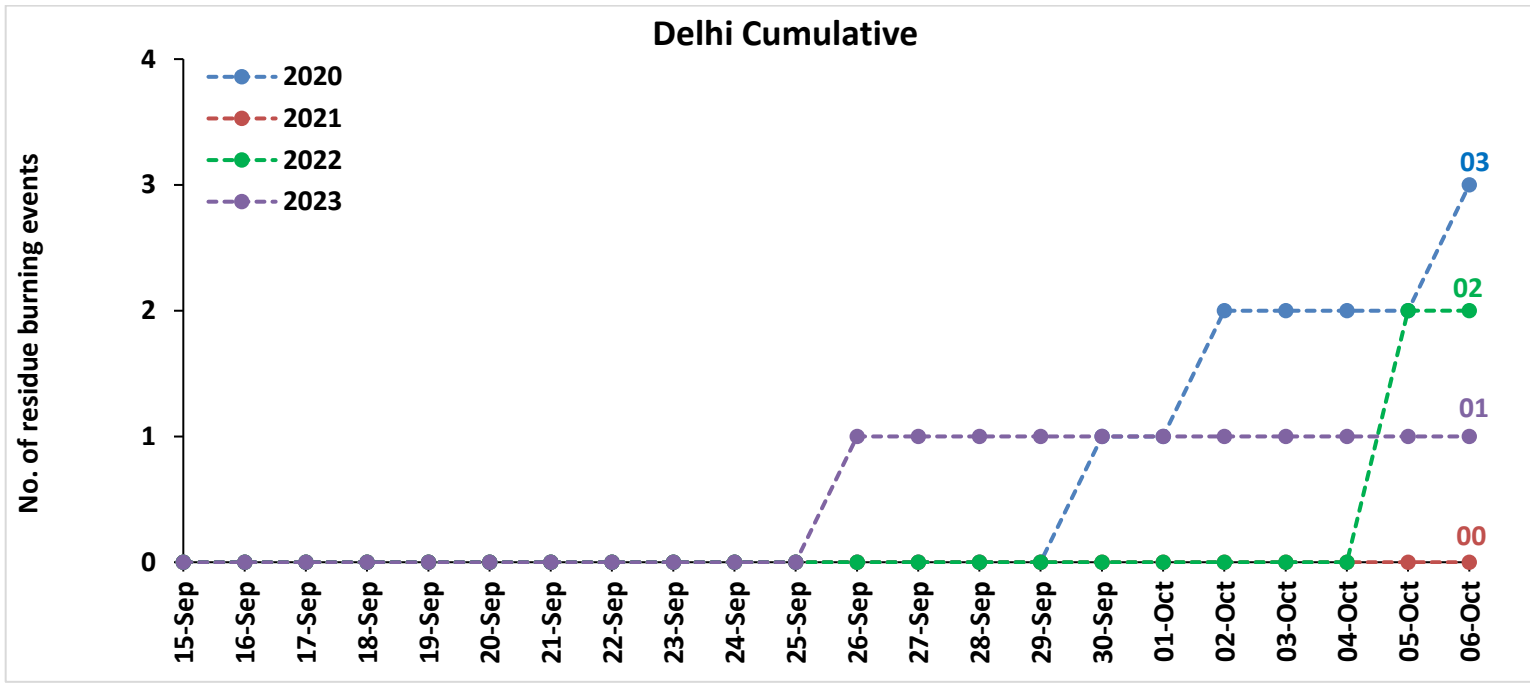
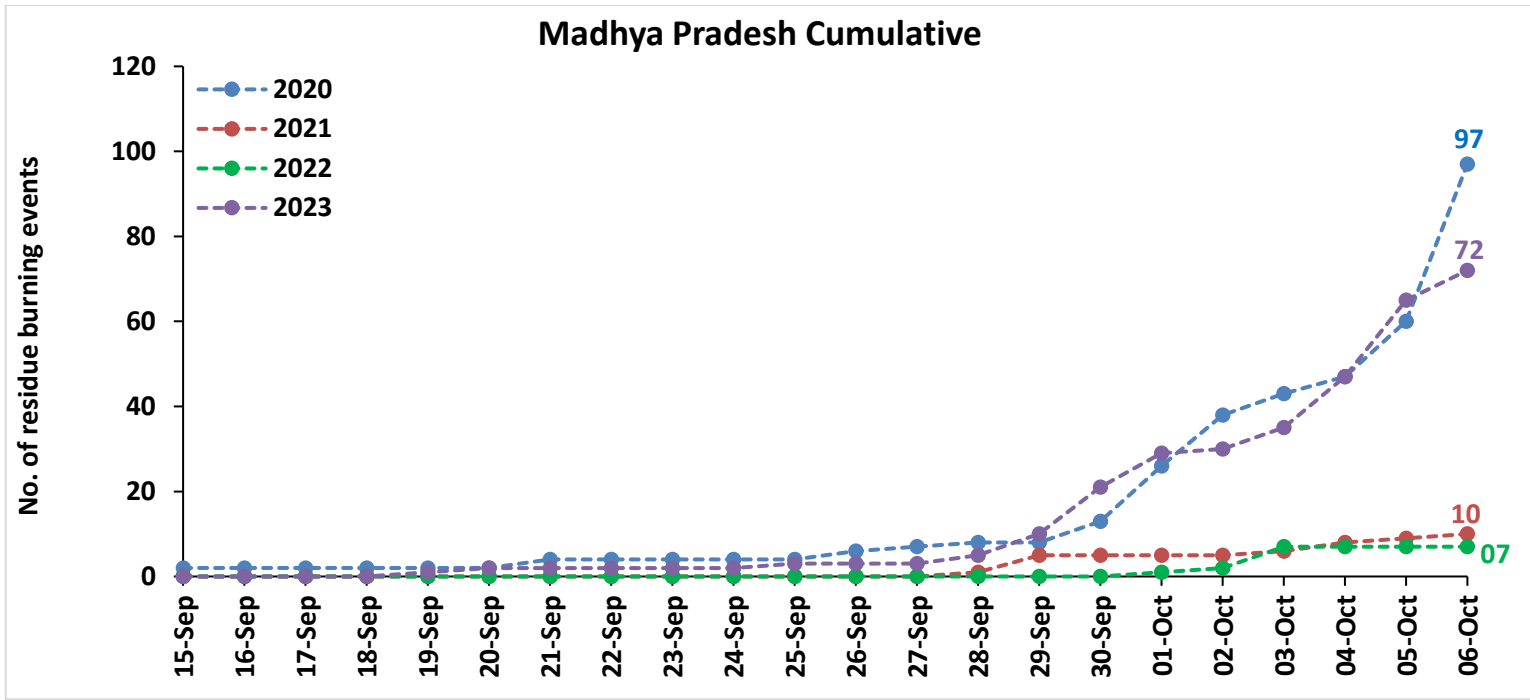




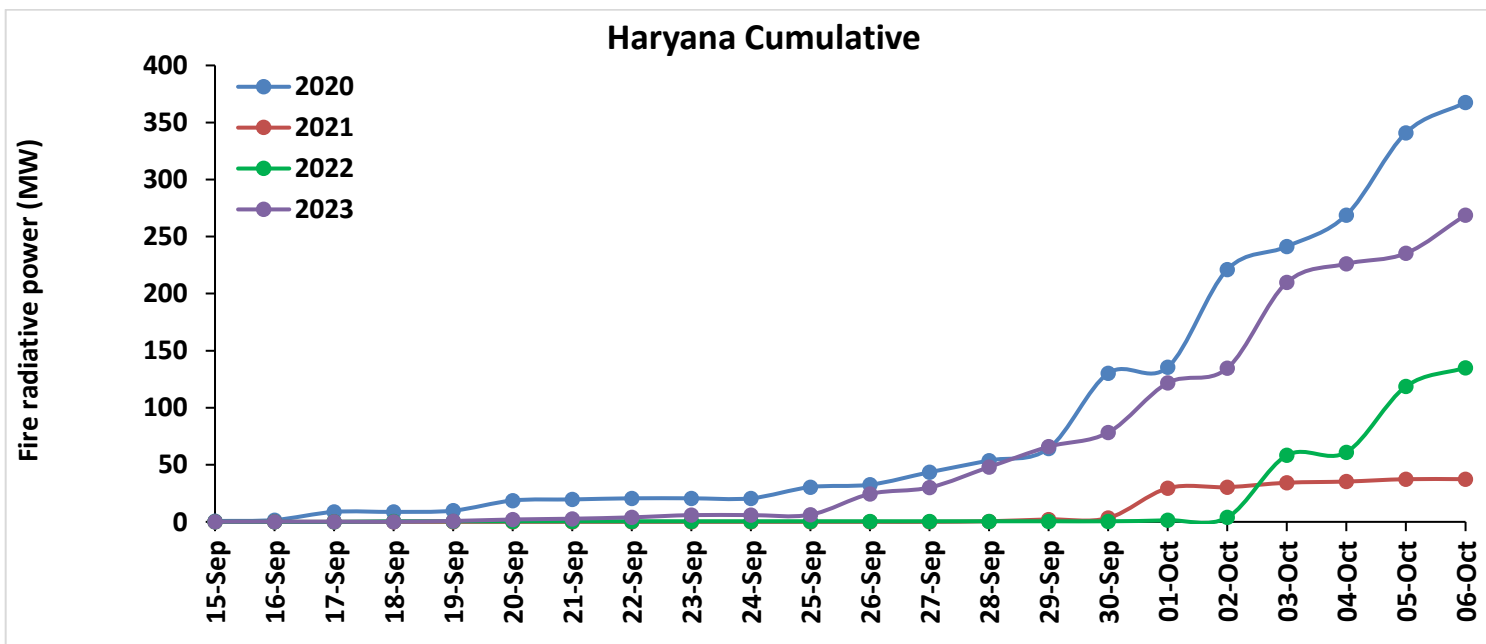
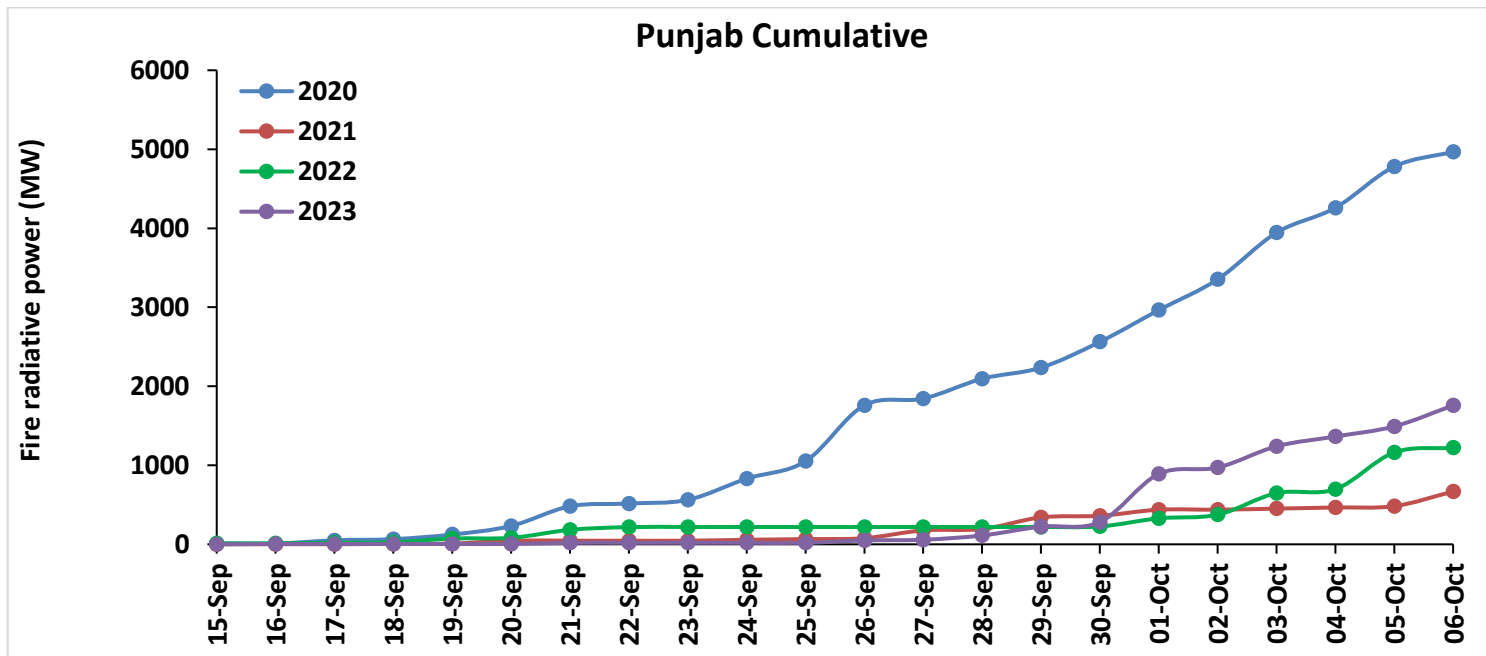
Comparison of residue burning events in current year (2023) with previous years (2020, 2021 and 2022) for the study State

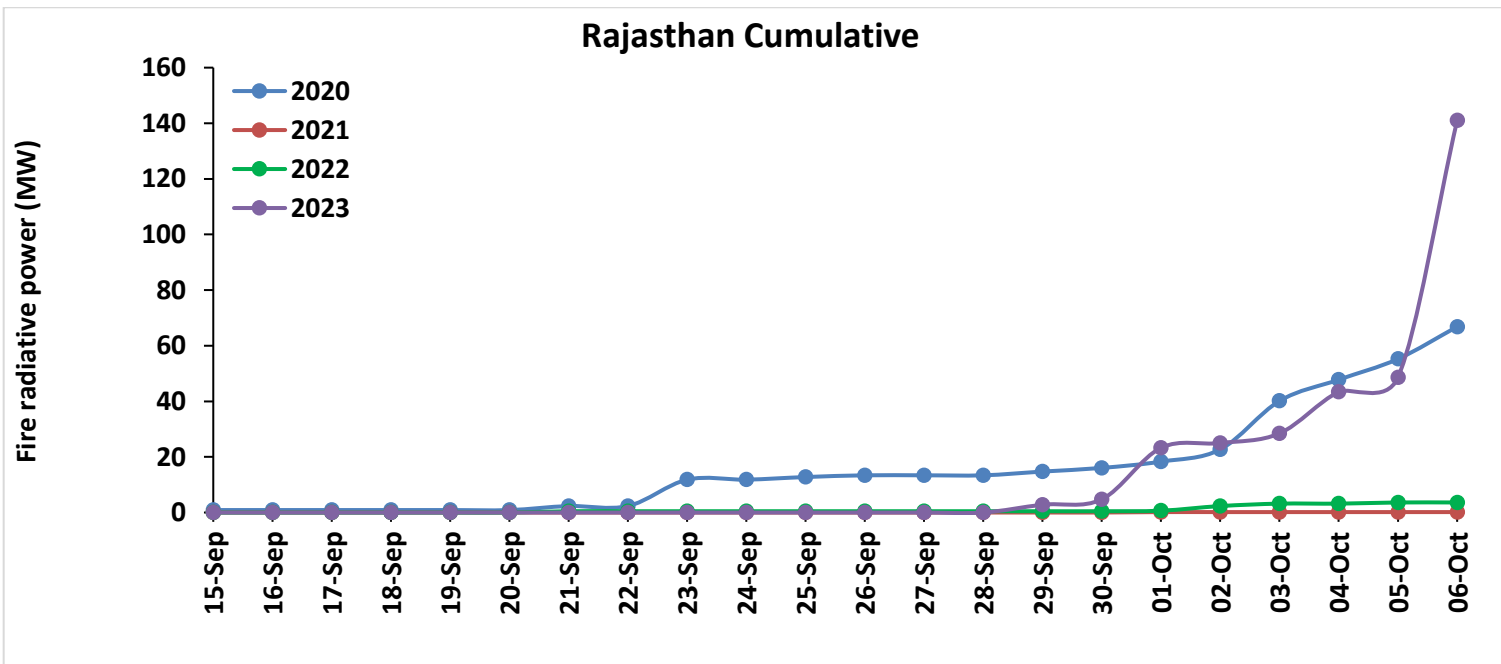
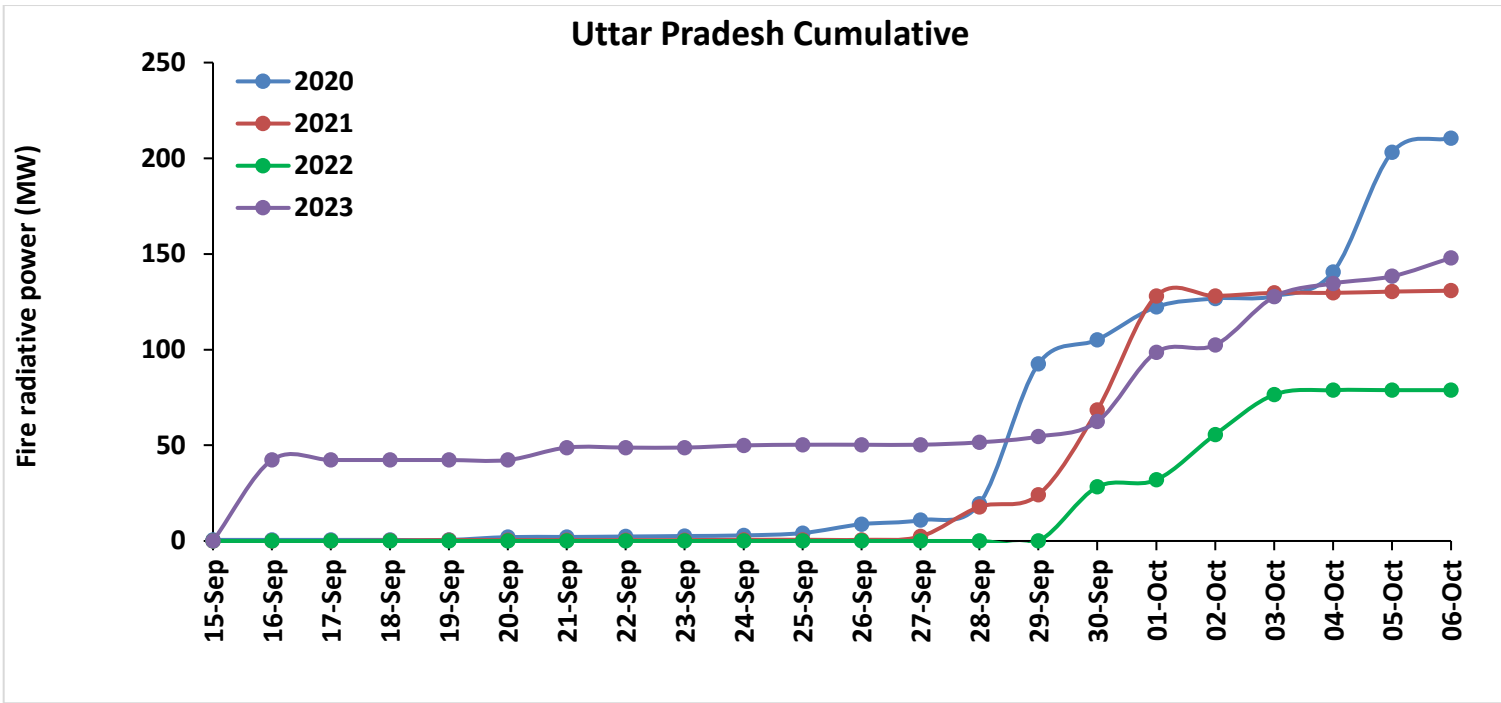


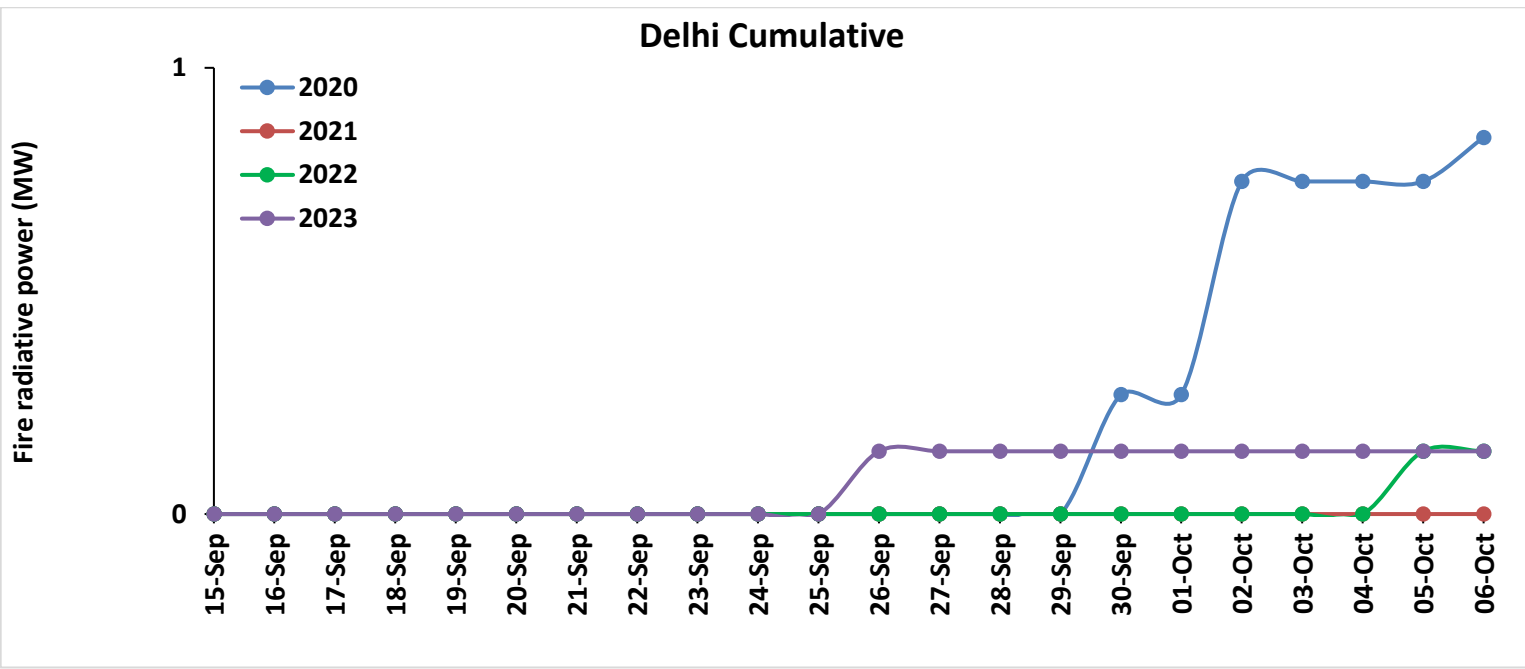
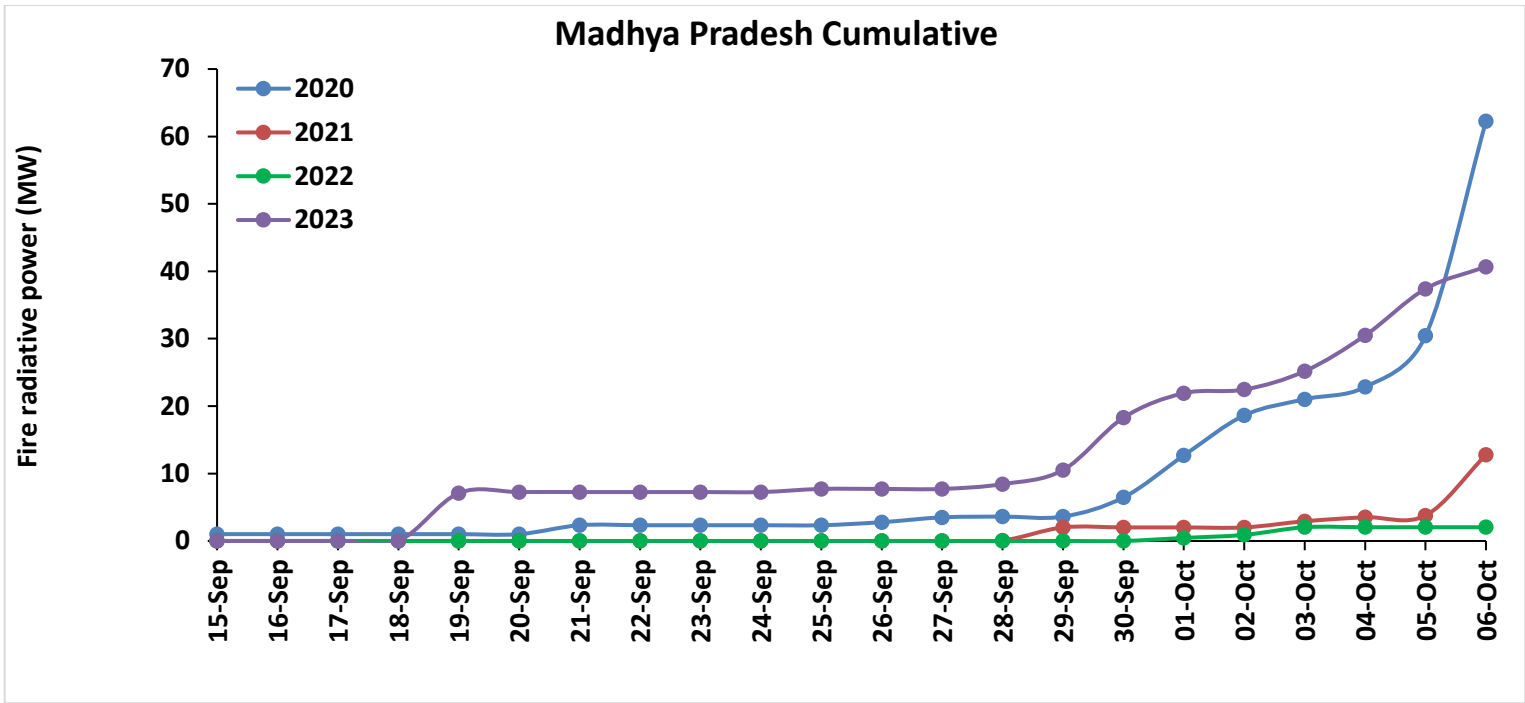




Comparison of residue burning fire power in current year (2023) with previous years (2020, 2021 and 2022) for the study States

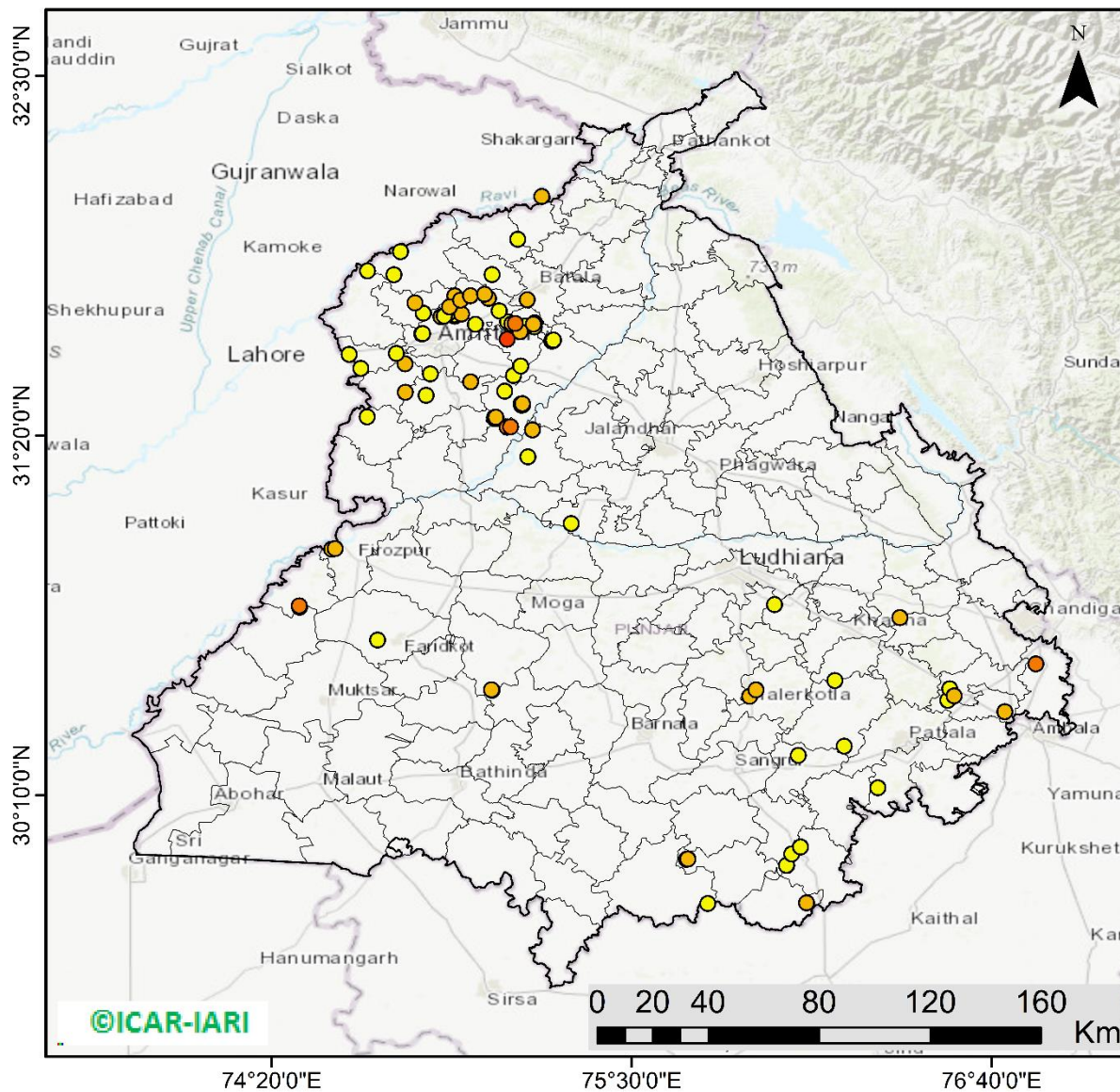






Punjab

RICE RESIDUE BURNING IN PUNJAB



91 burning events detected in Punjab during (06th Oct 2023)

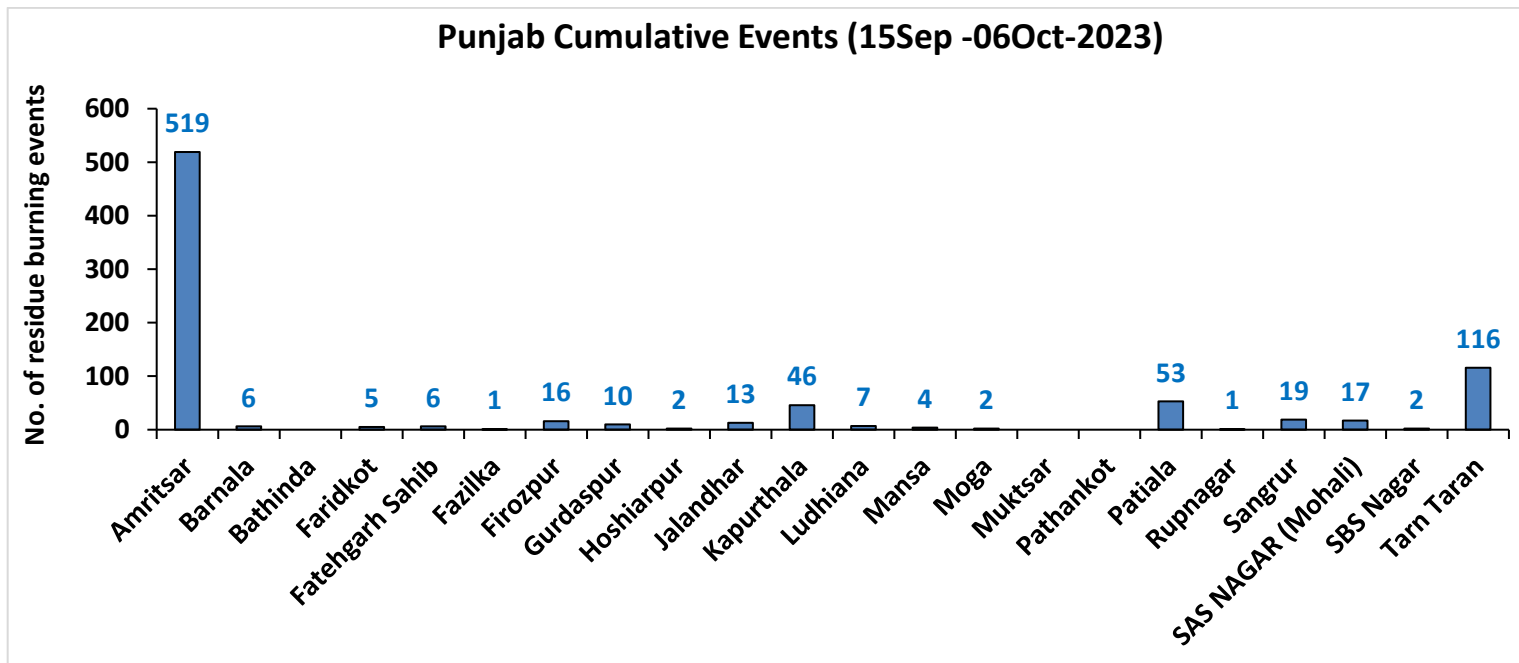
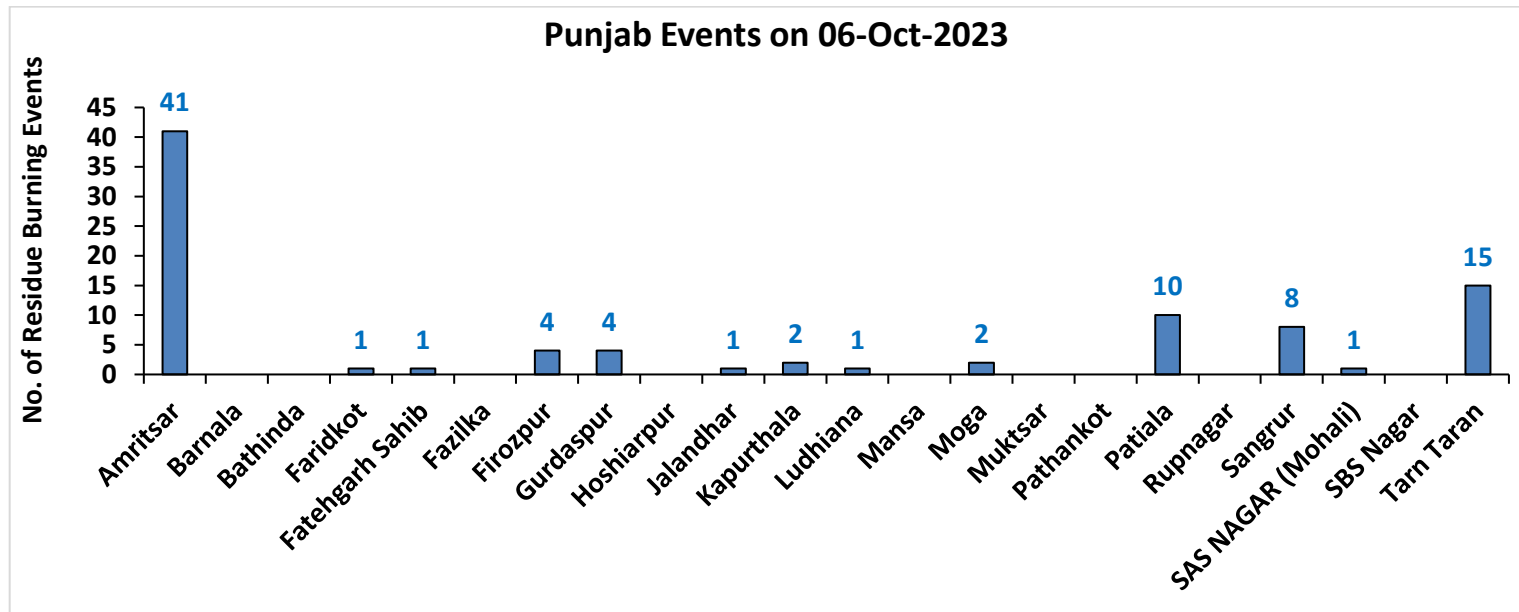
Fire Intensity (W/m²)

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



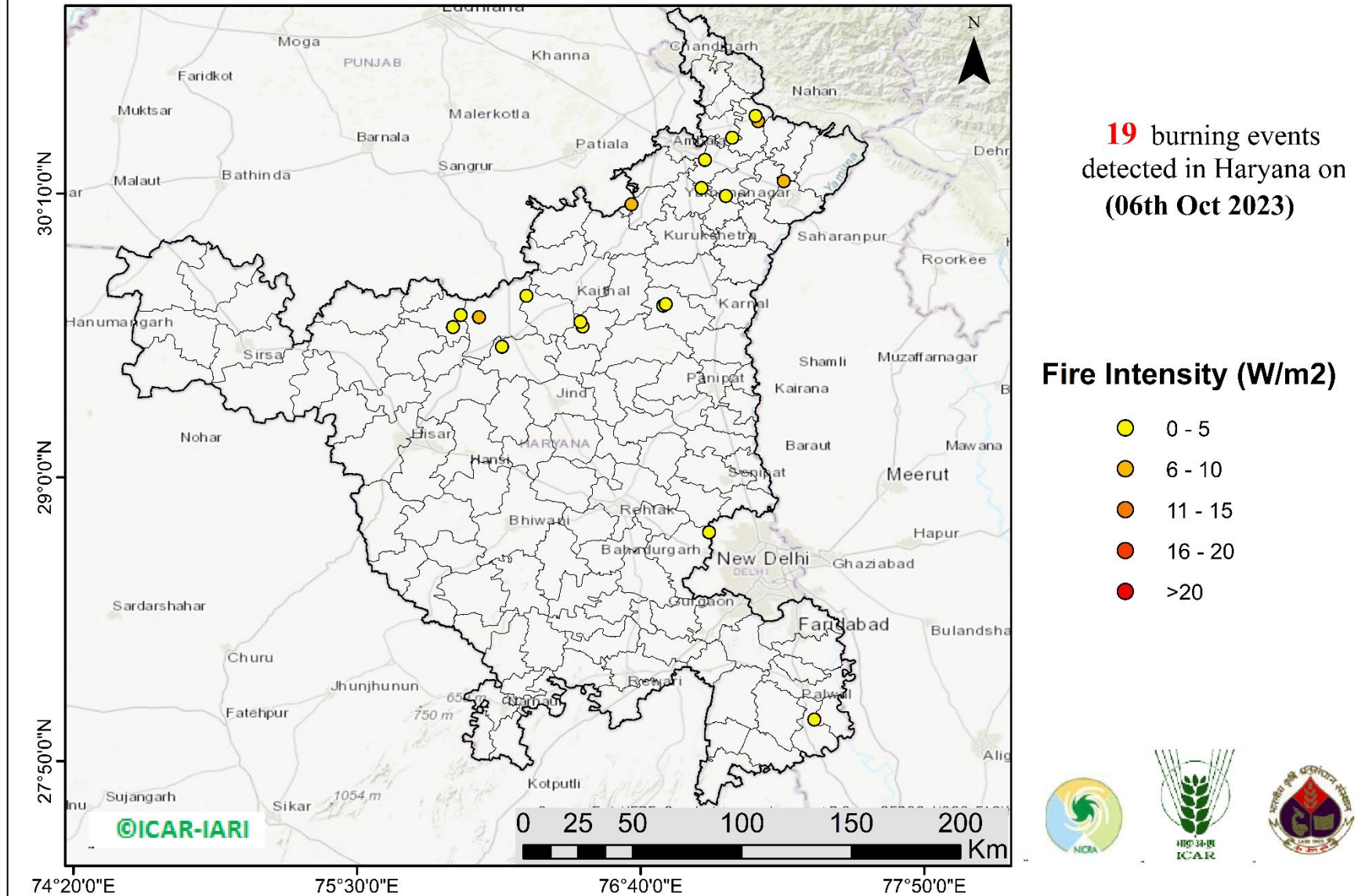
<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

District-wise cumulative number of residues burning events in Punjab (15Sep- 06Oct-2023)



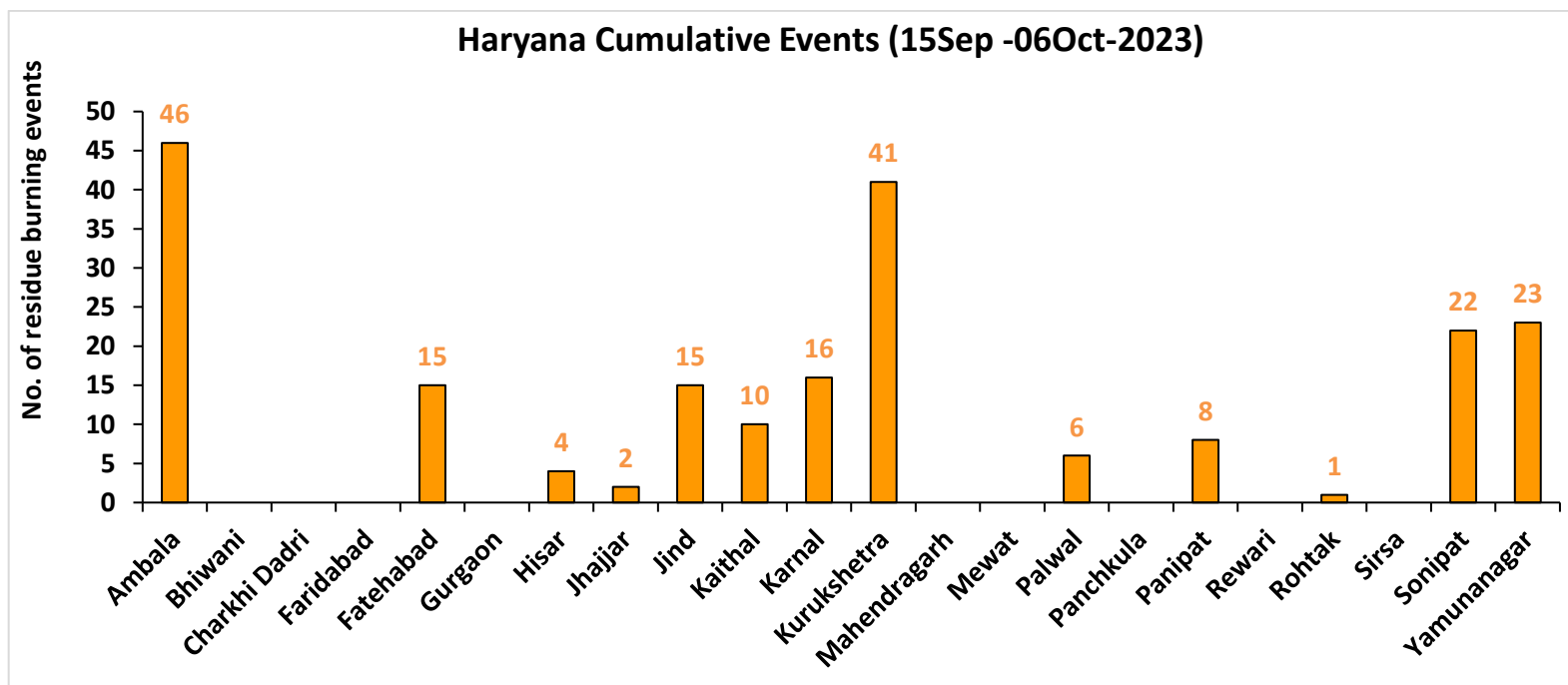
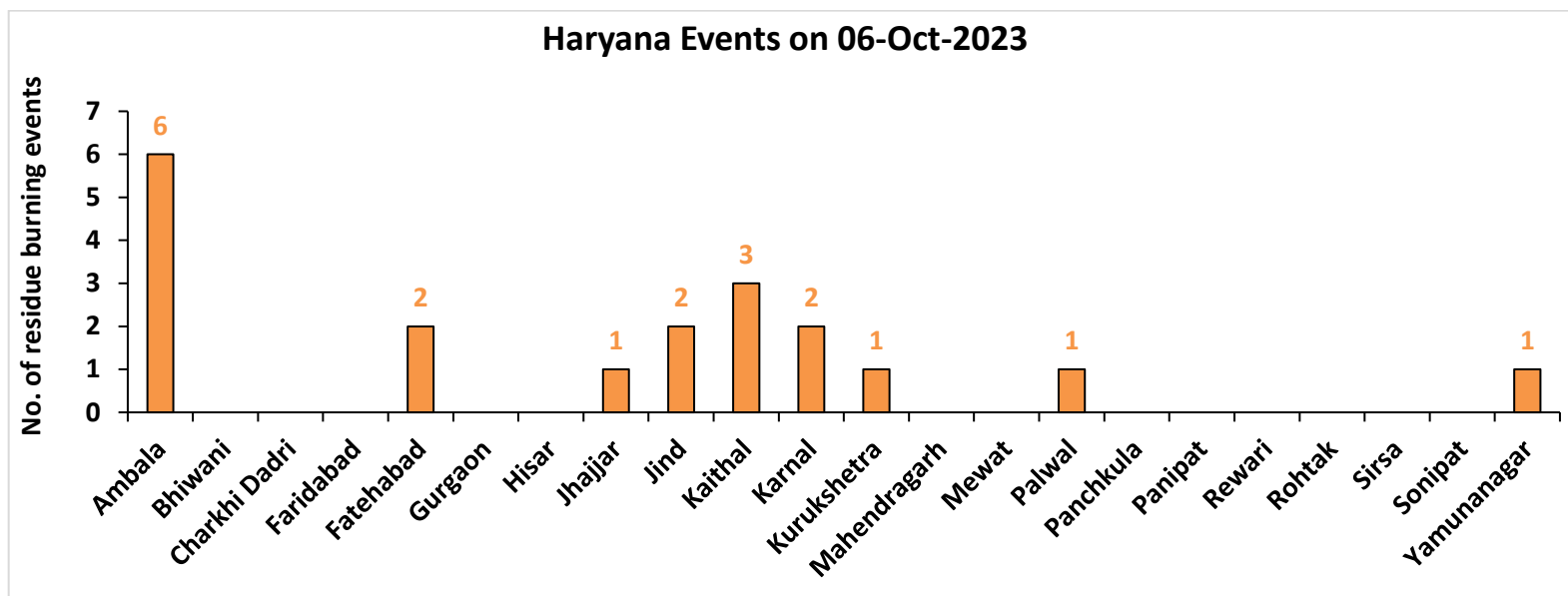
Haryana

RICE RESIDUE BURNING IN HARYANA



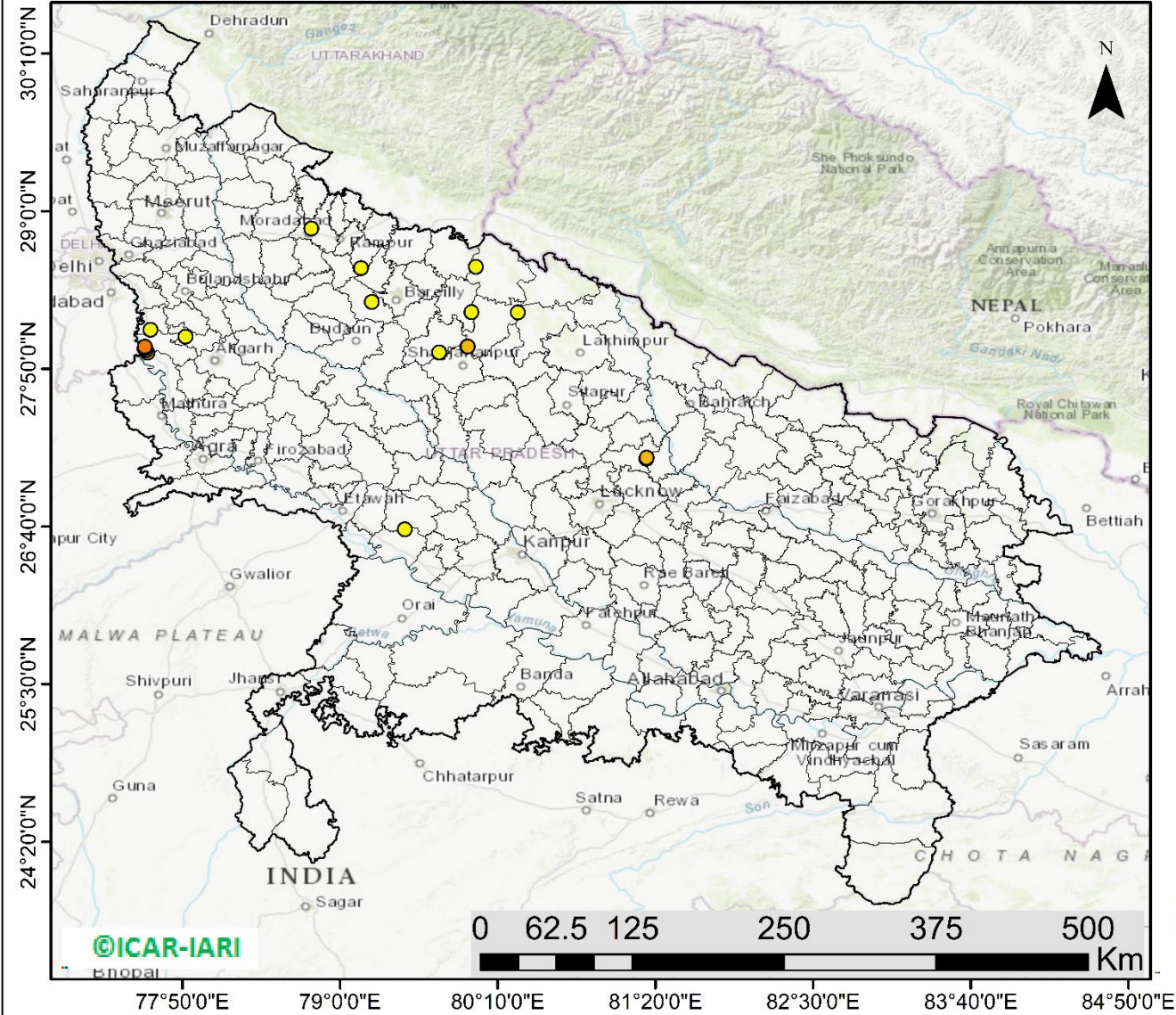
<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

District-wise cumulative number of residues burning events in Haryana (15Sep-06Oct -2023)



Uttar Pradesh

RICE RESIDUE BURNING IN UTTAR PRADESH



18 burning events detected in Uttar Pradesh on (06th Oct 2023)

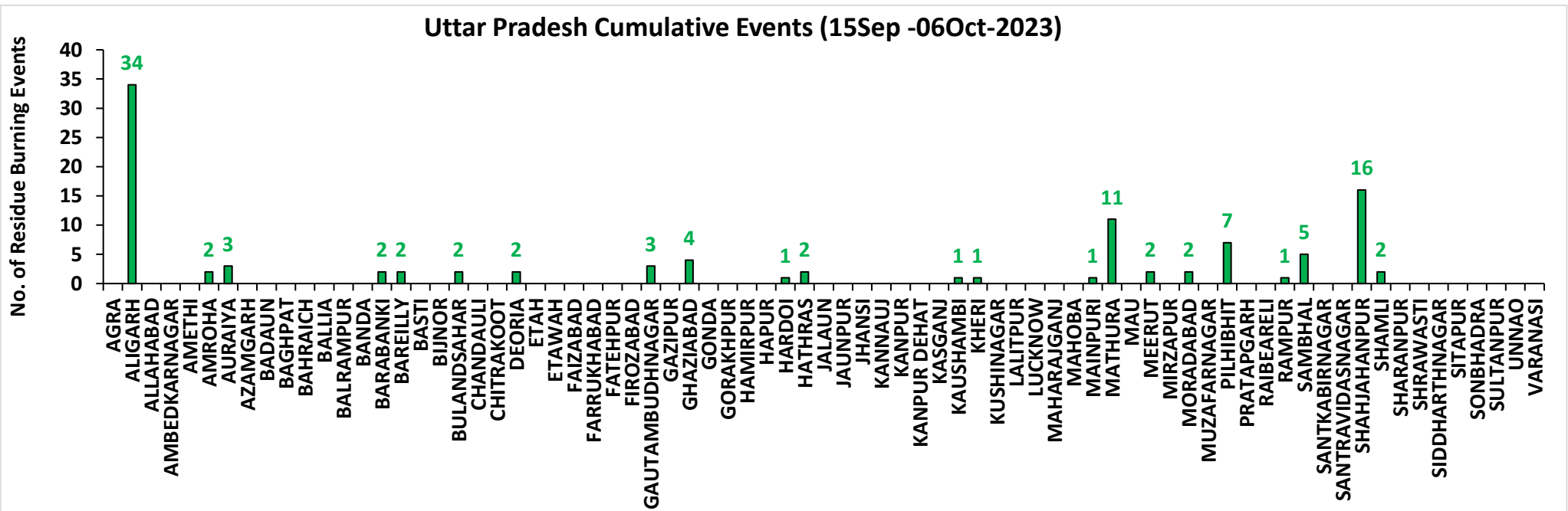
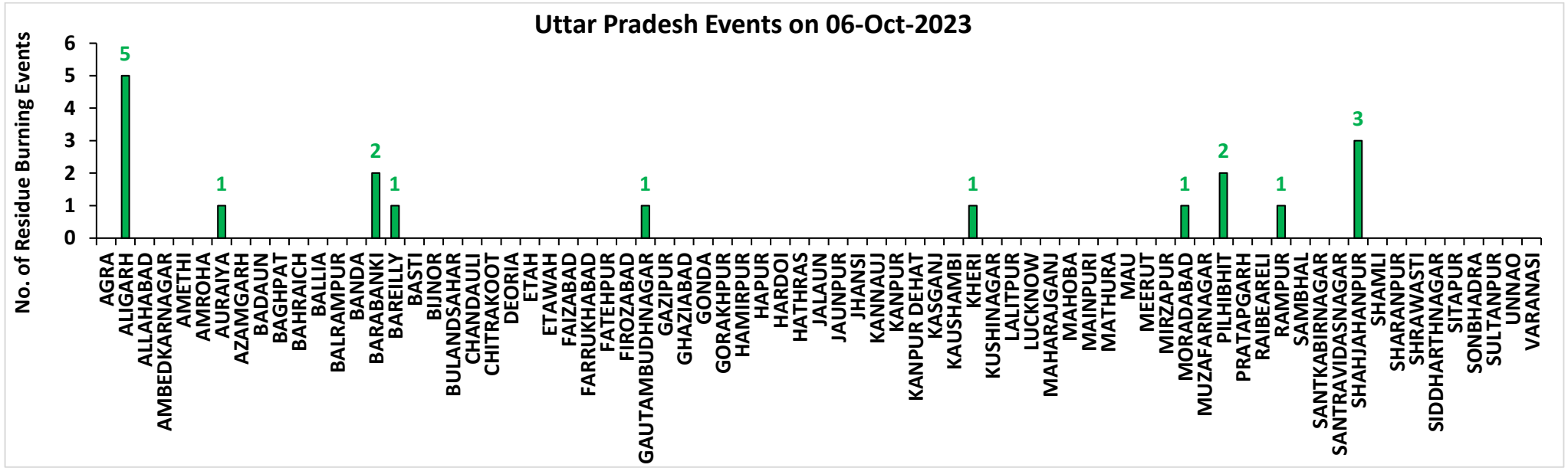
Fire Intensity (W/m2)

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



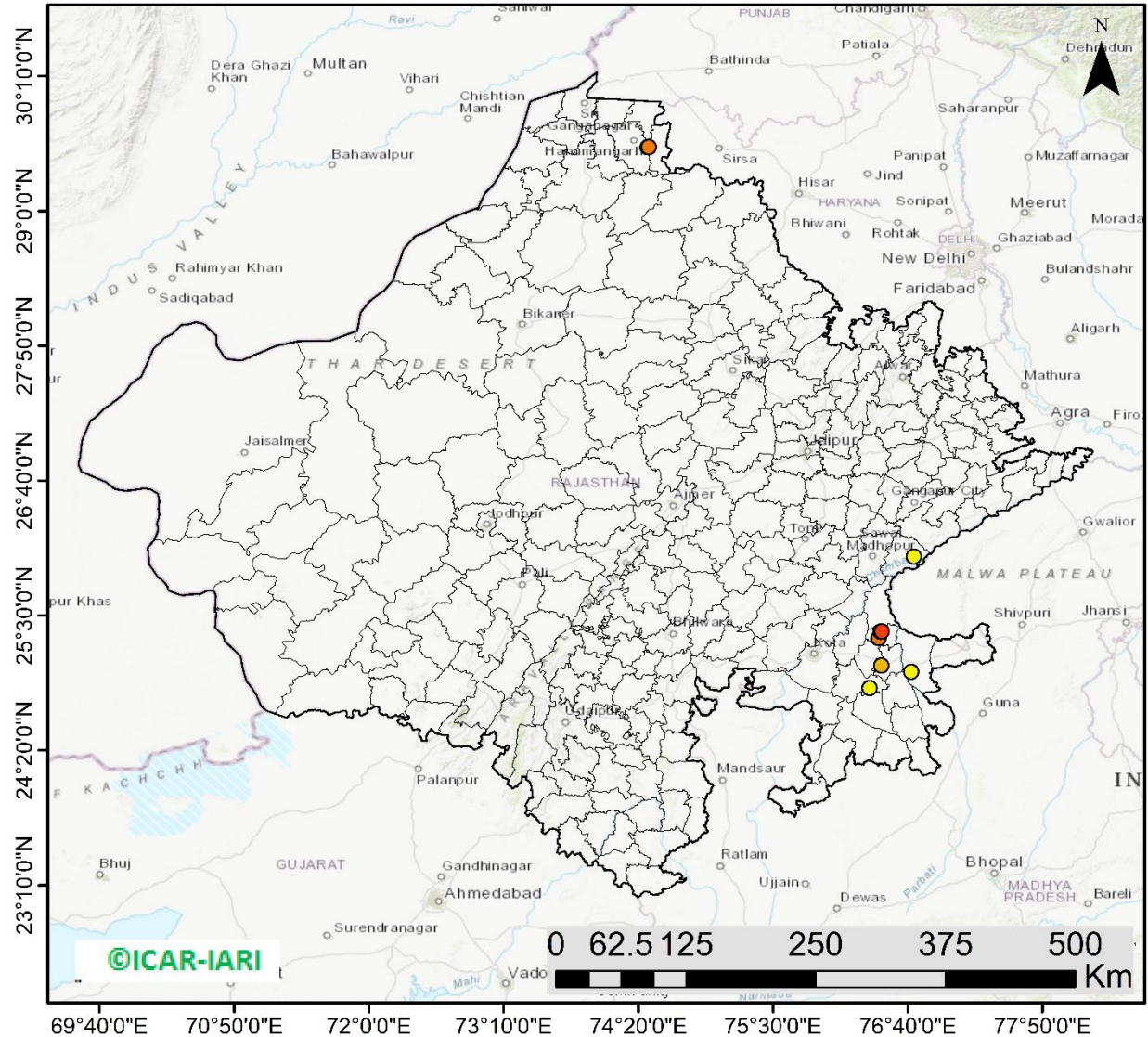
<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

District-wise cumulative number of residues burning events in Uttar Pradesh (15Sep-06Oct -2023)



Rajasthan

RICE RESIDUE BURNING IN RAJASTHAN



09 burning events
detected in Rajasthan on
(06th Oct 2023)

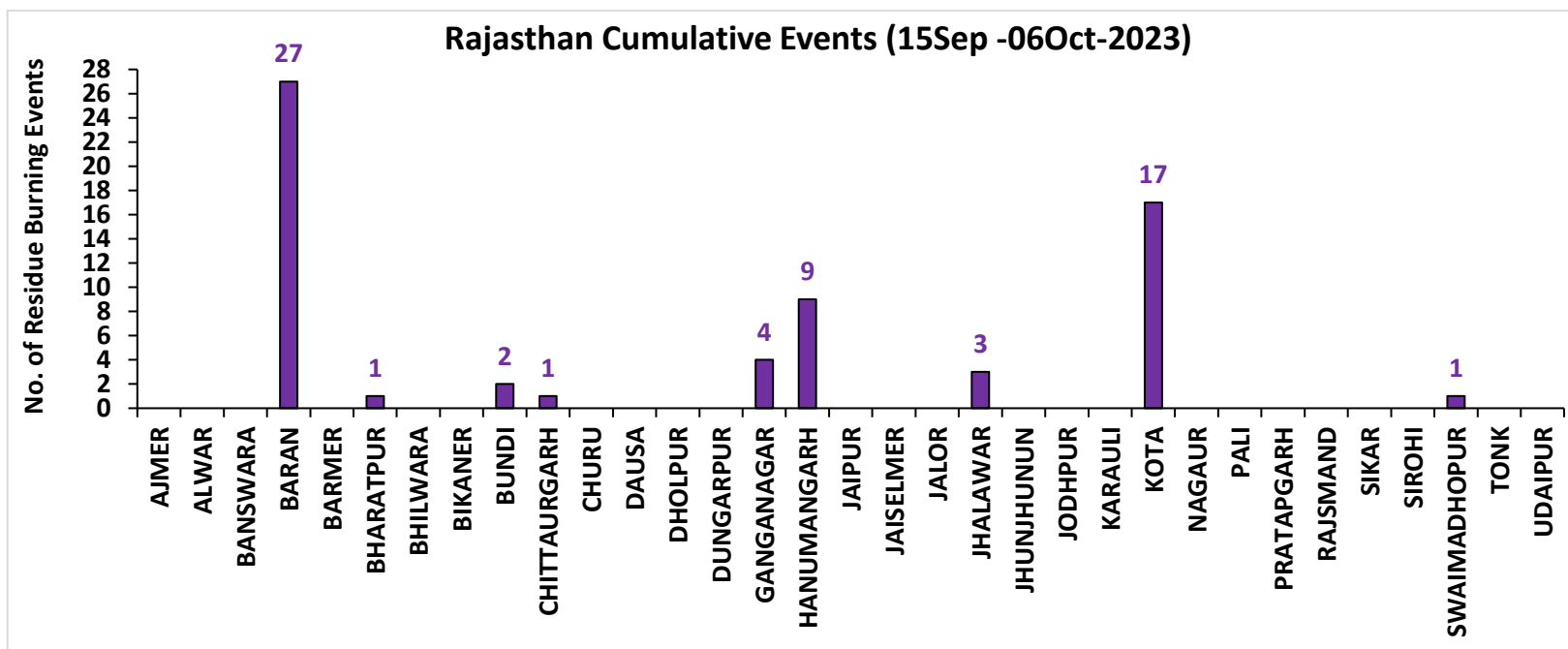
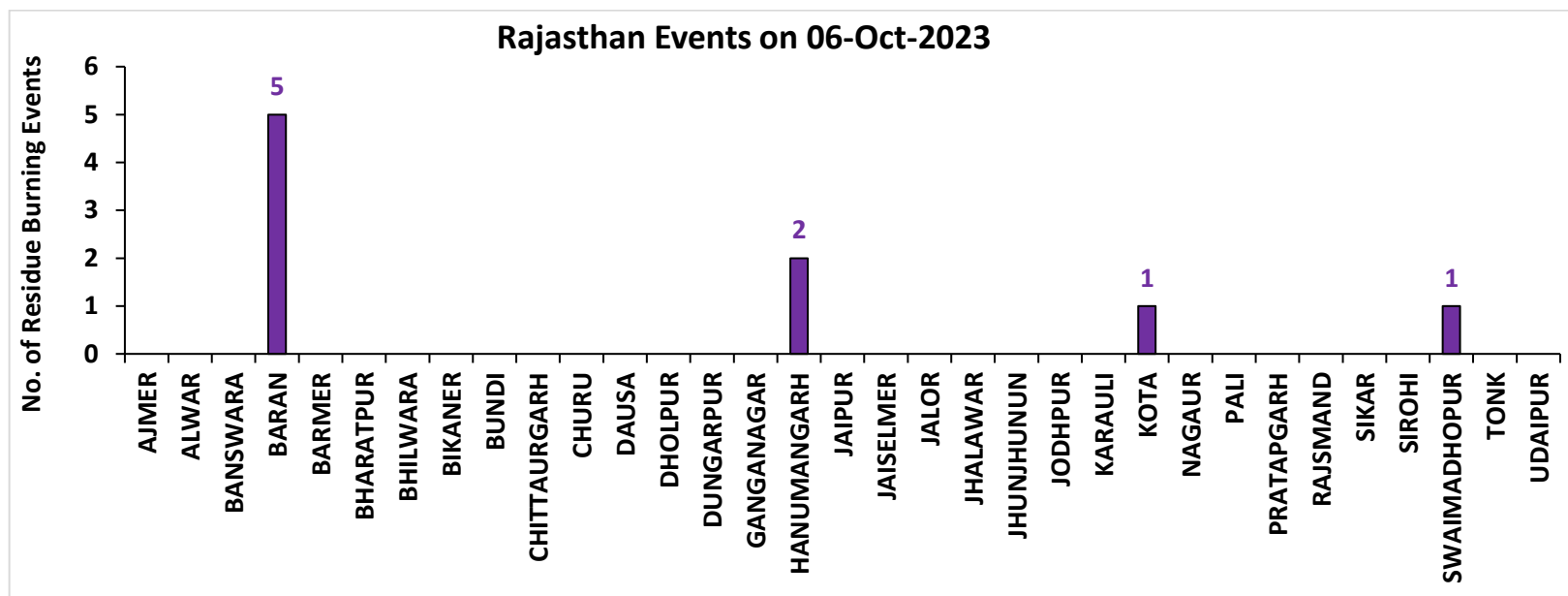
Fire Intensity (W/m²)

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



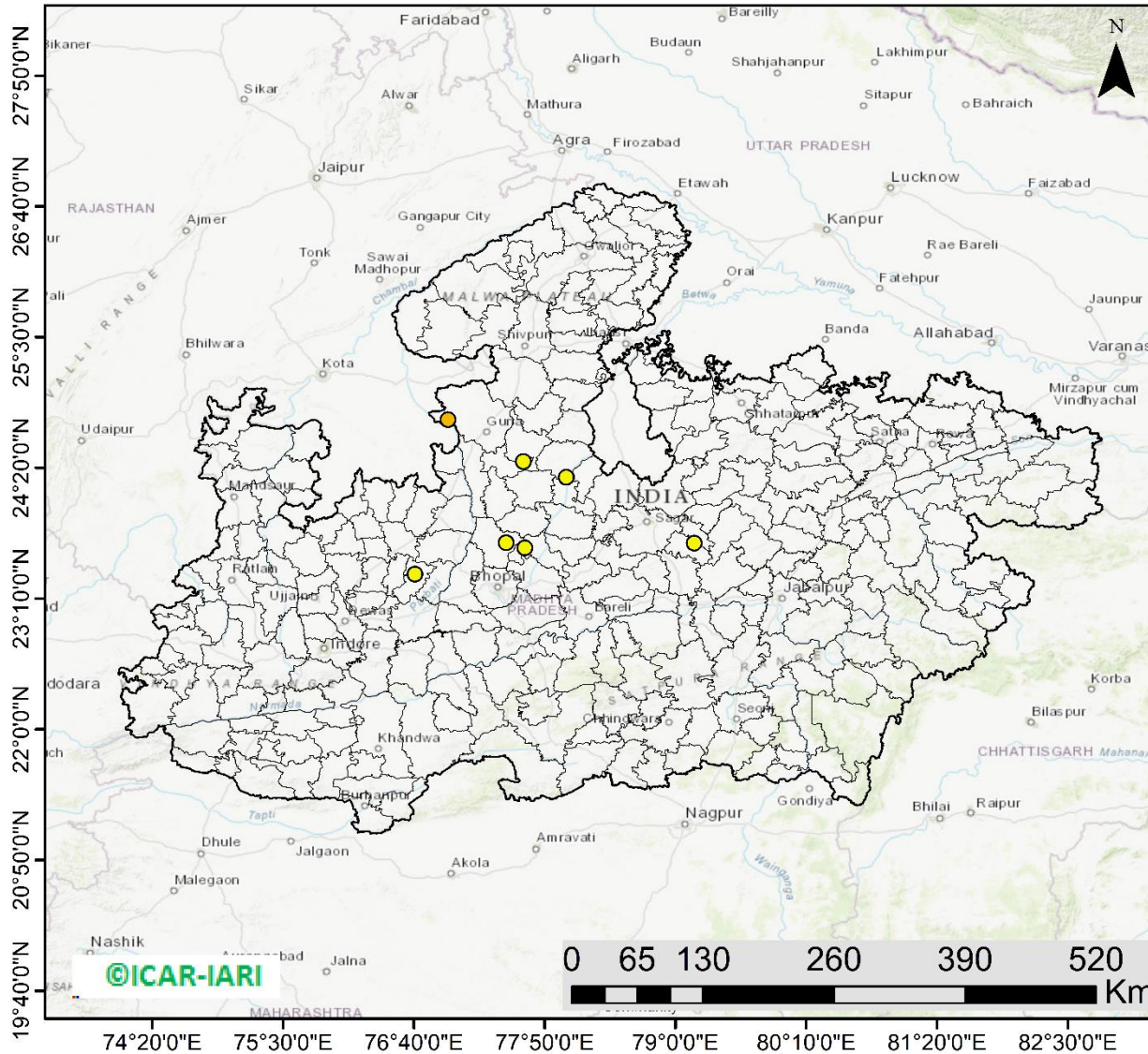
<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

District-wise cumulative number of residues burning events in Rajasthan (15Sep-06Oct -2023)



Madhya Pradesh

RICE RESIDUE BURNING IN MADHYA PRADESH



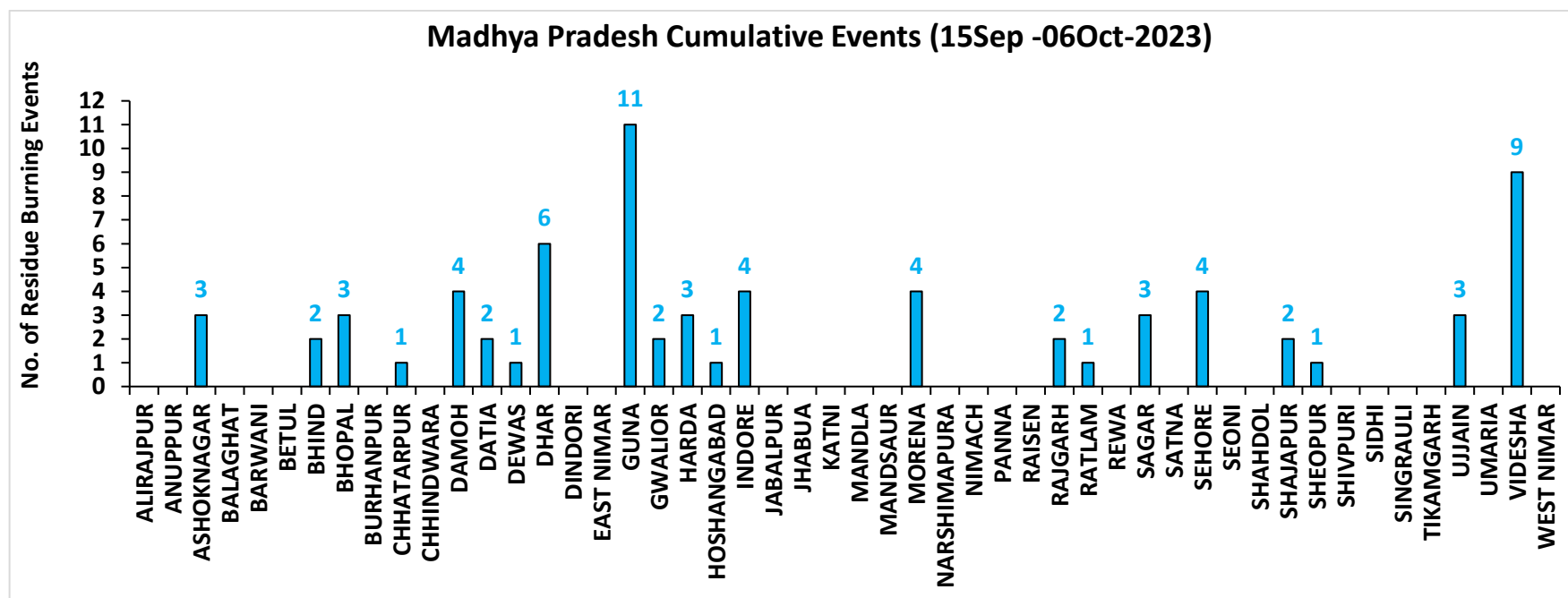
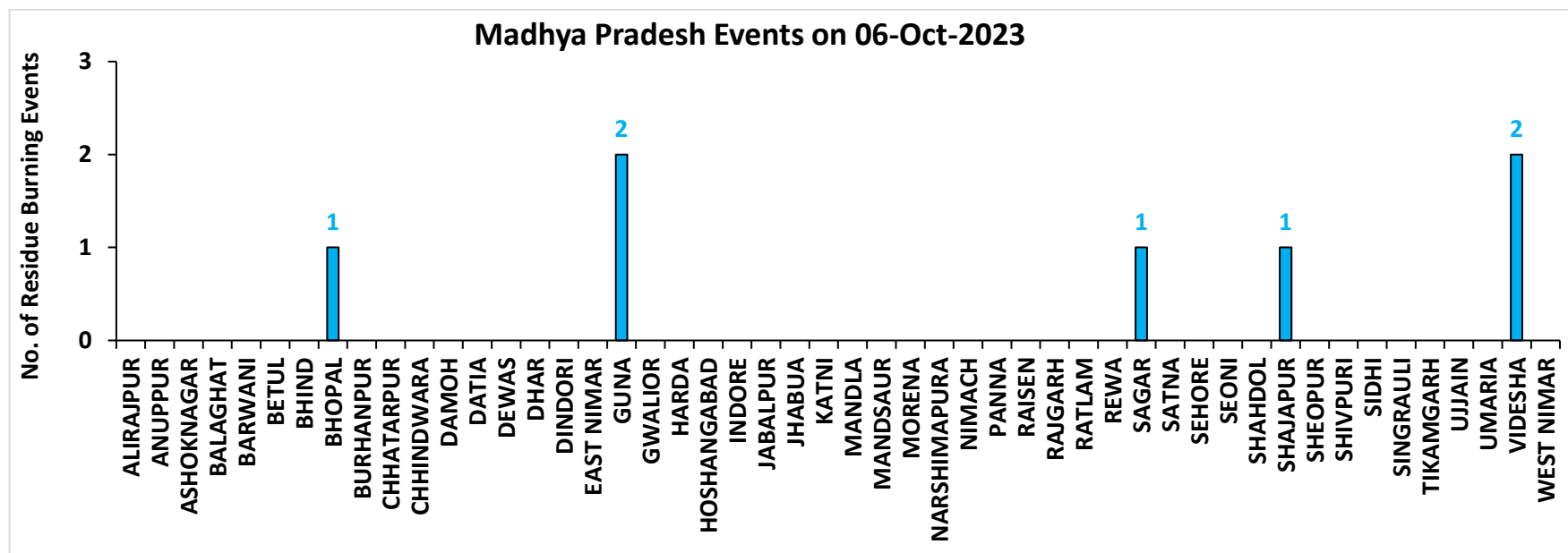
07 burning events detected in MP on (06th Oct 2023)

Fire Intensity (W/m²)

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



District-wise cumulative number of residues burning events in Madhya Pradesh (15Sep-06Oct -2023)



District-wise cumulative number of residues burning events detected in 2020, 2021, 2022 and 2023
(Period: 15 September-06 October)

(a) Punjab

District	15 Sep-06 Oct			
	2020	2021	2022	2023
Amritsar	1141	190	419	519
Barnala	5	0	2	6
Bathinda	0	0	0	0
Faridkot	5	9	2	5
Fatehgarh Sahib	19	3	3	6
Fazilka	0	1	0	1
Firozpur	40	5	15	16
Gurdaspur	84	5	7	10
Hoshiarpur	3	0	0	2
Jalandhar	21	7	12	13
Kapurthala	28	4	19	46
Ludhiana	46	23	6	7
Mansa	2	0	1	4
Moga	12	2	2	2
Muktsar	1	1	1	0
Pathankot	0	0	0	0
Patiala	89	12	22	53
Rupnagar	4	1	0	1
Sangrur	32	4	7	19
SAS NAGAR (Mohali)	10	2	4	17
SBS Nagar	2	1	2	2
Tarn Taran	391	50	106	116
Total	1935	320	630	845

(b) Haryana

District	15 Sep-06 Oct			
	2020	2021	2022	2023
AMBALA	27	1	9	46
BHIWANI	0	0	0	0
CHARKHI DADRI	0	0	0	0
FARIDABAD	0	0	0	0
FATEHABAD	17	1	3	15
GURGAON	0	0	0	0
HISAR	3	0	0	4
JHAJJAR	0	0	0	2
JIND	2	0	5	15
KAITHAL	29	2	8	10
KARNAL	55	5	19	16
KURUKSHETRA	43	13	26	41
MAHENDRAGARH	0	0	0	0
MEWAT	0	0	0	0
PALWAL	2	0	0	6
PANCHKULA	0	0	0	0
PANIPAT	6	0	1	8
REWARI	0	0	0	0
ROHTAK	0	0	0	1
SIRSA	2	0	0	0
SONIPAT	5	1	2	22
YAMUNANAGAR	16	1	1	23
Total	207	24	74	209

(c) Uttar Pradesh

District	15 Sep-06 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	1	2	7
ALIGARH	7	0	1	34	GHAZIABAD	1	0	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	2	5	0	1
AMETHI	0	0	0	0	HAMIRPUR	0	0	0	0	SAMBHAL	5	0	4	5
AMROHA	0	0	0	2	HAPUR	2	0	0	0	SANTKABIRNAGAR	0	0	0	0
AURAIYA	11	0	4	3	HARDOI	0	0	0	1	SANTRAVIDASNAGAR	0	0	0	0
AZAMGARH	0	0	0	0	HATHRAS	0	0	0	2	SHAHJAHANPUR	6	37	53	16
BADAUN	0	0	0	0	JALAUN	0	0	0	0	SHAMLI	10	2	2	2
BAGHPAT	1	0	0	0	JAUNPUR	0	0	0	0	SHARANPUR	4	0	0	0
BAHRAICH	1	0	0	0	JHANSI	4	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	3	0	0	0
BANDA	0	0	0	0	KANPUR DEHAT	1	0	0	0	SONBHADRA	0	0	0	0
BARABANKI	1	0	0	2	KASGANJ	1	0	0	0	SULTANPUR	0	0	0	0
BAREILLY	4	0	0	2	KAUSHAMBI	1	0	0	1	UNNAO	2	0	0	0
BASTI	0	0	0	0	KHERI	4	3	8	1	VARANASI	0	0	0	0
BIJNOR	3	0	1	0	KUSHINAGAR	0	0	0	0	Total	101	52	80	106
BULANDSAHAR	1	0	2	2	LALITPUR	0	1	2	0					
CHANDAUJI	0	0	0	0	LUCKNOW	0	0	0	0					
CHITRAKOOT	0	0	0	0	MAHARAJGANJ	0	0	0	0					
DEORIA	0	0	0	2	MAHOBA	0	0	0	0					
ETAH	3	0	0	0	MAINPURI	0	1	0	1					
ETAWAH	0	0	0	0	MATHURA	2	1	0	11					
FAIZABAD	0	0	0	0	MAU	0	0	0	0					
FARRUKHABAD	0	0	0	0	MEERUT	8	0	0	2					
FATEHPUR	2	0	0	0	MIRZAPUR	0	0	0	0					
FIROZABAD	1	0	0	0	MORADABAD	1	0	0	2					

(d) Delhi

District	15 Sep-06 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-06 Oct			
	2020	2021	2022	2023
AJMER	0	0	0	0
ALWAR	1	0	0	0
BANSWARA	0	0	0	0
BARAN	39	0	3	27
BARMER	2	0	0	0
BHARATPUR	0	0	0	1
BHILWARA	1	0	0	0
BIKANER	0	0	0	0
BUNDI	1	0	3	2
CHITTAURGARH	0	1	0	1
CHURU	0	0	0	0
DAUSA	0	0	0	0
DHOLPUR	0	0	0	0
DUNGARPUR	0	0	0	0
GANGANAGAR	1	0	0	4
HANUMANGARH	11	0	1	9
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	11	0	1	17
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	74	1	8	65

(f) Madhya Pradesh

District	15 Sep-06 Oct								
	2020	2021	2022	2023					
					PANNA	0	0	0	0
ALIRAJPUR	0	0	0	0	RAISEN	2	0	0	0
ANUPPUR	0	0	0	0	RAJGARH	1	0	2	2
ASHOKNAGAR	6	0	0	3	RATLAM	0	0	0	1
BALAGHAT	0	0	0	0	REWA	1	0	0	0
BARWANI	0	0	0	0	SAGAR	3	2	1	3
BETUL	0	0	0	0	SATNA	3	0	0	0
BHIND	0	0	0	2	SEHORE	4	0	1	4
BHOPAL	2	0	0	3	SEONI	0	0	0	0
BURHANPUR	0	0	0	0	SHAHDOL	0	0	0	0
CHHATARPUR	1	0	0	1	SHAJAPUR	4	0	0	2
CHHINDWARA	0	0	0	0	SHEOPUR	0	0	0	1
DAMOH	6	0	0	4	SHIVPURI	0	0	0	0
DATIA	2	0	0	2	SIDHI	0	0	0	0
DEWAS	2	0	0	1	SINGRAULI	0	0	0	0
DHAR	10	0	0	6	TIKAMGARH	0	0	0	0
DINDORI	0	0	0	0	UJJAIN	5	0	0	3
EAST NIMAR	0	0	0	0	UMARIA	0	0	0	0
GUNA	6	1	1	11	VIDESHA	15	1	1	9
GWALIOR	6	0	1	2	WEST NIMAR	0	0	0	0
HARDA	7	6	0	3	Total	97	10	7	72
HOSHANGABAD	3	0	0	1					
INDORE	1	0	0	4					
JABALPUR	4	0	0	0					
JHABUA	0	0	0	0					
KATNI	0	0	0	0					
MANDLA	0	0	0	0					
MANDSAUR	0	0	0	0					
MORENA	3	0	0	4					
NARSHIMAPURA	0	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-06 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
Total	1935	320	630	845	207	24	74	209	101	52	80	106

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
Total	3	0	2	1	74	1	8	65	97	10	7	72

Details of residue burning events in Punjab on 06-Oct-2023

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m2)
1	AMRITSAR	AJNALA	S-NPP	31.92914	74.75140	13:04:02	D	3.40
2	AMRITSAR	AJNALA	AQUA	31.85400	74.73000	14:08:27	D	5.00
3	AMRITSAR	ATTARI	S-NPP	31.53241	74.84789	13:04:02	D	2.70
4	AMRITSAR	ATTARI	S-NPP	31.55024	74.62241	13:04:02	D	3.60
5	AMRITSAR	ATTARI	S-NPP	31.59596	74.58478	13:04:02	D	3.70
6	AMRITSAR	ATTARI	AQUA	31.56500	74.76600	14:08:27	D	8.50
7	AMRITSAR	ATTARI	AQUA	31.59900	74.73800	14:08:27	D	4.60
8	AMRITSAR	CHOGAWAN	S-NPP	31.86683	74.64410	13:04:02	D	4.10
9	AMRITSAR	HARSHA CHHINA	S-NPP	31.72930	74.82473	13:04:02	D	2.40
10	AMRITSAR	HARSHA CHHINA	AQUA	31.76300	74.79800	14:08:27	D	5.10
11	AMRITSAR	MAJITHA	S-NPP	31.69358	74.99377	13:04:02	D	3.70
12	AMRITSAR	MAJITHA	S-NPP	31.71987	74.92676	13:04:02	D	3.80
13	AMRITSAR	MAJITHA	S-NPP	31.72400	74.92560	13:04:02	D	3.80
14	AMRITSAR	MAJITHA	S-NPP	31.73689	75.07094	13:04:02	D	2.40
15	AMRITSAR	MAJITHA	S-NPP	31.77747	75.03647	13:04:02	D	6.50
16	AMRITSAR	MAJITHA	S-NPP	31.78546	74.92701	13:04:02	D	6.50
17	AMRITSAR	MAJITHA	AQUA	31.72700	74.94900	14:08:27	D	7.60
18	AMRITSAR	MAJITHA	AQUA	31.75000	74.91000	14:08:27	D	5.40
19	AMRITSAR	MAJITHA	AQUA	31.77200	74.94600	14:08:27	D	7.80
20	AMRITSAR	MAJITHA	AQUA	31.78600	74.97800	14:08:27	D	5.60
21	AMRITSAR	MAJITHA	AQUA	31.79100	75.02400	14:08:27	D	6.70
22	AMRITSAR	RAYYA	S-NPP	31.52708	75.11722	13:04:02	D	4.70
23	AMRITSAR	RAYYA	S-NPP	31.55800	75.14087	13:04:02	D	2.90
24	AMRITSAR	RAYYA	S-NPP	31.63897	75.24160	13:04:02	D	3.70
25	AMRITSAR	RAYYA	S-NPP	31.63984	75.24590	13:04:02	D	3.70
26	AMRITSAR	RAYYA	S-NPP	31.64107	75.24289	13:04:02	D	4.40
27	AMRITSAR	RAYYA	S-NPP	31.64196	75.24716	13:04:02	D	4.40
28	AMRITSAR	TARSIKKA	S-NPP	31.68512	75.18523	13:04:02	D	3.30
29	AMRITSAR	TARSIKKA	S-NPP	31.68797	75.15705	13:04:02	D	2.50
30	AMRITSAR	TARSIKKA	S-NPP	31.69823	75.18611	13:04:02	D	2.30

31	AMRITSAR	TARSIKKA	S-NPP	31.70184	75.09808	13:04:02	D	2.80
32	AMRITSAR	TARSIKKA	AQUA	31.64500	75.09700	14:08:27	D	18.50
33	AMRITSAR	TARSIKKA	AQUA	31.67000	75.13900	14:08:27	D	7.90
34	AMRITSAR	TARSIKKA	AQUA	31.69400	75.18200	14:08:27	D	8.50
35	AMRITSAR	TARSIKKA	AQUA	31.69500	75.11200	14:08:27	D	6.80
36	AMRITSAR	TARSIKKA	AQUA	31.69600	75.12300	14:08:27	D	12.30
37	AMRITSAR	VERKA	S-NPP	31.66224	74.81986	13:04:02	D	4.80
38	AMRITSAR	VERKA	S-NPP	31.66298	74.82295	13:04:02	D	4.90
39	AMRITSAR	VERKA	S-NPP	31.72856	74.90549	13:04:02	D	8.90
40	AMRITSAR	VERKA	AQUA	31.71800	74.88200	14:08:27	D	6.00
41	AMRITSAR	VERKA	AQUA	31.72000	74.89300	14:08:27	D	4.60
42	FARIDKOT	FARIDKOT	S-NPP	30.66931	74.67690	13:04:02	D	3.40
43	FATEHGARH SAHIB	KHAMANON	AQUA	30.74200	76.37000	14:08:27	D	5.70
44	FIROZPUR	FIROZPUR	AQUA	30.96400	74.52800	14:08:27	D	8.70
45	FIROZPUR	FIROZPUR	AQUA	30.96600	74.53900	14:08:27	D	5.60
46	FIROZPUR	GURUHAR SAHAI	S-NPP	30.77586	74.42397	13:04:02	D	5.30
47	FIROZPUR	GURUHAR SAHAI	S-NPP	30.78019	74.42274	13:04:02	D	12.90
48	GURDASPUR	BATALA	AQUA	31.77300	75.16200	14:08:27	D	5.40
49	GURDASPUR	DERA BABA NANAK	S-NPP	31.96903	75.13132	13:04:02	D	3.00
50	GURDASPUR	FATEHGARH CHURIAN	S-NPP	31.85459	75.04807	13:04:02	D	3.90
51	GURDASPUR	KALANAUR	AQUA	32.10800	75.20900	14:08:27	D	8.40
52	JALANDHAR	SHAHKOT	S-NPP	31.04692	75.30426	13:04:02	D	4.90
53	KAPURTHALA	SULTANPUR LODHI	S-NPP	31.26369	75.16420	13:04:02	D	3.50
54	KAPURTHALA	SULTANPUR LODHI	AQUA	31.35100	75.17900	14:08:27	D	7.20
55	LUDHIANA	DORAHA	S-NPP	30.78450	75.96381	13:04:02	D	2.40
56	MOGA	BAGHA PURANA	S-NPP	30.50640	75.04791	13:04:02	D	8.80
57	MOGA	BAGHA PURANA	S-NPP	30.50816	75.04601	13:04:02	D	9.00
58	PATIALA	NABHA	S-NPP	30.32506	76.18959	13:04:02	D	1.90
59	PATIALA	NABHA	S-NPP	30.53802	76.15926	13:04:02	D	3.10
60	PATIALA	PATRAN	S-NPP	29.93794	76.00310	13:04:02	D	4.90
61	PATIALA	PATRAN	S-NPP	29.93862	76.00231	13:04:02	D	4.40
62	PATIALA	PATRAN	S-NPP	29.99793	76.04796	13:04:02	D	2.70
63	PATIALA	RAJPURA	S-NPP	30.51104	76.53171	13:04:02	D	5.00
64	PATIALA	SANAUR	S-NPP	30.19030	76.29862	13:04:02	D	3.80

65	PATIALA	SHAMBU KALAN	S-NPP	30.47362	76.52530	13:04:02	D	3.90
66	PATIALA	SHAMBU KALAN	AQUA	30.43700	76.71000	14:08:27	D	9.00
67	PATIALA	SHAMBU KALAN	AQUA	30.48800	76.54600	14:08:27	D	7.80
68	SANGRUR	ANDANA	S-NPP	29.81706	76.06749	13:04:02	D	7.90
69	SANGRUR	BHAWANIGARH	S-NPP	30.29511	76.04072	13:04:02	D	2.40
70	SANGRUR	DIRBA	S-NPP	29.97523	76.01934	13:04:02	D	1.30
71	SANGRUR	LEHRA GAGA	S-NPP	29.81458	75.74714	13:04:02	D	4.80
72	SANGRUR	LEHRA GAGA	S-NPP	29.95791	75.67825	13:04:02	D	8.40
73	SANGRUR	LEHRA GAGA	S-NPP	29.95877	75.68253	13:04:02	D	9.60
74	SANGRUR	MALERKOTLA-1	S-NPP	30.50762	75.90353	13:04:02	D	5.90
75	SANGRUR	MALERKOTLA-2	S-NPP	30.48657	75.88314	13:04:02	D	5.40
76	SAS NAGAR (MOHALI)	DERABASSI	AQUA	30.59200	76.81100	14:08:27	D	12.00
77	TARN TARAN	BHIKHIWIND	S-NPP	31.39326	74.64310	13:04:02	D	2.40
78	TARN TARAN	CHOHLA SAHIB	AQUA	31.36000	75.09700	14:08:27	D	14.10
79	TARN TARAN	CHOHLA SAHIB	AQUA	31.36100	75.10800	14:08:27	D	10.80
80	TARN TARAN	KHADUR SAHIB	S-NPP	31.38710	75.05768	13:04:02	D	4.00
81	TARN TARAN	KHADUR SAHIB	S-NPP	31.39082	75.05572	13:04:02	D	9.40
82	TARN TARAN	KHADUR SAHIB	S-NPP	31.39123	75.05653	13:04:02	D	8.50
83	TARN TARAN	KHADUR SAHIB	S-NPP	31.39171	75.06013	13:04:02	D	9.60
84	TARN TARAN	KHADUR SAHIB	S-NPP	31.43107	75.14301	13:04:02	D	4.30
85	TARN TARAN	KHADUR SAHIB	S-NPP	31.43197	75.14737	13:04:02	D	4.30
86	TARN TARAN	KHADUR SAHIB	S-NPP	31.43517	75.14185	13:04:02	D	7.70
87	TARN TARAN	KHADUR SAHIB	S-NPP	31.43608	75.14622	13:04:02	D	7.70
88	TARN TARAN	KHADUR SAHIB	S-NPP	31.47638	75.08867	13:04:02	D	2.50
89	TARN TARAN	TARN TARAN	S-NPP	31.46326	74.83389	13:04:02	D	3.40
90	TARN TARAN	TARN TARAN	S-NPP	31.50683	74.97843	13:04:02	D	9.10
91	TARN TARAN	TARN TARAN	AQUA	31.47300	74.76700	14:08:27	D	7.30

Details of residue burning events in Haryana on 06-Oct-2023

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m ²)
1	AMBALA	AMBALA-II	AQUA	30.12200	76.62900	14:08:27	D	8.70
2	AMBALA	BARARA	S-NPP	30.15626	77.01771	13:04:02	D	3.70
3	AMBALA	NARAINGARH	S-NPP	30.39589	77.04353	13:04:02	D	3.00
4	AMBALA	NARAINGARH	S-NPP	30.46380	77.15042	13:04:02	D	5.90
5	AMBALA	NARAINGARH	S-NPP	30.48541	77.13940	13:04:02	D	2.80
6	AMBALA	SAHA	S-NPP	30.30474	76.93158	13:04:02	D	1.30
7	FATEHABAD	TOHANA	S-NPP	29.61730	75.89522	13:04:02	D	3.00
8	FATEHABAD	TOHANA	S-NPP	29.66663	75.92668	13:04:02	D	3.10
9	JHAJJAR	BAHADURGARH	S-NPP	28.77345	76.94863	01:54:45	N	0.80
10	JIND	NARWANA	AQUA	29.65800	76.00200	14:08:27	D	9.20
11	JIND	UCHANA	S-NPP	29.53624	76.09646	13:04:02	D	5.00
12	KAITHAL	KALAYAT	S-NPP	29.74589	76.19739	13:04:02	D	2.50
13	KAITHAL	RAJOUND	S-NPP	29.61965	76.42815	13:04:02	D	3.10
14	KAITHAL	RAJOUND	S-NPP	29.63871	76.41908	13:04:02	D	3.60
15	KARNAL	CHIRAO	S-NPP	29.70548	76.75970	13:04:02	D	3.60
16	KARNAL	CHIRAO	S-NPP	29.71159	76.77010	13:04:02	D	3.20
17	KURUKSHETRA	SHAHBAD	S-NPP	30.18897	76.91721	13:04:02	D	4.60
18	PALWAL	HASSANPUR	S-NPP	28.00355	77.38142	13:04:02	D	4.70
19	YAMUNANAGAR	BILASPUR	AQUA	30.21700	77.25600	14:08:27	D	8.10

Details of residue burning events in Uttar Pradesh on 06-Oct-2023

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m ²)
1	ALIGARH	GABHANA	S-NPP	28.06994	77.85663	01:54:45	N	0.60
2	ALIGARH	KHAIR	S-NPP	27.95154	77.57513	13:04:02	D	8.20
3	ALIGARH	KHAIR	S-NPP	27.96938	77.56261	13:04:02	D	1.80
4	ALIGARH	KHAIR	S-NPP	27.98374	77.55344	13:04:02	D	6.40
5	ALIGARH	KHAIR	S-NPP	27.99633	77.55612	13:04:02	D	10.40
6	AURAIYA	BIDHUNA	S-NPP	26.64456	79.47950	01:54:45	N	0.40
7	BARABANKI	FATEHPUR	S-NPP	27.16664	81.26657	13:04:02	D	3.50
8	BARABANKI	FATEHPUR	S-NPP	27.17401	81.26920	13:04:02	D	7.40
9	BAREILLY	AONLA	S-NPP	28.32714	79.23496	13:04:02	D	2.30
10	GAUTAMBUDHNAGAR	JEVAR	S-NPP	28.12165	77.59769	13:04:02	D	3.70
11	KHERI	GOLA	S-NPP	28.24969	80.31628	13:04:02	D	4.30
12	MORADABAD	MORADABAD	S-NPP	28.87092	78.78762	01:54:45	N	1.00
13	PILHIBHIT	BISALPUR	S-NPP	28.25185	79.97312	13:04:02	D	2.50
14	PILHIBHIT	PURANPUR	S-NPP	28.58716	80.00492	13:04:02	D	2.10
15	RAMPUR	MILAK	S-NPP	28.57762	79.15518	13:04:02	D	3.30
16	SHAHJAHANPUR	PUWANYA	S-NPP	27.99673	79.94116	13:04:02	D	2.40
17	SHAHJAHANPUR	PUWANYA	S-NPP	27.99747	79.94548	13:04:02	D	5.70
18	SHAHJAHANPUR	TILHAR	S-NPP	27.95371	79.73396	13:04:02	D	2.20

Details of residue burning events in Rajasthan on 06-Oct-2023

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m ²)
1	BARAN	BARAN	S-NPP	25.06615	76.43861	13:04:02	D	5.50
2	BARAN	KISHANGUNJ	S-NPP	25.01274	76.69738	13:04:02	D	4.70
3	BARAN	MANGROL	AQUA	25.30300	76.41500	14:08:27	D	10.50
4	BARAN	MANGROL	AQUA	25.36000	76.43100	14:08:27	D	13.70
5	BARAN	MANGROL	AQUA	25.36100	76.44200	14:08:27	D	16.50
6	HANUMANGARH	HANUMANGARH	AQUA	29.55000	74.41500	14:08:27	D	37.40
7	HANUMANGARH	HANUMANGARH	AQUA	29.55200	74.42500	14:08:27	D	12.30
8	KOTA	SANGOD	S-NPP	24.87197	76.33718	13:04:02	D	2.00
9	SWAIMADHOPUR	KHANDAR	S-NPP	26.00897	76.72028	13:04:02	D	2.20

Details of residue burning events in Madhya Pradesh on 06-Oct-2023

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m ²)
1	BHOPAL	BERASIYA	S-NPP	23.66451	77.49082	13:04:02	D	3.30
2	GUNA	ARON	S-NPP	24.38810	77.64450	13:04:02	D	3.30
3	GUNA	GUNA	S-NPP	24.76182	76.97134	13:04:02	D	5.30
4	SAGAR	REHLI	S-NPP	23.66049	79.16851	13:04:02	D	3.20
5	SHAJAPUR	SUJALPUR	S-NPP	23.38397	76.67737	13:04:02	D	4.70
6	VIDESHA	KORWAI	S-NPP	24.24803	78.02663	13:04:02	D	1.90
7	VIDESHA	VIDESHA	S-NPP	23.61856	77.65733	13:04:02	D	1.60

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)
