



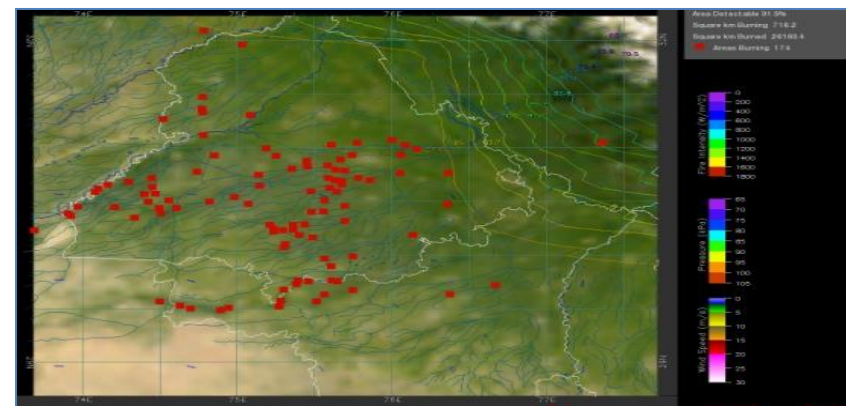
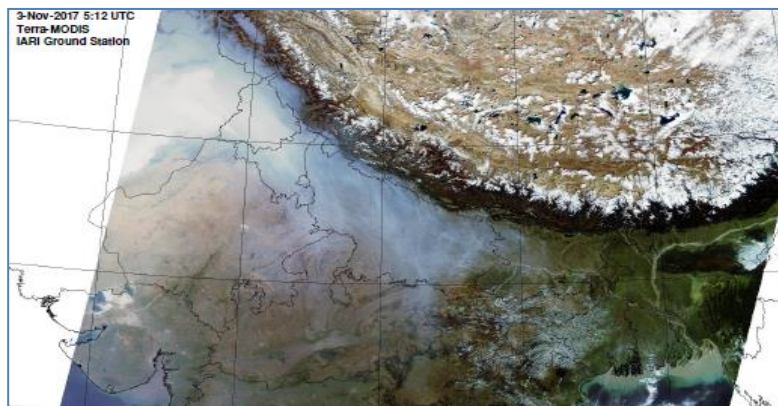
**Bulletin
No. 77**

**Events Date:
30-Nov-2023**

**Issued on:
30-Nov-2023**



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



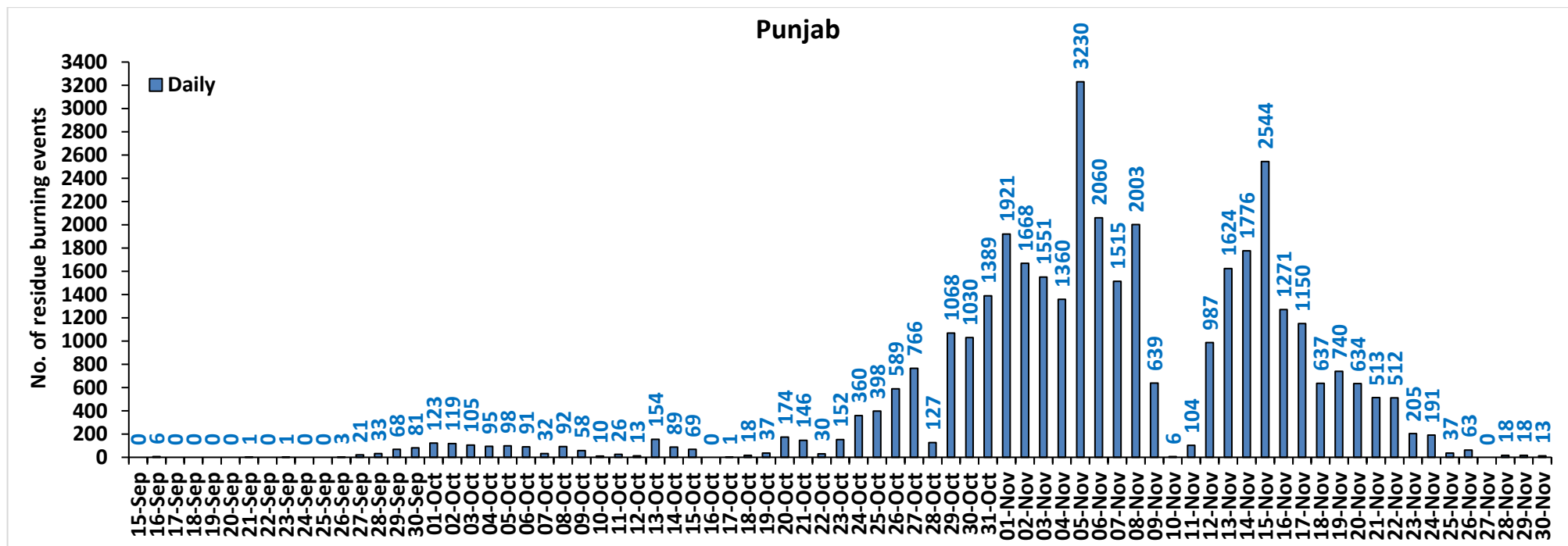
**Consortium for Research on Agroecosystem Monitoring and Modeling from Space (CREAMS) Laboratory,
Division of Agricultural Physics, ICAR – Indian Agricultural Research Institute, New Delhi – 110012**

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

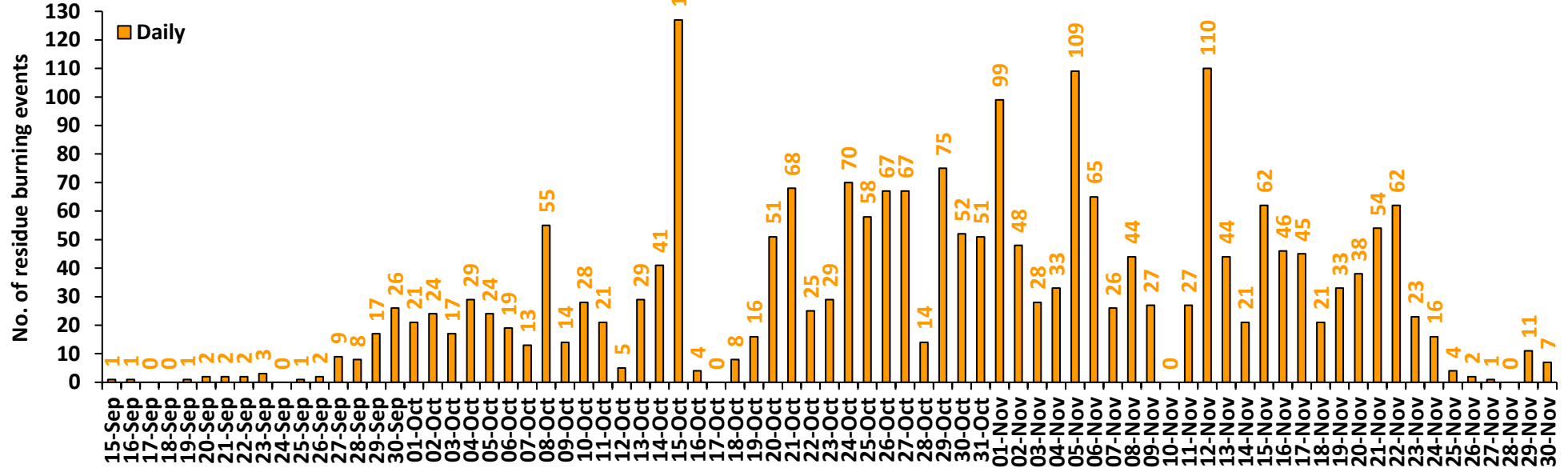
Highlights for 30-Nov-2023

- 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 **33** residue burning events in the six study States on 30-Nov-2023.
- The state wise events detected on 30-Nov-2023 were **13** in Punjab, **07** in Haryana, **11** in UP, **00** in Delhi, **02** in Rajasthan and **00** in MP.
- Total **57242** burning events were detected in the six states between 15-Sept-2023 and 30-Nov-2023, which are distributed as **36663**, **2303**, **3996**, **05**, **1775** and **12500** in Punjab, Haryana, UP, Delhi, Rajasthan and MP, respectively.
- Detection of residue burning events was hampered by the presence of clouds over Madhya Pradesh state.

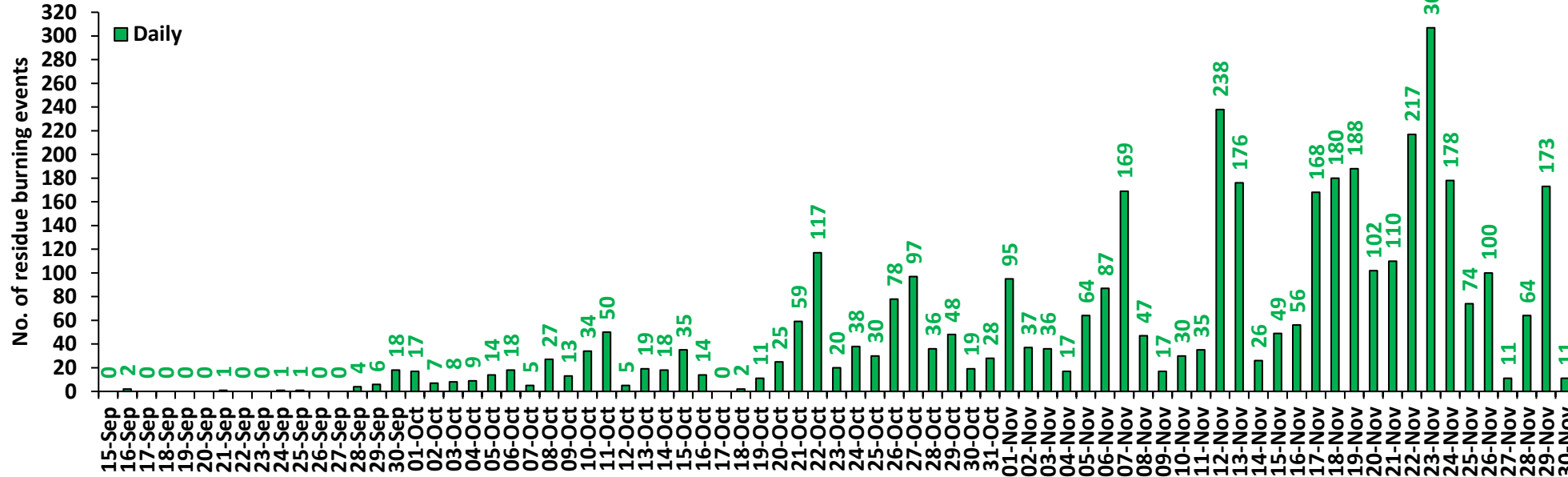
Temporal distribution of rice residue burning events for the study States in 2023



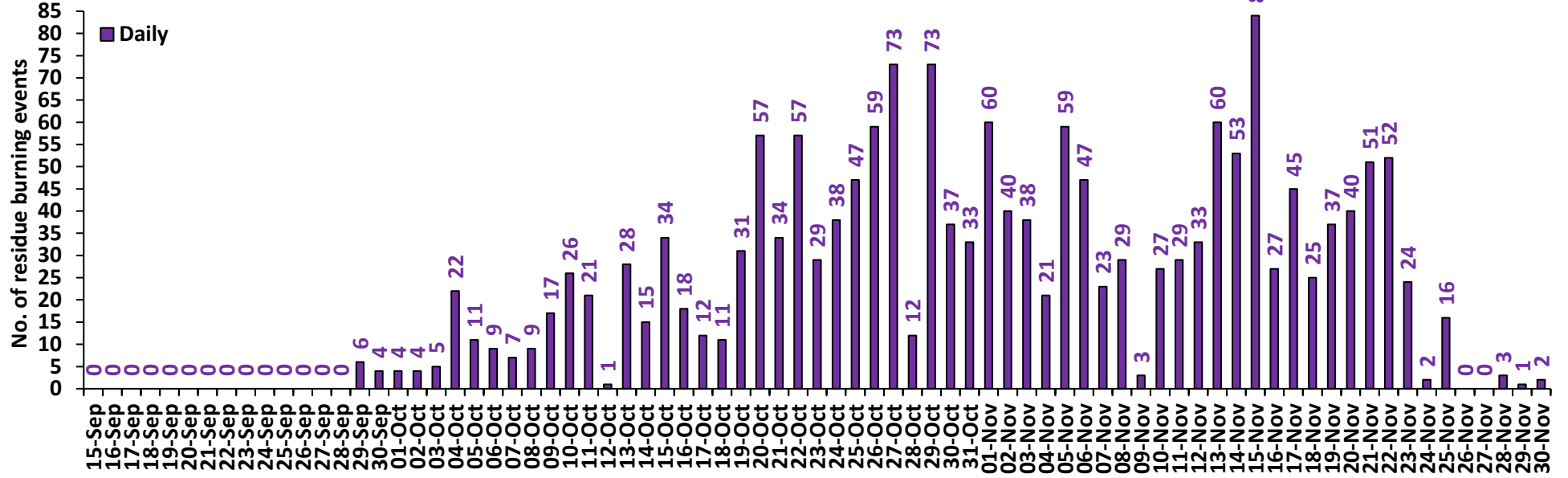
Haryana



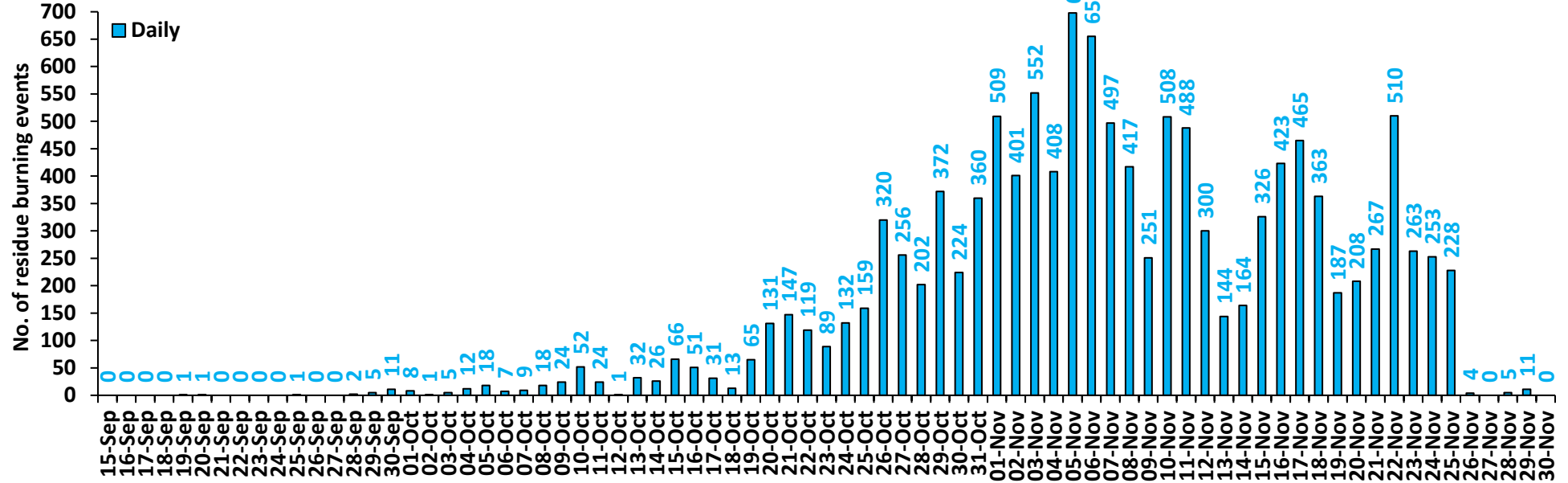
Uttar Pradesh



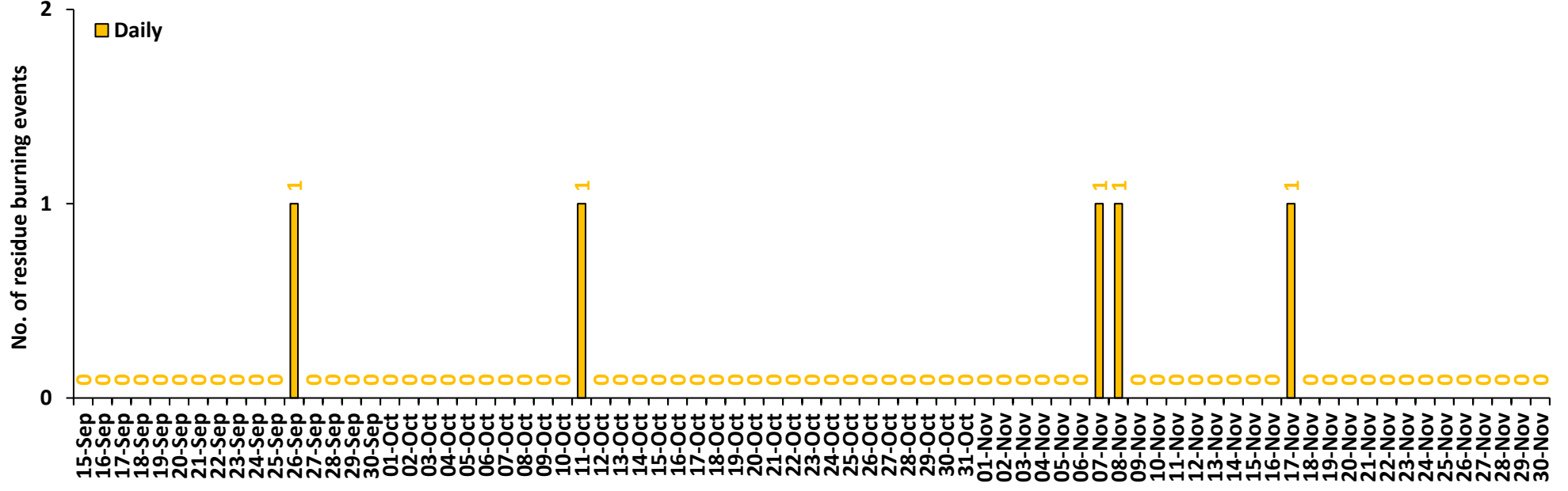
Rajasthan



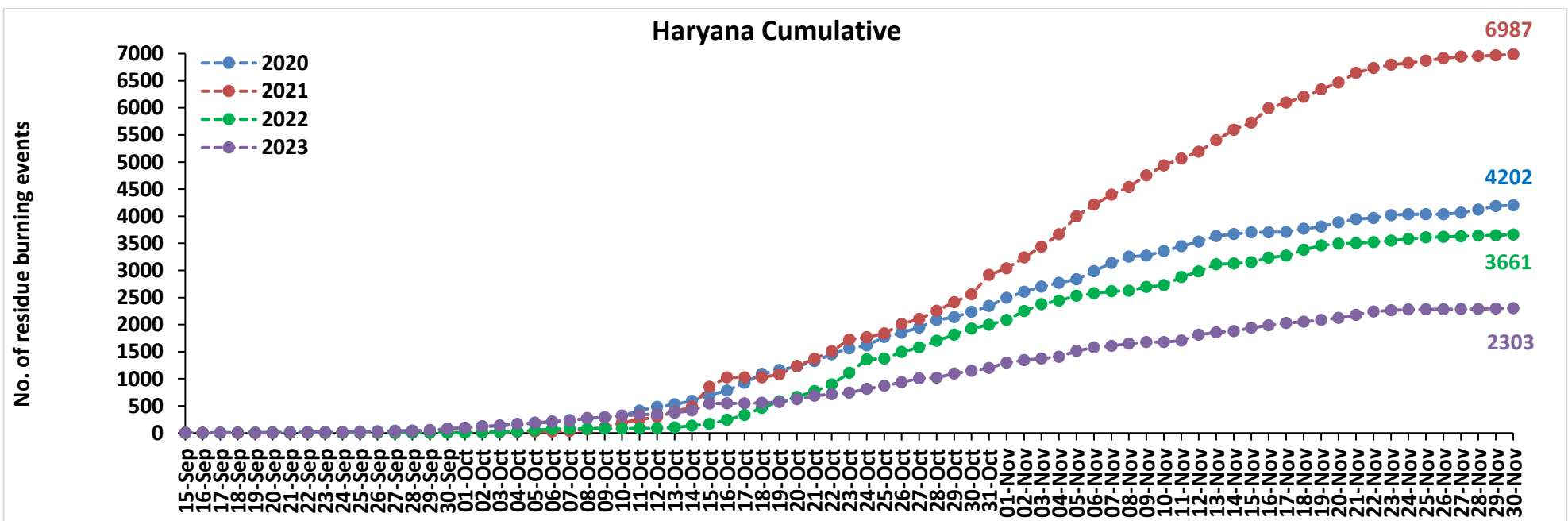
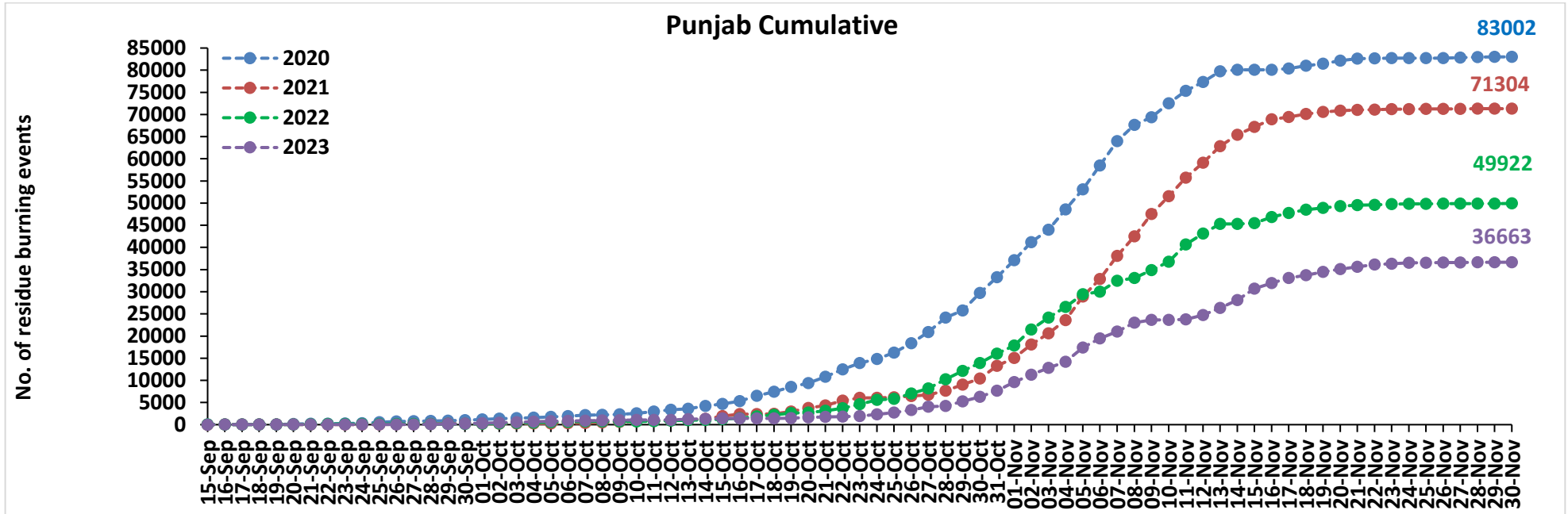
Madhya Pradesh



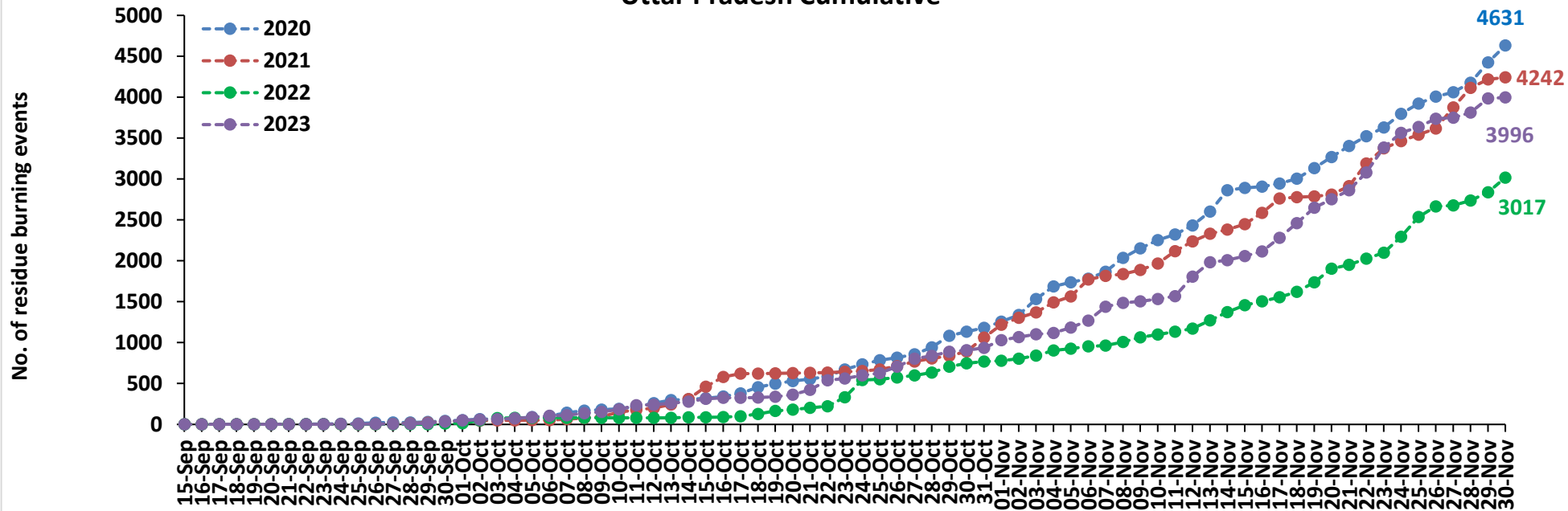
Delhi



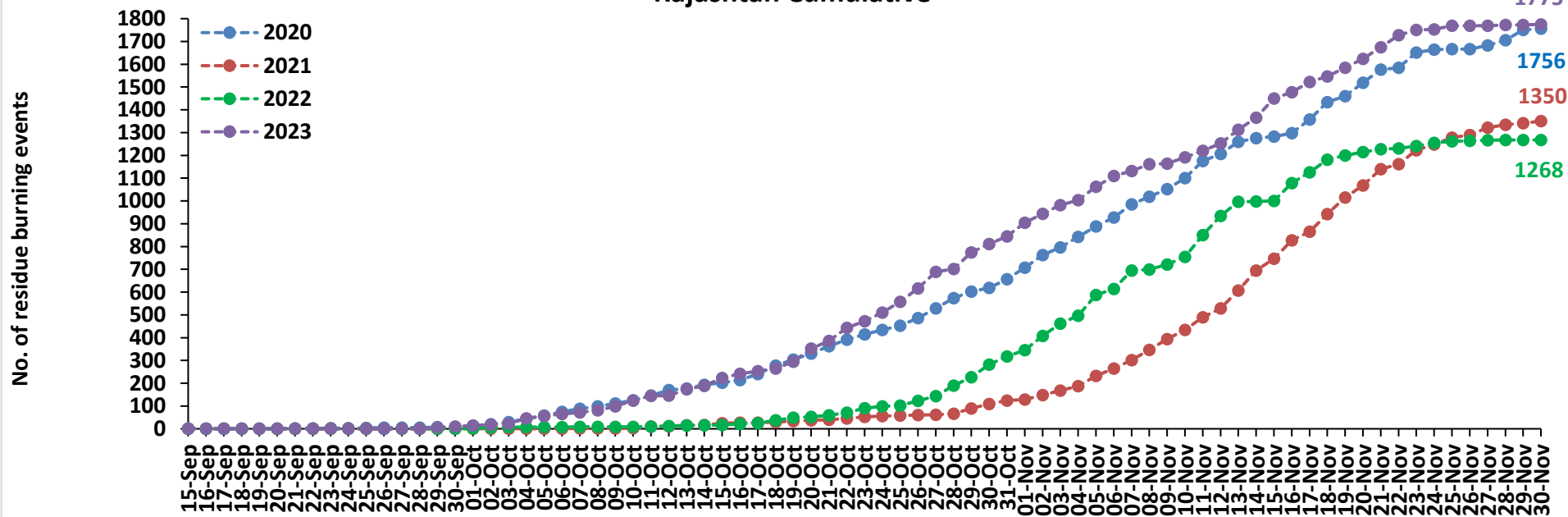
Comparison of residue burning events in current year (2023) with previous years (2020, 2021 and 2022) for the study State



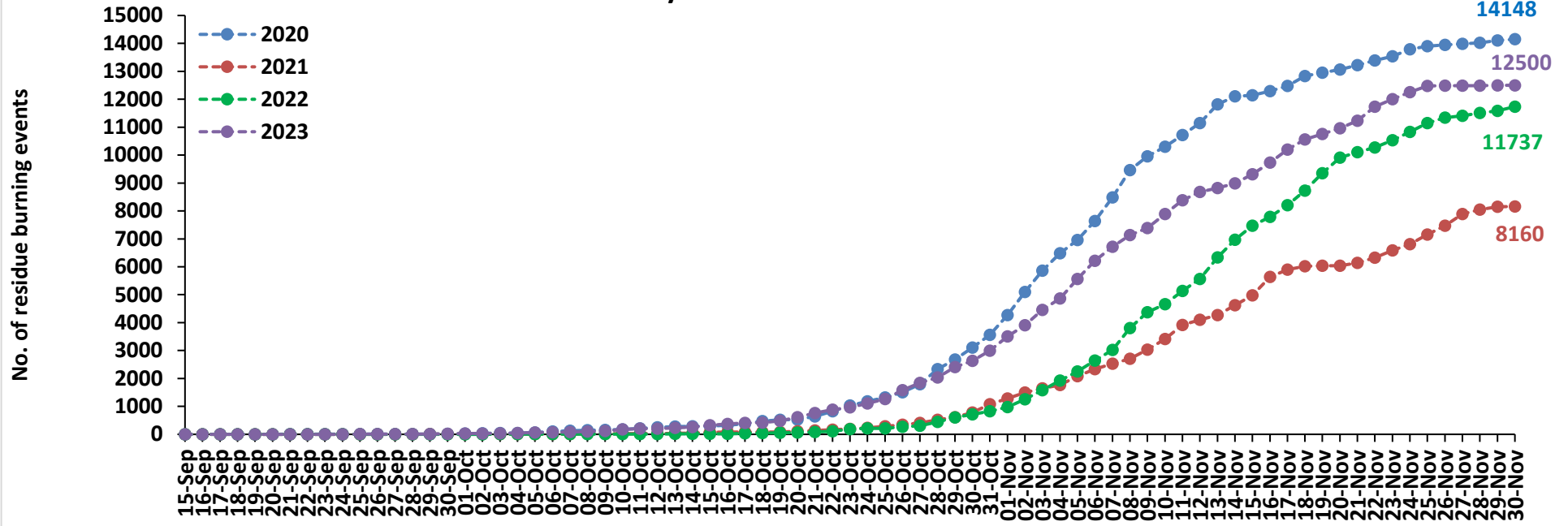
Uttar Pradesh Cumulative



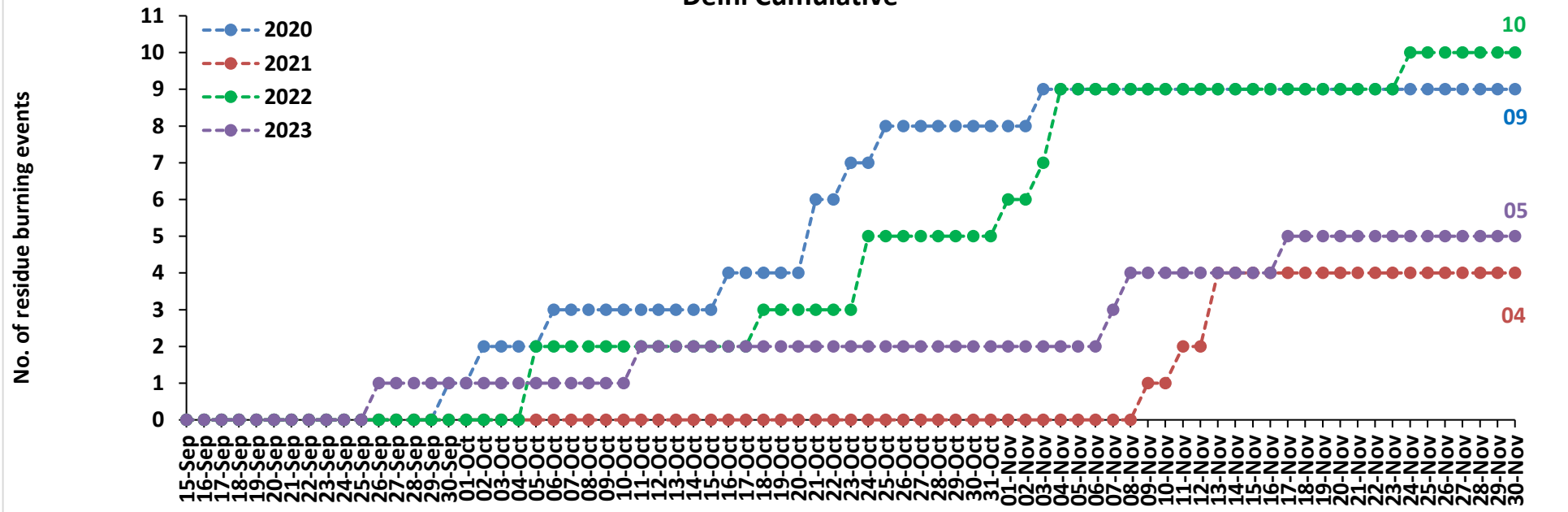
Rajasthan Cumulative



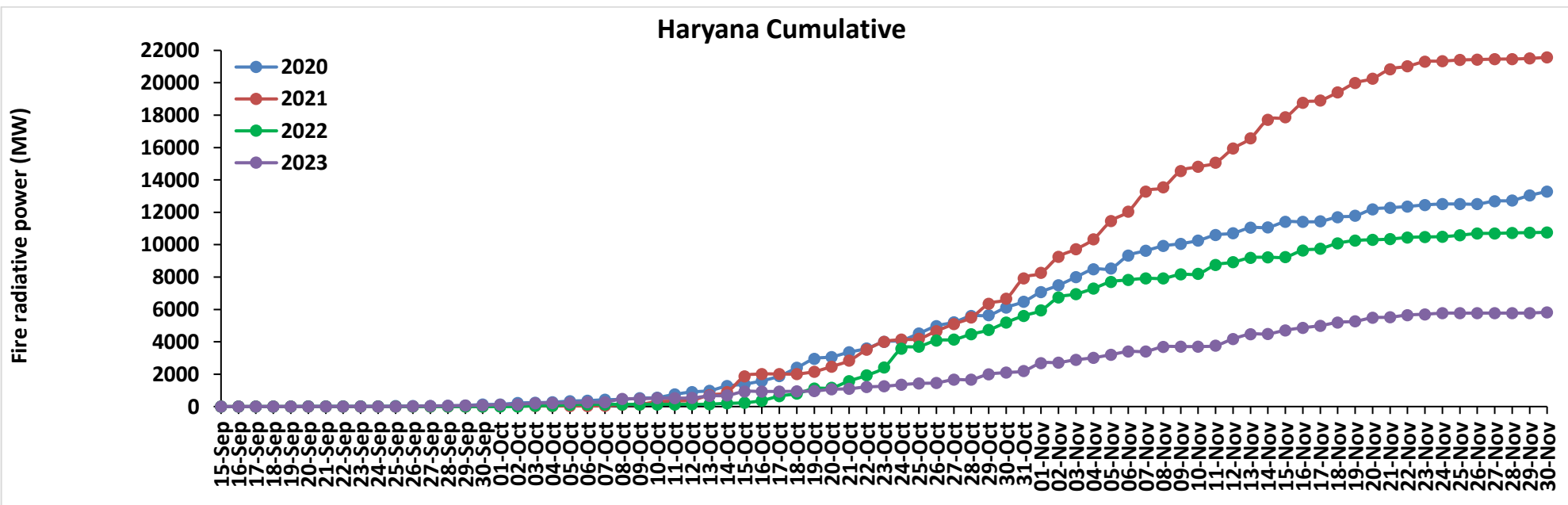
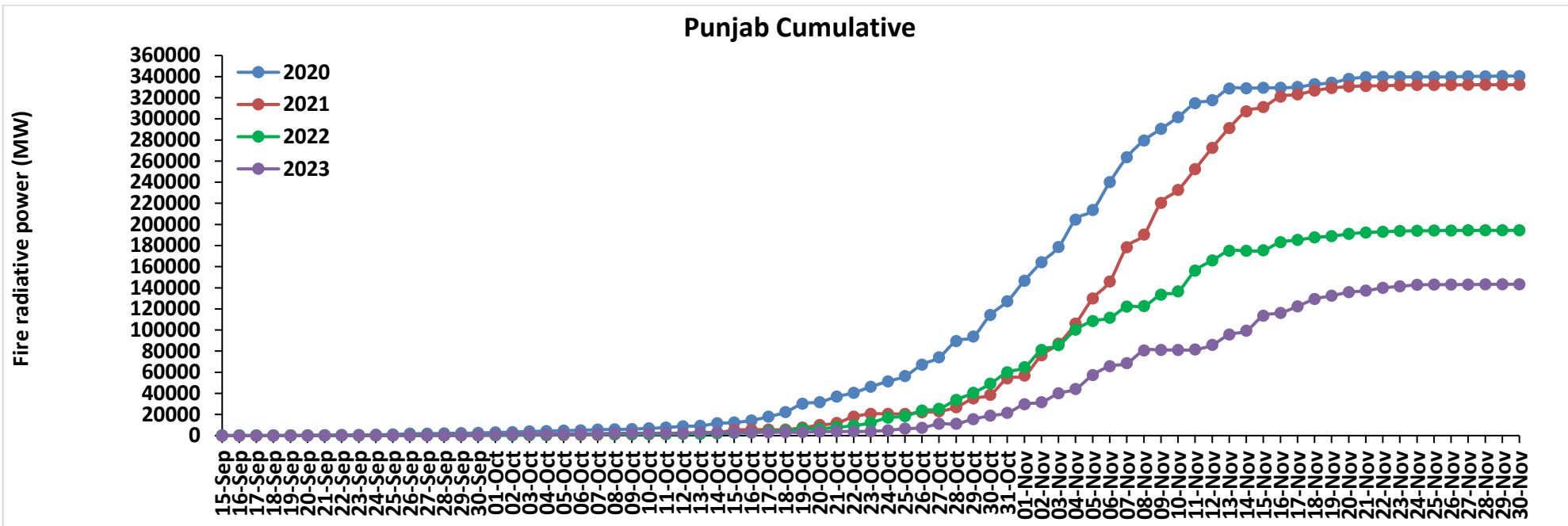
Madhya Pradesh Cumulative



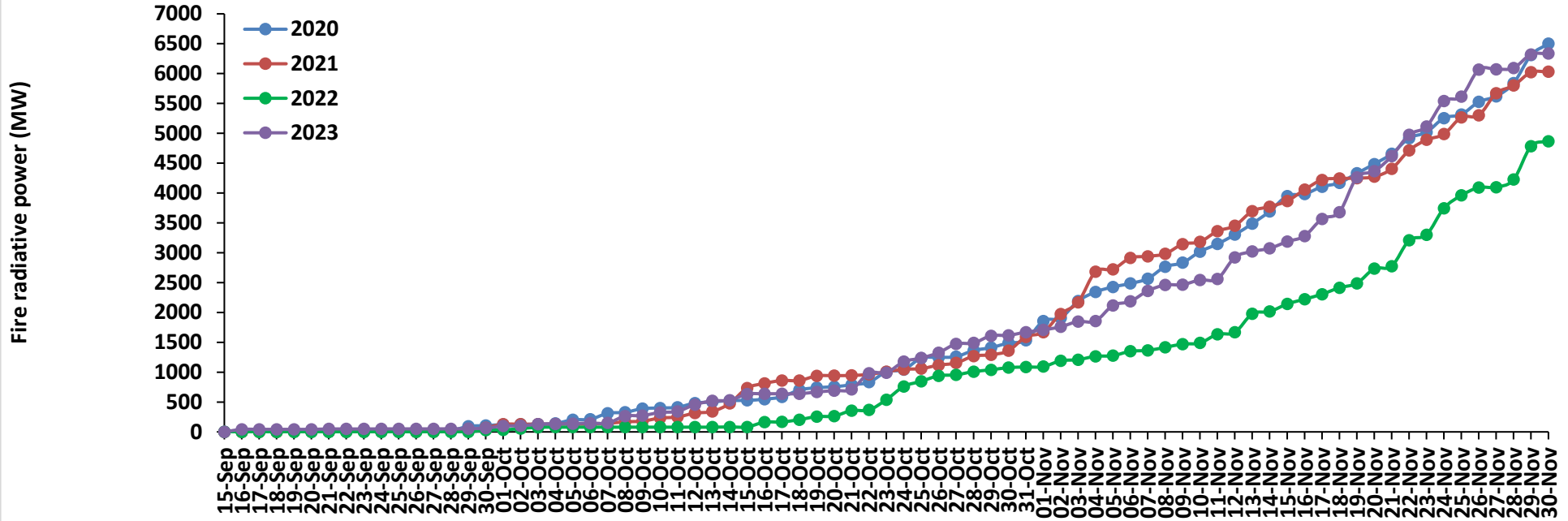
Delhi Cumulative



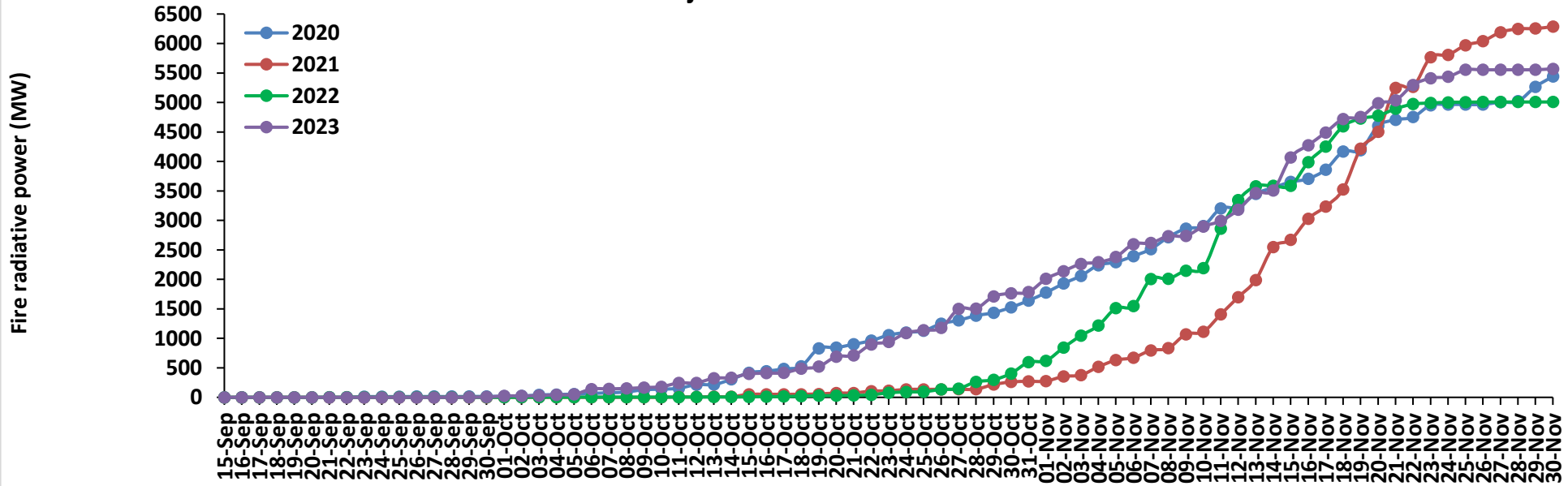
Comparison of residue burning fire power in current year (2023) with previous years (2020, 2021 and 2022) for the study States



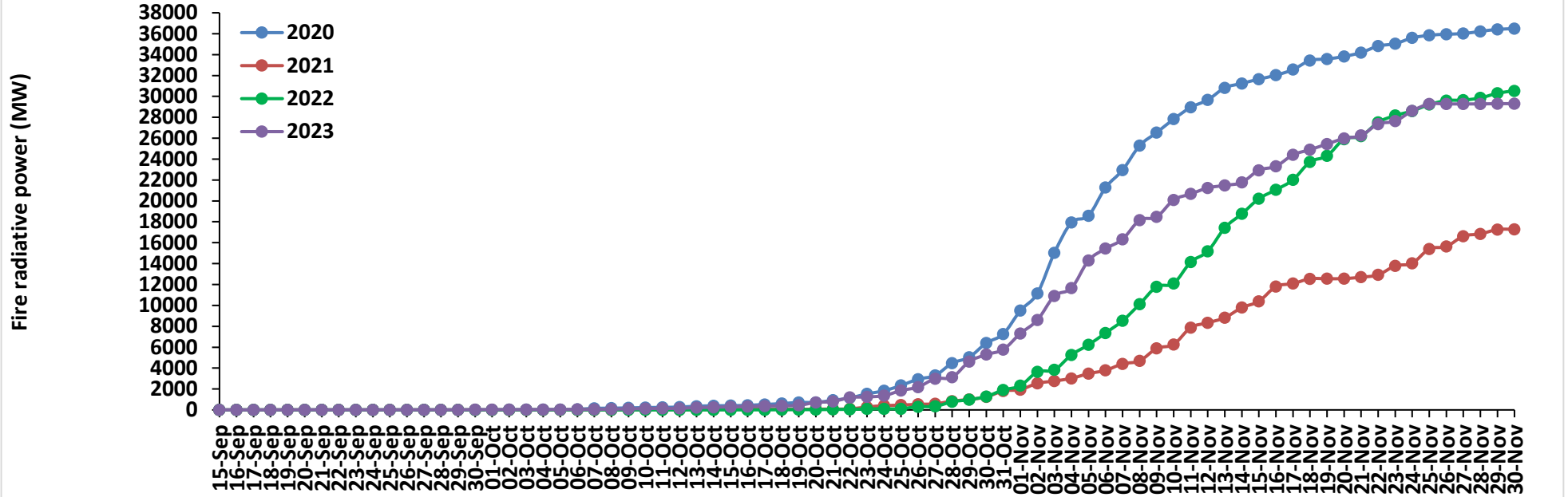
Uttar Pradesh Cumulative



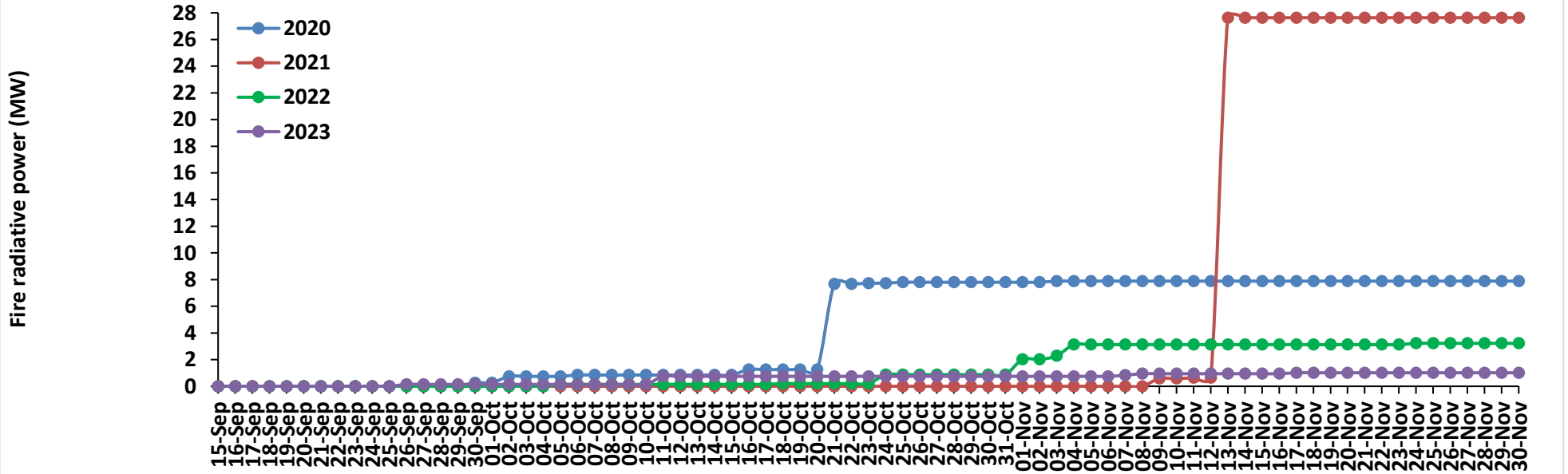
Rajasthan Cumulative



Madhya Pradesh Cumulative

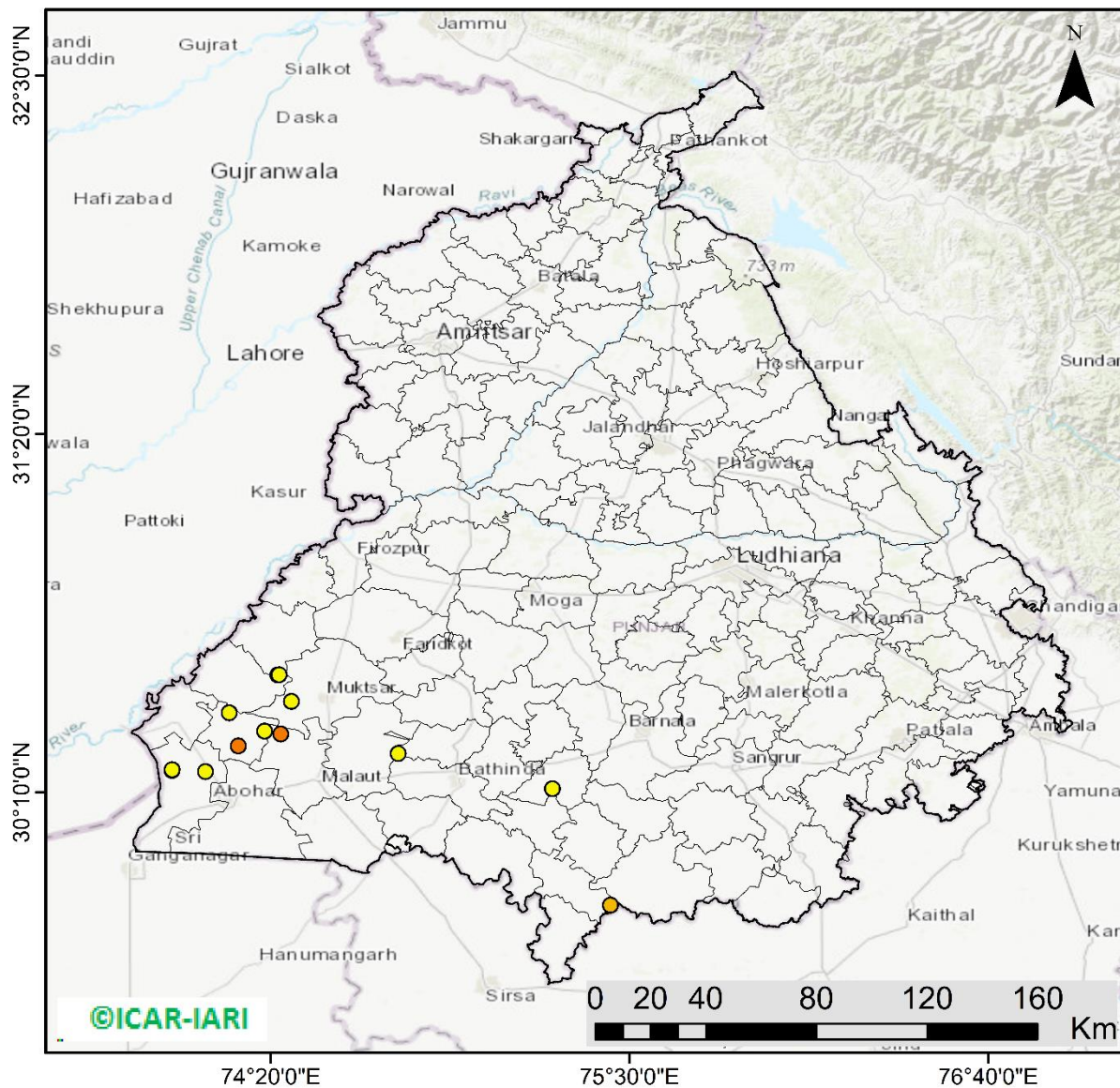


Delhi Cumulative



Punjab

RICE RESIDUE BURNING IN PUNJAB



13 burning events detected in Punjab during (30th Nov 2023)

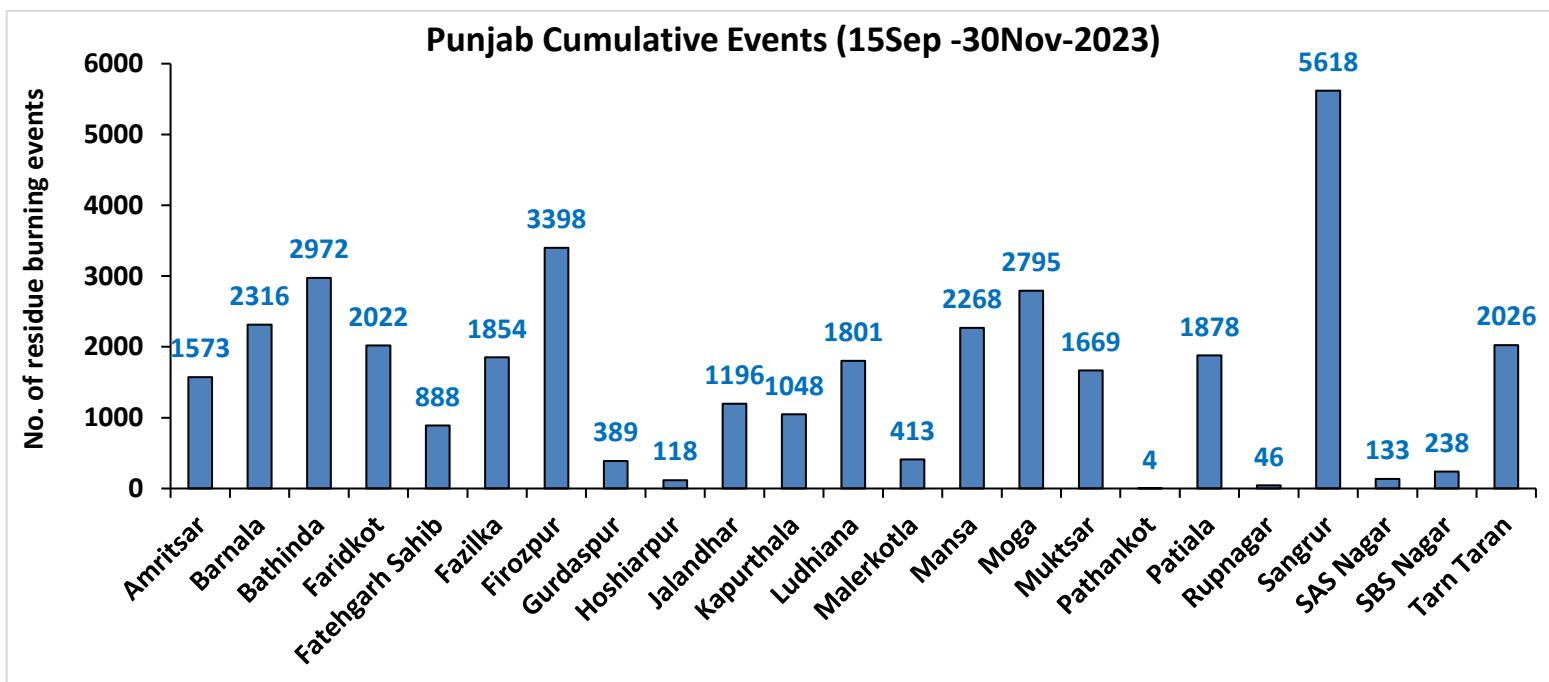
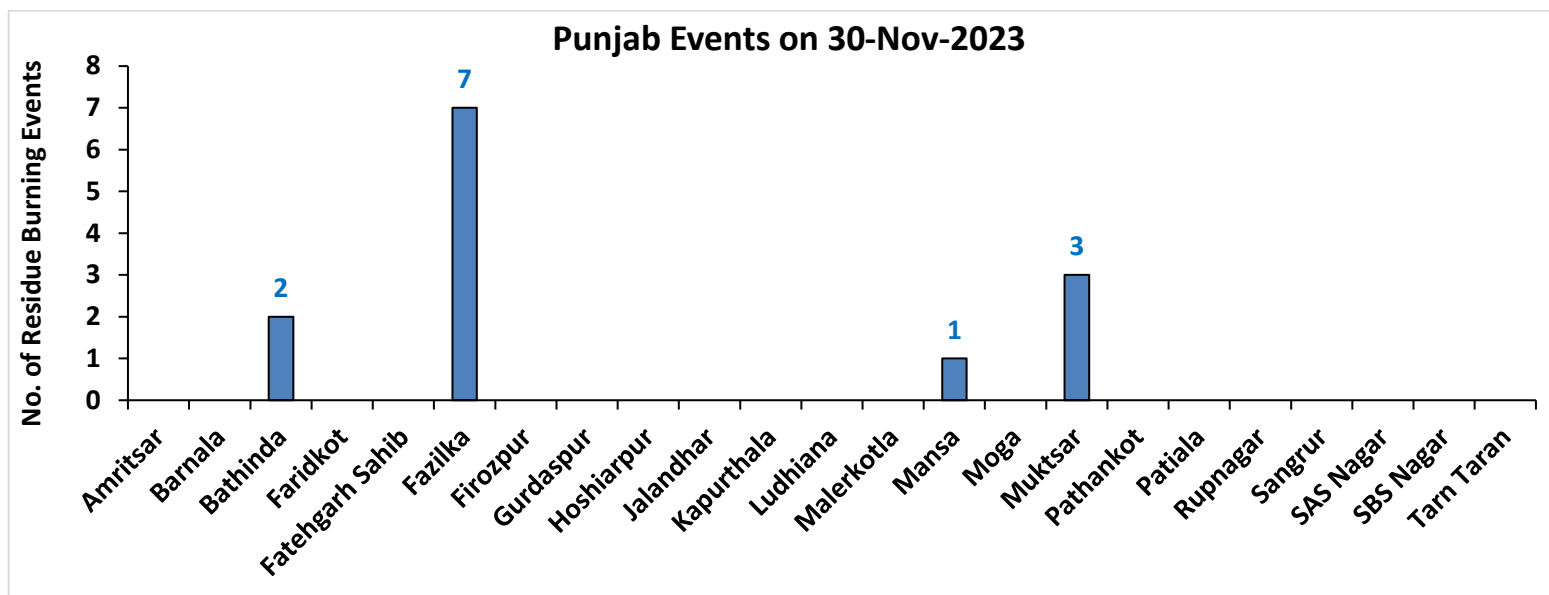
Fire Intensity (W/m²)

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



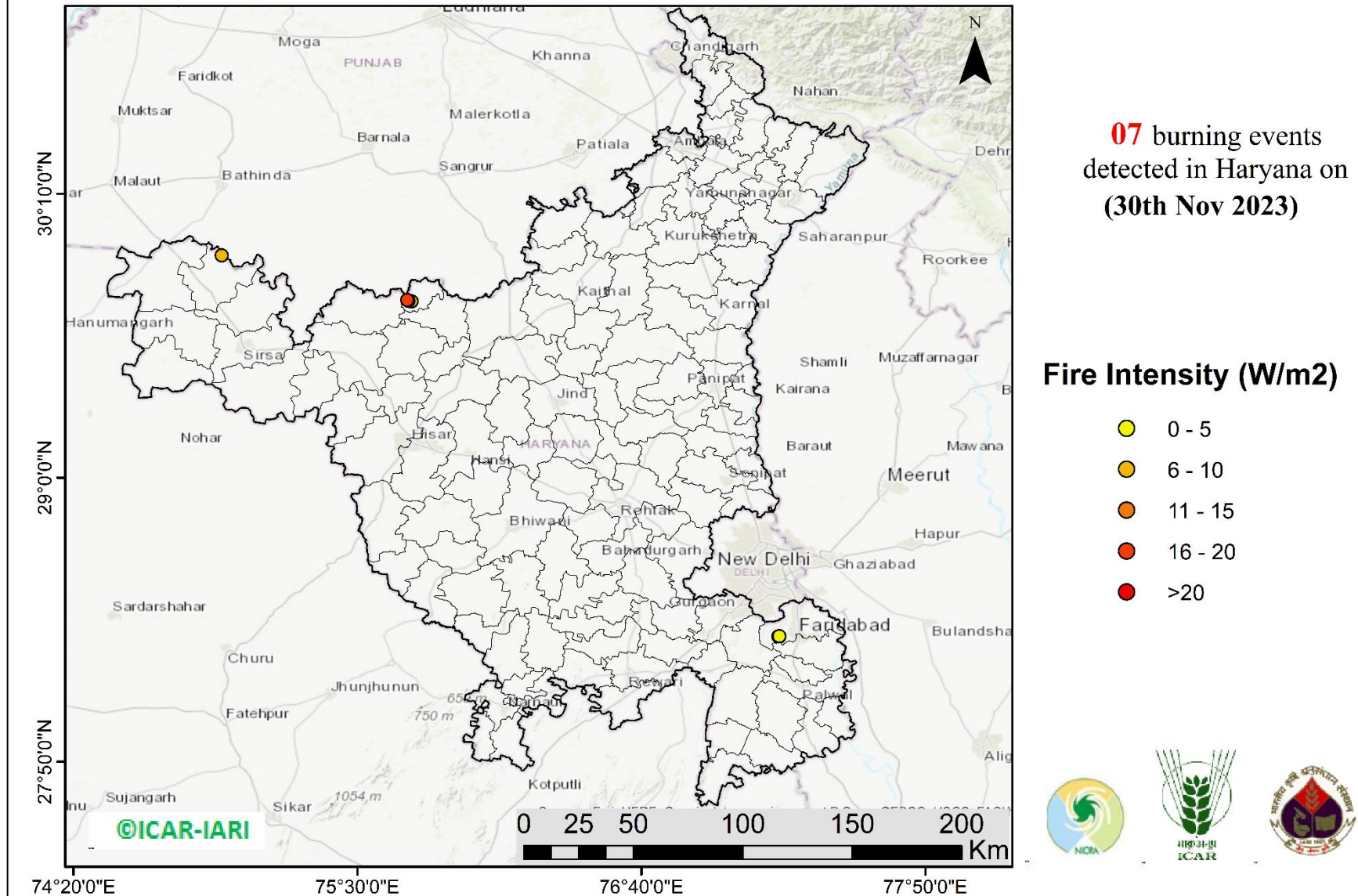
<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

District-wise cumulative number of residues burning events in Punjab (15Sep- 30Nov-2023)



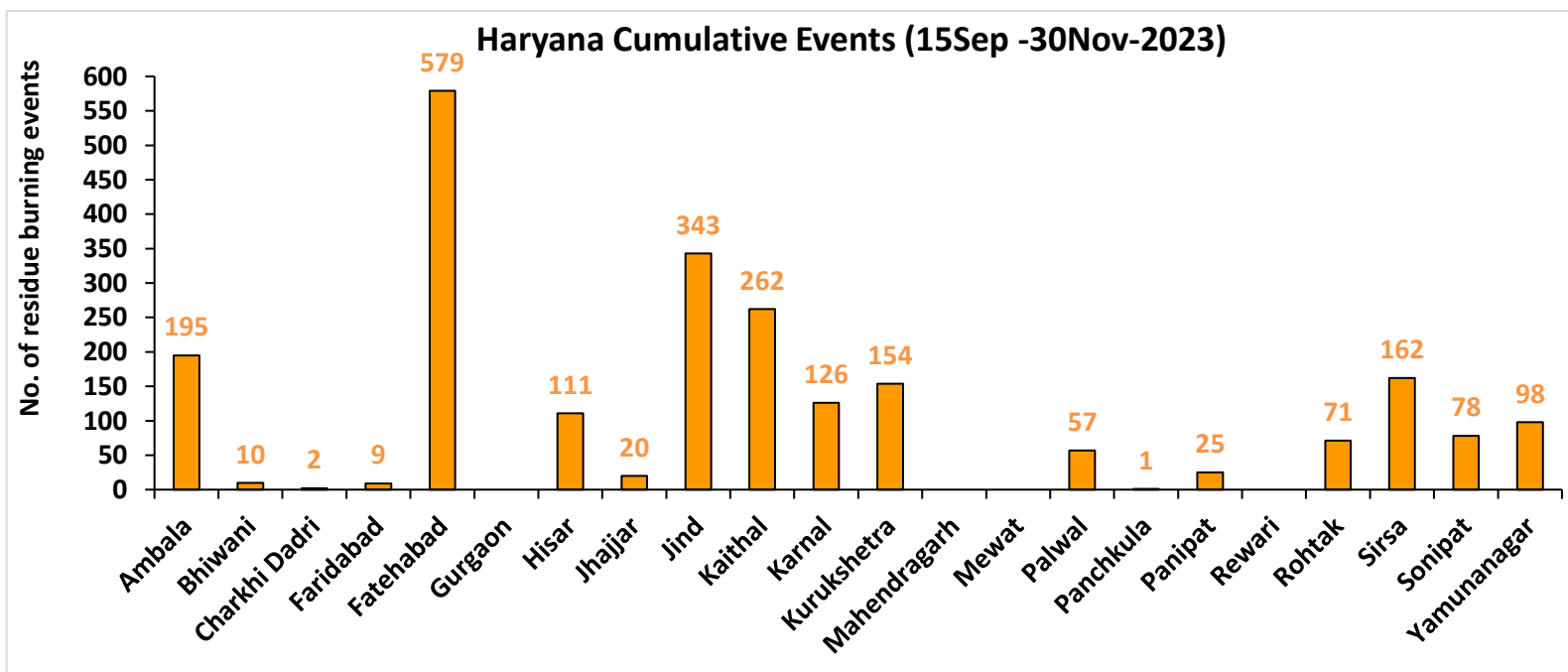
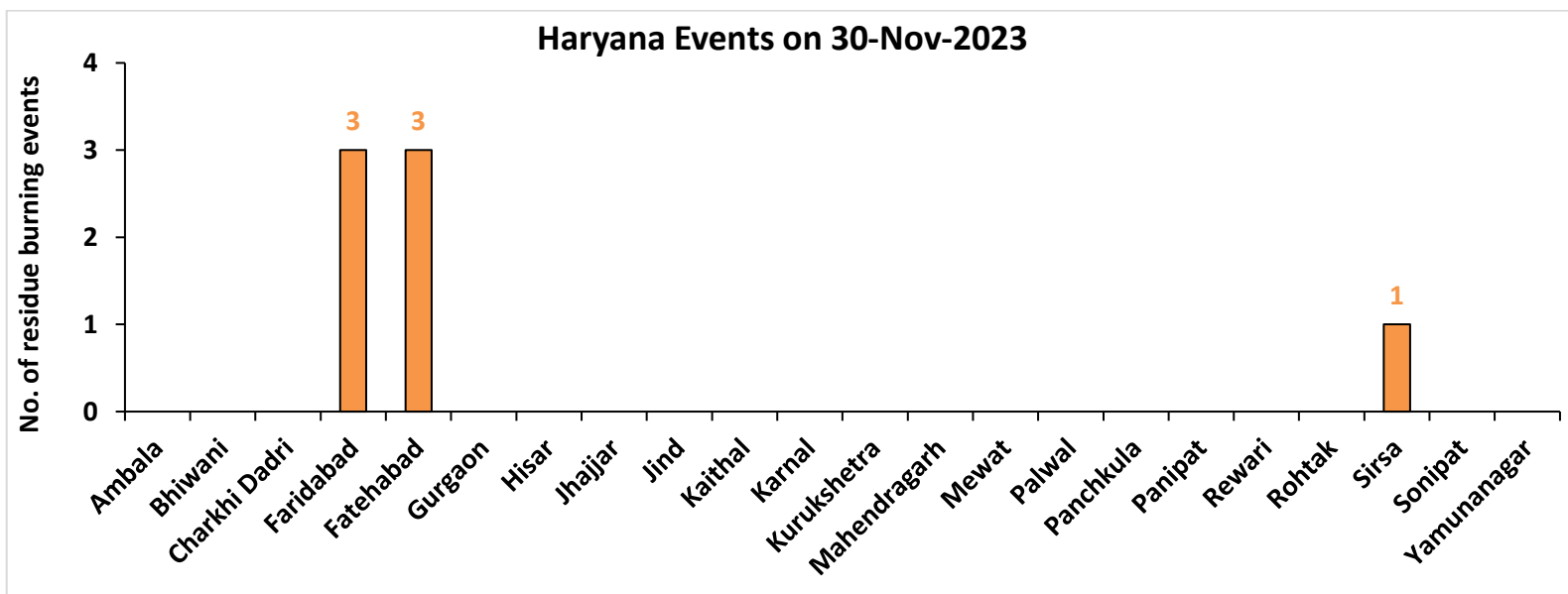
Haryana

RICE RESIDUE BURNING IN HARYANA



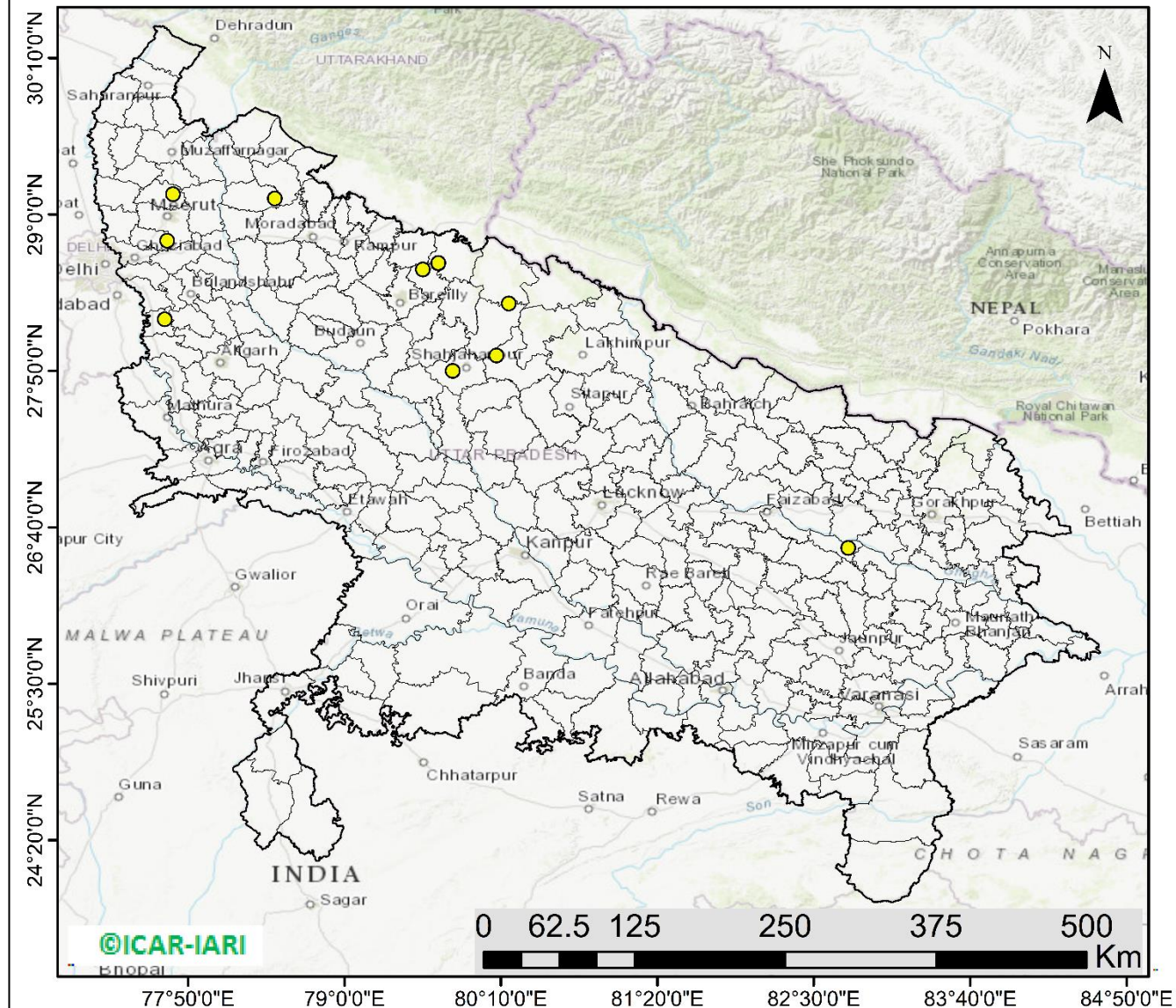
<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

District-wise cumulative number of residues burning events in Haryana (15Sep- 30Nov-2023)



Uttar Pradesh

RICE RESIDUE BURNING IN UTTAR PRADESH



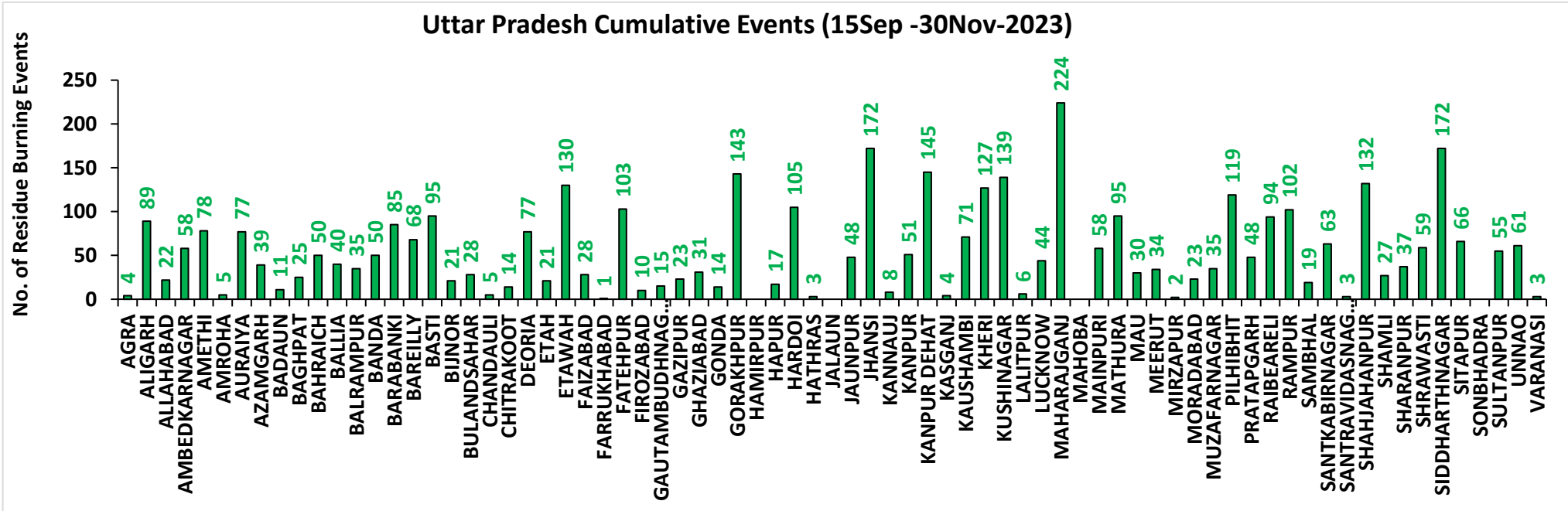
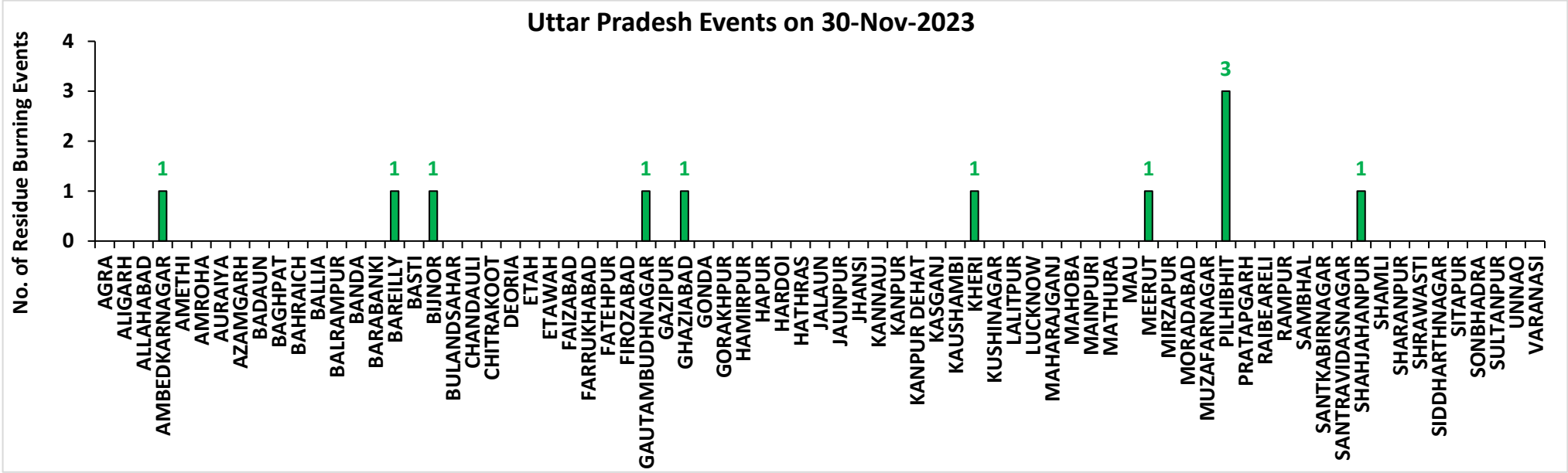
11 burning events detected in Uttar Pradesh on (30th Nov 2023)

Fire Intensity (W/m²)

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

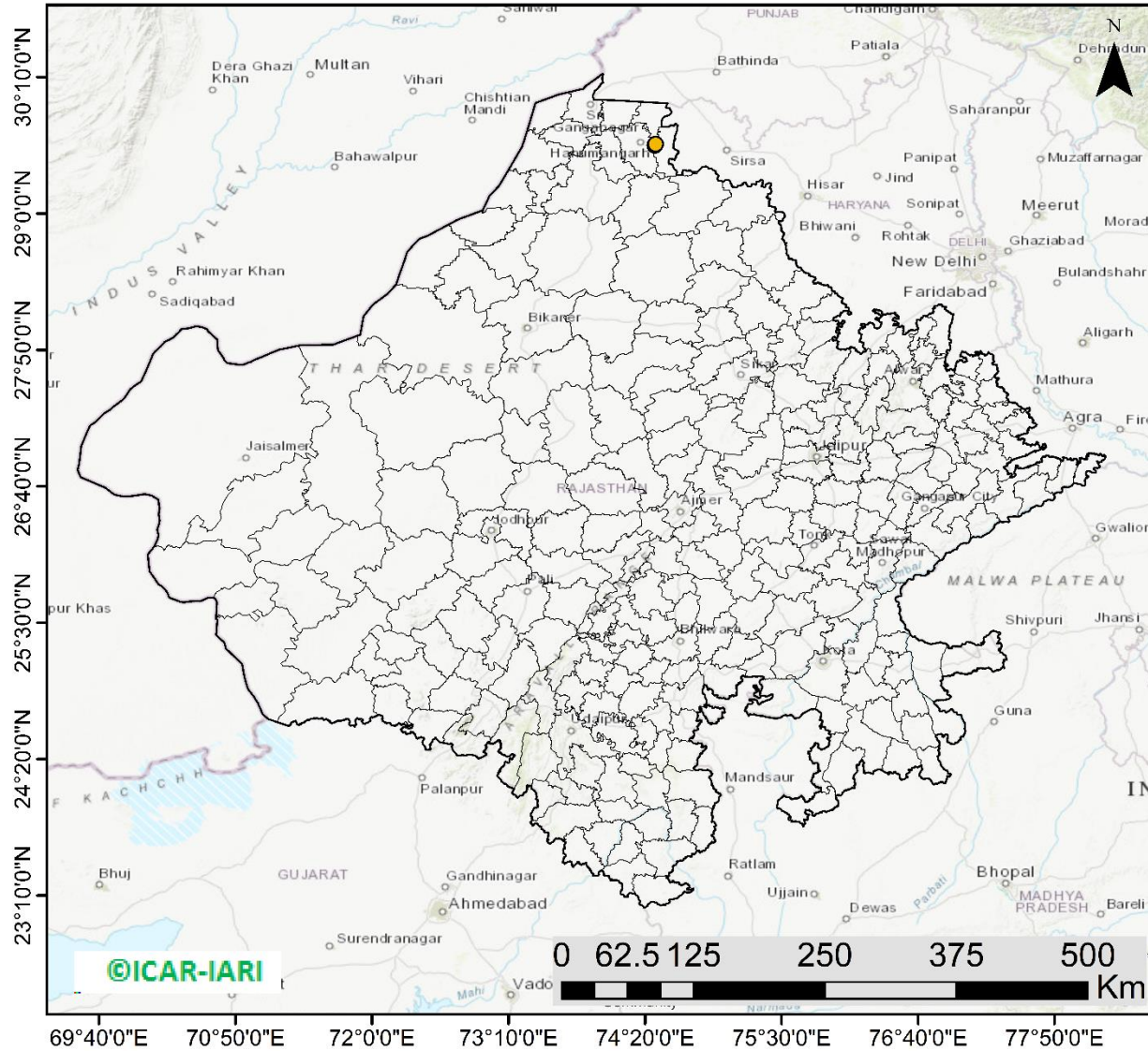
<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

District-wise cumulative number of residues burning events in Uttar Pradesh (15Sep-30Nov -2023)



Rajasthan

RICE RESIDUE BURNING IN RAJASTHAN



02 burning events
detected in Rajasthan on
(30th Nov 2023)

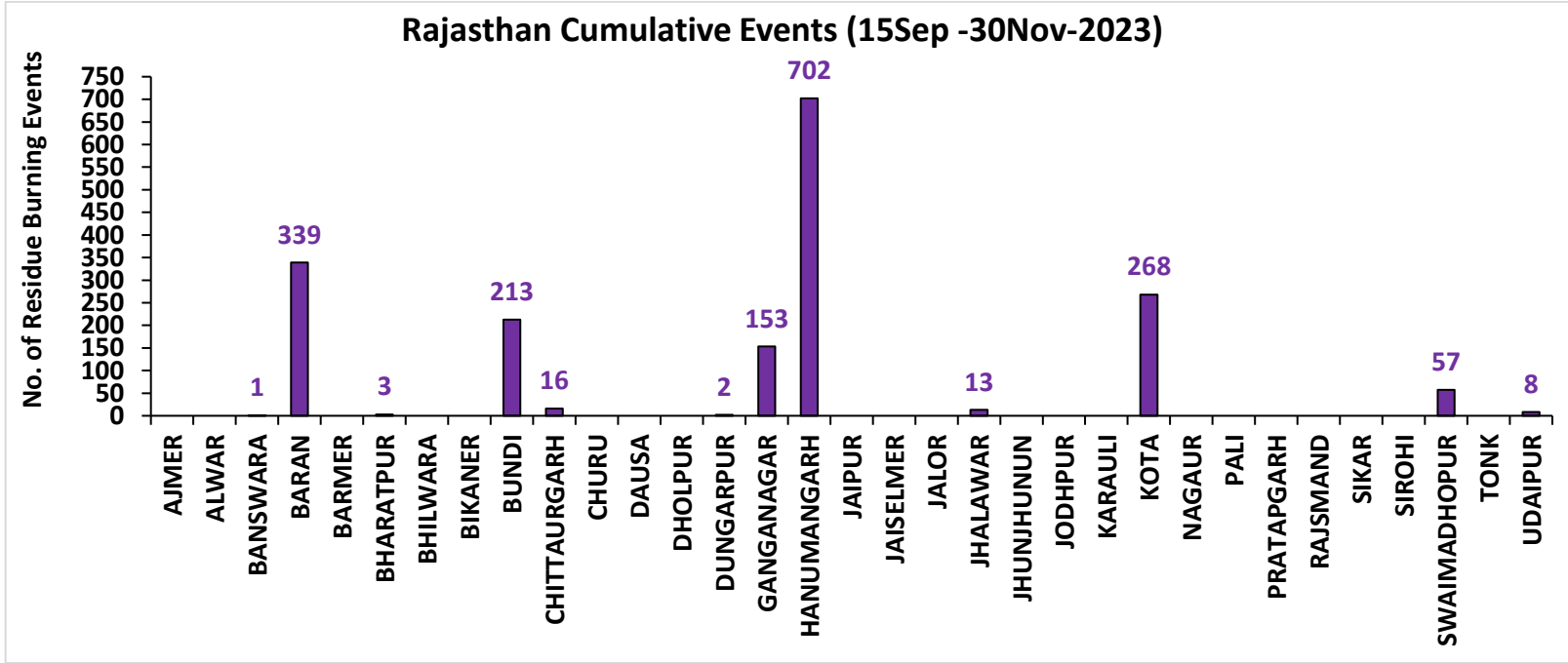
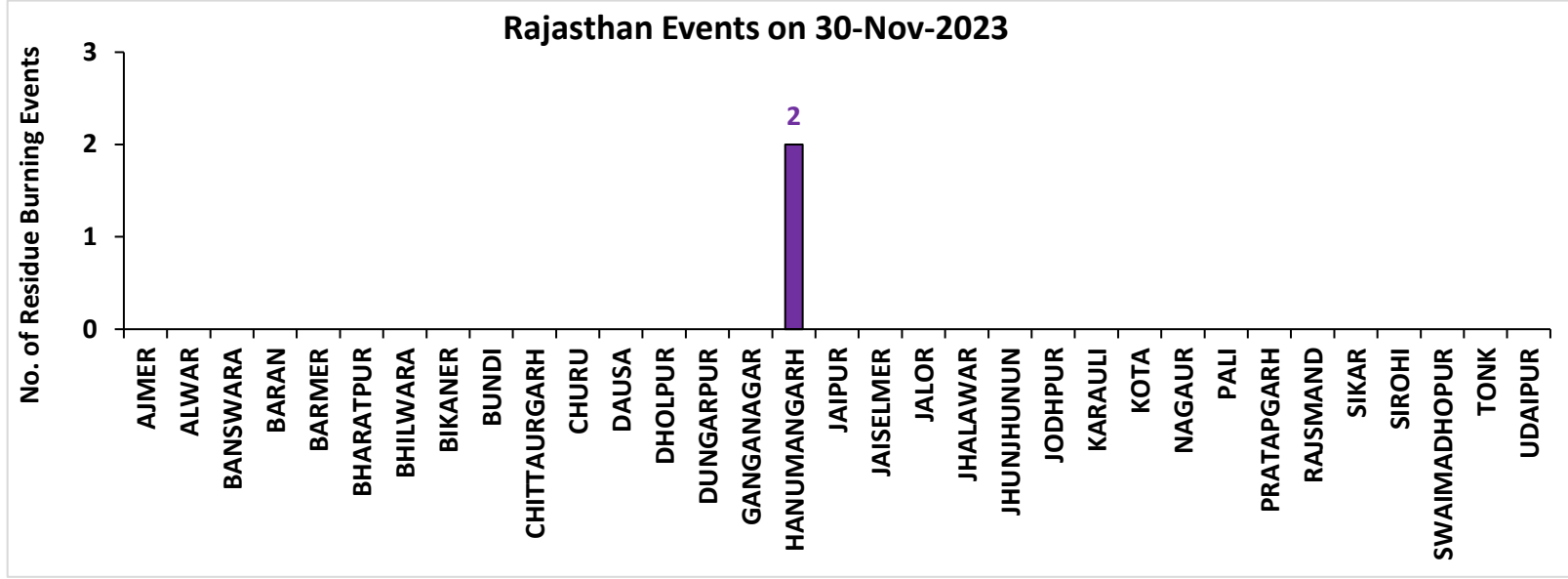
Fire Intensity (W/m²)

- 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-30Nov -2023)



District-wise cumulative number of residues burning events detected in 2020, 2021, 2022 and 2023
(Period: 15 September-30 November)

(a) Punjab

District	15 Sep-30 Nov			
	2020	2021	2022	2023
Amritsar	3067	2174	1542	1573
Barnala	5342	4326	2910	2316
Bathinda	5239	4481	4592	2972
Faridkot	4734	3953	2693	2022
Fatehgarh Sahib	1536	1724	1149	888
Fazilka	2616	2389	2593	1854
Firozpur	8525	6289	4558	3398
Gurdaspur	2132	1396	854	389
Hoshiarpur	388	331	259	118
Jalandhar	1951	2548	1388	1196
Kapurthala	1886	1798	1279	1048
Ludhiana	5065	5817	2682	1801
Malerkotla*	--	--	--	413
Mansa	3786	3217	2815	2268
Moga	7421	6515	3609	2795
Muktsar	5072	4598	3884	1669
Pathankot	13	6	1	4
Patiala	6433	5426	3395	1878
Rupnagar	205	307	246	46
Sangrur#	11727	9389	5916	5618
SAS NAGAR	127	148	103	133
SBS Nagar	132	355	270	238
Tarn Taran	5605	4117	3184	2026
Total	83002	71304	49922	36663

(b) Haryana

District	15 Sep-30 Nov			
	2020	2021	2022	2023
AMBALA	346	308	226	195
BHIWANI	5	12	9	10
CHARKHI DADRI	0	0	1	2
FARIDABAD	1	3	1	9
FATEHABAD	880	1479	767	579
GURGAON	0	0	0	0
HISAR	56	245	115	111
JHAJJAR	6	7	8	20
JIND	347	919	533	343
KAITHAL	840	1157	641	262
KARNAL	592	955	301	126
KURUKSHETRA	406	538	302	154
MAHENDRAGARH	0	0	0	0
MEWAT	0	0	0	0
PALWAL	46	115	51	57
PANCHKULA	0	0	0	1
PANIPAT	55	254	84	25
REWARI	0	0	0	0
ROHTAK	50	78	68	71
SIRSA	357	551	305	162
SONIPAT	72	219	94	78
YAMUNANAGAR	143	147	155	98
Total	4202	6987	3661	2303

*Malerkotla events are included in Sangrur events in 2020, 2021, 2022.

Sangrur events in 2023 do not include Malerkotla events.

(c) Uttar Pradesh

District	15 Sep-30 Nov													
	2020	2021	2022	2023	GAUTAMBUDHNAGAR	16	19	11	15	MUZAFARNAGAR	66	41	31	35
AGRA	7	0	0	4	GAZIPUR	41	30	34	23	PILHIBHIT	36	224	155	119
ALIGARH	114	40	44	89	GHAZIABAD	29	17	13	31	PRATAPGARH	46	43	32	48
ALLAHABAD	56	46	19	22	GONDA	14	13	1	14	RAIBEARELI	49	104	59	94
AMBEDKARNAGAR	55	40	52	58	GORAKHPUR	47	38	45	143	RAMPUR	167	193	108	102
AMETHI	15	33	24	78	HAMIRPUR	7	0	0	0	SAMBHAL	22	22	15	19
AMROHA	24	10	9	5	HAPUR	42	22	17	17	SANTKABIRNAGAR	33	24	17	63
AURAIYA	105	81	68	77	HARDOI	112	119	83	105	SANTRAVIDASNAGAR	5	6	5	3
AZAMGARH	68	43	30	39	HATHRAS	0	0	2	3	SHAHJAHANPUR	161	423	327	132
BADAUN	15	19	11	11	JALAUN	51	0	0	0	SHAMLI	52	50	26	27
BAGHPAT	28	24	20	25	JAUNPUR	59	44	40	48	SHARANPUR	110	92	37	37
BAHRAICH	110	60	23	50	JHANSI	380	173	123	172	SHRAWASTI	48	45	19	59
BALLIA	174	88	60	40	KANNAUJ	34	6	8	8	SIDDHARTHANAGAR	77	140	49	172
BALRAMPUR	69	21	13	35	KANPUR	45	39	30	51	SITAPUR	84	56	49	66
BANDA	50	15	23	50	KANPUR DEHAT	102	53	67	145	SONBHADRA	1	2	0	0
BARABANKI	36	73	61	85	KASGANJ	3	2	3	4	SULTANPUR	15	40	33	55
BAREILLY	95	69	73	68	KAUSHAMBI	101	92	51	71	UNNAO	52	34	41	61
BASTI	58	53	21	95	KHERI	214	186	168	127	VARANASI	2	5	0	3
BIJNOR	57	55	25	21	KUSHINAGAR	88	61	59	139	Total	4631	4242	3017	3996
BULANDSAHAR	75	16	32	28	LALITPUR	3	6	3	6					
CHANDAULI	53	26	15	5	LUCKNOW	35	34	16	44					
CHITRAKOOT	19	9	15	14	MAHARAJGANJ	64	210	190	224					
DEORIA	90	41	47	77	MAHOBA	27	0	0	0					
ETAH	17	10	8	21	MAINPURI	69	52	46	58					
ETAWAH	93	108	69	130	MATHURA	161	240	30	95					
FAIZABAD	16	13	8	28	MAU	43	23	13	30					
FARRUKHABAD	7	4	1	1	MEERUT	99	63	48	34					
FATEHPUR	138	108	109	103	MIRZAPUR	14	18	7	2					
FIROZABAD	27	17	10	10	MORADABAD	34	16	16	23					

(d) Delhi

District	15 Sep-30 Nov			
	2020	2021	2022	2023
CENTRAL	0	0	0	0
EAST	0	0	0	0
NEW DELHI	0	0	0	0
NORTH	3	3	9	5
NORTH EAST	0	0	0	0
NORTH WEST DELHI	3	1	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	2	0	1	0
Total	9	4	10	5

(e) Rajasthan

District	15 Sep-30 Nov			
	2020	2021	2022	2023
AJMER	3	0	0	0
ALWAR	10	0	0	0
BANSWARA	0	0	1	1
BARAN	167	13	77	339
BARMER	4	0	0	0
BHARATPUR	2	3	1	3
BHILWARA	11	0	0	0
BIKANER	1	0	0	0
BUNDI	128	87	180	213
CHITTAURGARH	5	13	8	16
CHURU	0	0	0	0
DAUSA	1	0	0	0
DHOLPUR	0	0	0	0
DUNGARPUR	0	0	2	2
GANGANAGAR	226	146	104	153
HANUMANGARH	952	995	677	702
JAIPUR	4	0	0	0
JAISELMER	5	0	0	0
JALOR	2	0	0	0
JHALAWAR	10	1	12	13
JHUNJHUNUN	1	0	0	0
JODHPUR	5	0	0	0
KARAULI	1	0	0	0
KOTA	116	57	148	268
NAGAU	4	0	0	0
PALI	13	0	0	0
PRATAPGARH	8	0	0	0
RAJSMAND	1	0	0	0
SIKAR	1	0	0	0
SIROHI	3	0	0	0
SWAIMADHOPUR	65	34	55	57
TONK	5	0	0	0
UDAIPUR	2	1	3	8
Total	1756	1350	1268	1775

(f) Madhya Pradesh

District	15 Sep-30 Nov								
	2020	2021	2022	2023					
					PANNA	50	23	41	48
ALIRAJPUR	0	0	0	0	RAISEN	619	361	465	407
ANUPPUR	3	2	7	3	RAJGARH	13	3	5	11
ASHOKNAGAR	156	90	188	278	RATLAM	10	7	3	6
BALAGHAT	9	6	5	4	REWA	143	120	101	95
BARWANI	6	0	0	3	SAGAR	28	31	55	92
BETUL	37	16	27	44	SATNA	577	526	504	394
BHIND	269	159	209	270	SEHORE	164	153	227	193
BHOPAL	52	40	43	50	SEONI	1234	897	1127	1438
BURHANPUR	16	3	5	10	SHAHDOL	3	1	3	2
CHHATARPUR	9	0	2	3	SHAJAPUR	22	0	0	20
CHHINDWARA	136	59	102	178	SHEOPUR	1862	1013	1800	1859
DAMOH	75	53	70	100	SHIVPURI	396	112	286	301
DATIA	1188	498	861	915	SIDHI	4	6	4	2
DEWAS	8	0	0	14	SINGRAULI	0	7	3	18
DHAR	48	0	0	45	TIKAMGARH	5	0	1	6
DINDORI	0	0	1	3	UJJAIN	18	0	0	18
EAST NIMAR	23	7	11	56	UMARIA	9	11	16	11
GUNA	70	12	124	468	VIDESHA	145	123	94	152
GWALIOR	2058	848	1583	1072	WEST NIMAR	68	12	20	45
HARDA	14	21	11	31	Total	14148	8160	11737	12500
HOSHANGABAD	1060	1067	1099	1181					
INDORE	4	0	0	12					
JABALPUR	2671	1426	1982	1984					
JHABUA	0	0	0	0					
KATNI	326	119	224	274					
MANDLA	152	119	153	97					
MANDSAUR	15	0	0	6					
MORENA	62	37	25	48					
NARSHIMAPURA	309	172	250	232					
NIMACH	2	0	0	1					

State-wise and date-wise number of paddy residue burning events detected in 2020, 2021, 2022 and 2023
(Period: 15 September-30 November)

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
14-Oct	605	229	82	89	69	98	30	41	9	68	5	18
15-Oct	449	660	169	69	106	363	36	127	15	149	0	35
16-Oct	654	429	206	0	80	176	76	4	21	121	6	14
17-Oct	1172	14	403	1	143	0	86	0	38	39	7	0
18-Oct	938	57	342	18	166	1	134	8	76	0	30	2
19-Oct	1080	496	436	37	72	55	122	16	43	5	36	11
20-Oct	890	788	96	174	62	155	78	51	31	1	17	25
21-Oct	1392	597	393	146	101	131	107	68	25	5	23	59
22-Oct	1665	1111	582	30	128	140	122	25	32	3	18	117
23-Oct	1438	620	902	152	106	218	217	29	84	8	109	20
24-Oct	911	0	1019	360	57	38	250	70	63	11	212	38
25-Oct	1416	76	181	398	155	71	12	58	50	18	9	30
26-Oct	2126	329	1238	589	77	175	123	67	33	41	23	78
27-Oct	2563	279	1111	766	96	93	83	67	40	58	23	97
28-Oct	3232	906	2067	127	139	149	123	14	87	35	34	36
29-Oct	1624	1353	1898	1068	52	161	112	75	139	32	73	48
30-Oct	3946	1373	1761	1030	100	148	112	52	50	53	43	19
31-Oct	3531	2895	2131	1389	108	353	70	51	49	170	20	28
01-Nov	3835	1796	1842	1921	151	124	88	99	74	157	9	95
02-Nov	4098	3001	3634	1668	111	203	166	48	82	87	25	37
03-Nov	2818	2512	2666	1551	93	197	128	28	197	66	40	36
04-Nov	4584	3032	2437	1360	72	228	63	33	152	123	61	17
05-Nov	4529	5327	2817	3230	66	331	90	109	52	70	24	64
06-Nov	5382	3942	599	2060	151	219	46	65	43	208	28	87
07-Nov	5491	5199	2487	1515	150	182	37	26	86	46	8	169
08-Nov	3674	4397	604	2003	115	138	11	44	169	21	44	47
09-Nov	1718	5079	1778	639	21	217	69	27	115	51	58	17
10-Nov	3127	4008	1893	6	80	184	35	0	101	77	33	30
11-Nov	2822	4156	3916	104	93	126	152	27	71	151	36	35
12-Nov	1989	3403	2467	987	83	127	99	110	108	120	36	238
13-Nov	2441	3742	2175	1624	105	210	132	44	172	95	102	176

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
14-Oct	0	0	0	0	16	1	1	15	15	11	1	26
15-Oct	0	0	0	0	9	8	2	34	8	27	2	66
16-Oct	1	0	0	0	12	2	4	18	23	13	2	51
17-Oct	0	0	0	0	26	0	4	12	63	1	11	31
18-Oct	0	0	1	0	37	2	12	11	88	0	15	13
19-Oct	0	0	0	0	27	5	12	31	49	1	12	65
20-Oct	0	0	0	0	26	4	4	57	9	21	7	131
21-Oct	2	0	0	0	32	2	6	34	112	30	18	147
22-Oct	0	0	0	0	29	5	12	57	183	29	31	119
23-Oct	1	0	0	0	23	7	20	29	204	32	70	89
24-Oct	0	0	2	0	20	4	7	38	150	34	26	132
25-Oct	1	0	0	0	18	2	4	47	144	60	0	159
26-Oct	0	0	0	0	34	3	21	59	178	55	57	320
27-Oct	0	0	0	0	42	1	21	73	294	62	38	256
28-Oct	0	0	0	0	45	4	46	12	537	110	143	202
29-Oct	0	0	0	0	29	23	37	73	349	97	151	372

30-Oct	0	0	0	0	17	20	55	37	428	168	119	224
31-Oct	0	0	0	0	37	15	36	33	455	299	112	360
01-Nov	0	0	1	0	51	5	27	60	709	198	142	509
02-Nov	0	0	0	0	55	19	63	40	820	214	284	401
03-Nov	1	0	1	0	34	20	54	38	771	148	323	552
04-Nov	0	0	2	0	46	19	34	21	618	123	348	408
05-Nov	0	0	0	0	46	45	91	59	474	320	319	698
06-Nov	0	0	0	0	40	32	27	47	678	248	392	655
07-Nov	0	0	0	1	57	38	80	23	848	199	383	497
08-Nov	0	0	0	1	33	44	5	29	981	170	783	417
09-Nov	0	1	0	0	34	48	22	3	495	330	570	251
10-Nov	0	0	0	0	48	40	34	27	346	380	282	508
11-Nov	0	1	0	0	75	55	95	29	418	506	482	488
12-Nov	0	0	0	0	31	40	84	33	422	185	421	300
13-Nov	0	2	0	0	54	78	63	60	670	171	773	144
14-Nov	0	0	0	0	16	88	1	53	294	346	633	164
15-Nov	0	0	0	0	6	51	2	84	35	353	507	326
16-Nov	0	0	0	0	16	81	78	27	145	660	316	423
17-Nov	0	0	0	1	60	38	48	45	191	261	416	465
18-Nov	0	0	0	0	75	77	55	25	352	126	524	363
19-Nov	0	0	0	0	27	73	19	37	124	16	625	187
20-Nov	0	0	0	0	59	53	15	40	106	6	556	208
21-Nov	0	0	0	0	57	72	12	51	159	95	196	267
22-Nov	0	0	0	0	9	21	4	52	165	188	170	510
23-Nov	0	0	0	0	66	61	10	24	150	262	259	263
24-Nov	0	0	1	0	13	26	14	2	258	224	299	253
25-Nov	0	0	0	0	2	30	7	16	106	343	315	228
26-Nov	0	0	0	0	0	11	2	0	48	318	198	4
27-Nov	0	0	0	0	16	33	2	0	39	416	57	0
28-Nov	0	0	0	0	24	12	1	3	38	163	109	5
29-Nov	0	0	0	0	44	7	0	1	83	95	74	11
30-Nov	0	0	0	0	6	9	1	2	41	14	151	0
Total	9	4	10	5	1756	1350	1268	1775	14148	8160	11737	12500

Details of residue burning events in Punjab on 30-Nov-2023

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m2)
1	Bathinda	Goniana Mandi	S-NPP	30.29217	74.74801	14:12:51	D	3.20
2	Bathinda	Rampura	S-NPP	30.17753	75.24973	14:12:51	D	1.90
3	Fazilka	Arniwala Sheikh Subanpur	AQUA	30.31700	74.22800	14:37:09	D	12.40
4	Fazilka	Arniwala Sheikh Subanpur	S-NPP	30.42472	74.19855	14:12:51	D	2.70
5	Fazilka	Jalalabad	S-NPP	30.54826	74.35678	14:12:51	D	1.90
6	Fazilka	Jalalabad	S-NPP	30.54854	74.36040	14:12:51	D	1.90
7	Fazilka	Khuian Sarwar	S-NPP	30.23320	74.12110	14:12:51	D	1.10
8	Fazilka	Khuian Sarwar	S-NPP	30.23754	74.01228	14:12:51	D	3.40
9	Fazilka	Khuian Sarwar	S-NPP	30.23968	74.01287	14:12:51	D	2.90
10	Mansa	Budhlada	S-NPP	29.79860	75.43844	14:12:51	D	7.20
11	Muktsar	Malout	AQUA	30.35600	74.36600	14:37:09	D	14.80
12	Muktsar	Malout	S-NPP	30.36518	74.31335	14:12:51	D	2.20
13	Muktsar	Muktsar	S-NPP	30.46170	74.40079	14:12:51	D	4.00

Details of residue burning events in Haryana on 30-Nov-2023

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m ²)
1	FARIDABAD	FARIDABAD	S-NPP	28.34771	77.23437	01:23:17	N	1.90
2	FARIDABAD	FARIDABAD	S-NPP	28.34802	77.22979	01:23:17	N	2.40
3	FARIDABAD	FARIDABAD	S-NPP	28.34860	77.23354	01:23:17	N	3.50
4	FATEHABAD	JAKHAL	TERRA	29.72400	75.72300	10:31:58	D	8.40
5	FATEHABAD	JAKHAL	TERRA	29.72600	75.71000	10:31:58	D	16.40
6	FATEHABAD	JAKHAL	AQUA	29.73000	75.70500	14:37:09	D	18.40
7	SIRSA	ODHAN	S-NPP	29.91296	74.94266	01:23:17	N	5.50

Details of residue burning events in Uttar Pradesh on 30-Nov-2023

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m2)
1	AMBEDKARNAGAR	TANDA	S-NPP	26.51159	82.75786	01:23:17	N	1.00
2	BAREILLY	NAWABGANJ	TERRA	28.58900	79.58500	10:31:58	D	4.00
3	BIJNOR	CHANDPUR	TERRA	29.11800	78.48100	10:31:58	D	3.60
4	GAUTAMBUDHNAGAR	JEVAR	TERRA	28.21700	77.66000	10:31:58	D	4.10
5	GHAZIABAD	MODINAGAR	S-NPP	28.80326	77.67828	14:12:51	D	3.50
6	KHERI	MOHMADI	S-NPP	27.94674	80.13425	01:23:17	N	0.60
7	MEERUT	SARDHANA	S-NPP	29.15070	77.72144	12:32:34	D	2.10
8	PILHIBHIT	PILHIBHIT	S-NPP	28.63458	79.70014	12:32:34	D	2.70
9	PILHIBHIT	PILHIBHIT	S-NPP	28.63751	79.70024	12:32:34	D	2.60
10	PILHIBHIT	PURANPUR	S-NPP	28.33467	80.22575	01:23:17	N	0.40
11	SHAHJAHANPUR	SHAHJAHANPUR	S-NPP	27.83226	79.80733	12:32:34	D	2.40

Details of residue burning events in Rajasthan on 30-Nov-2023

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m2)
1	HANUMANGARH	TIBI	AQUA	29.58300	74.41800	14:37:09	D	14.50
2	HANUMANGARH	TIBI	S-NPP	29.59328	74.42426	14:12:51	D	8.70

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

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

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

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