

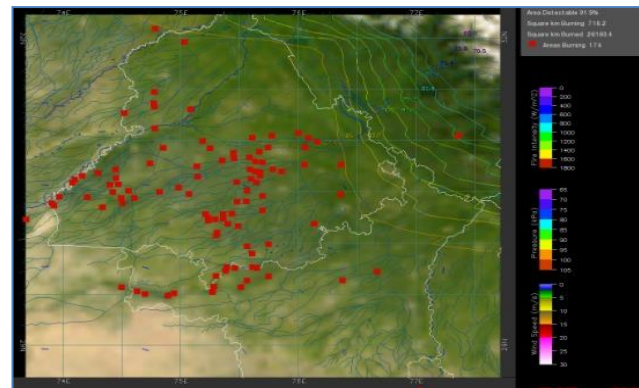
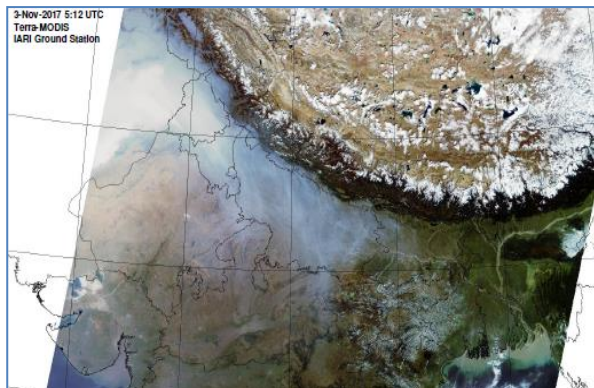


MONITORING PADDY RESIDUE BURNING IN INDIA USING SATELLITE REMOTE SENSING DURING 2022

**Bulletin
No. 75**

**Events Date:
28-Nov-2022**

**Issued on:
28-Nov-2022**



Prepared by:

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

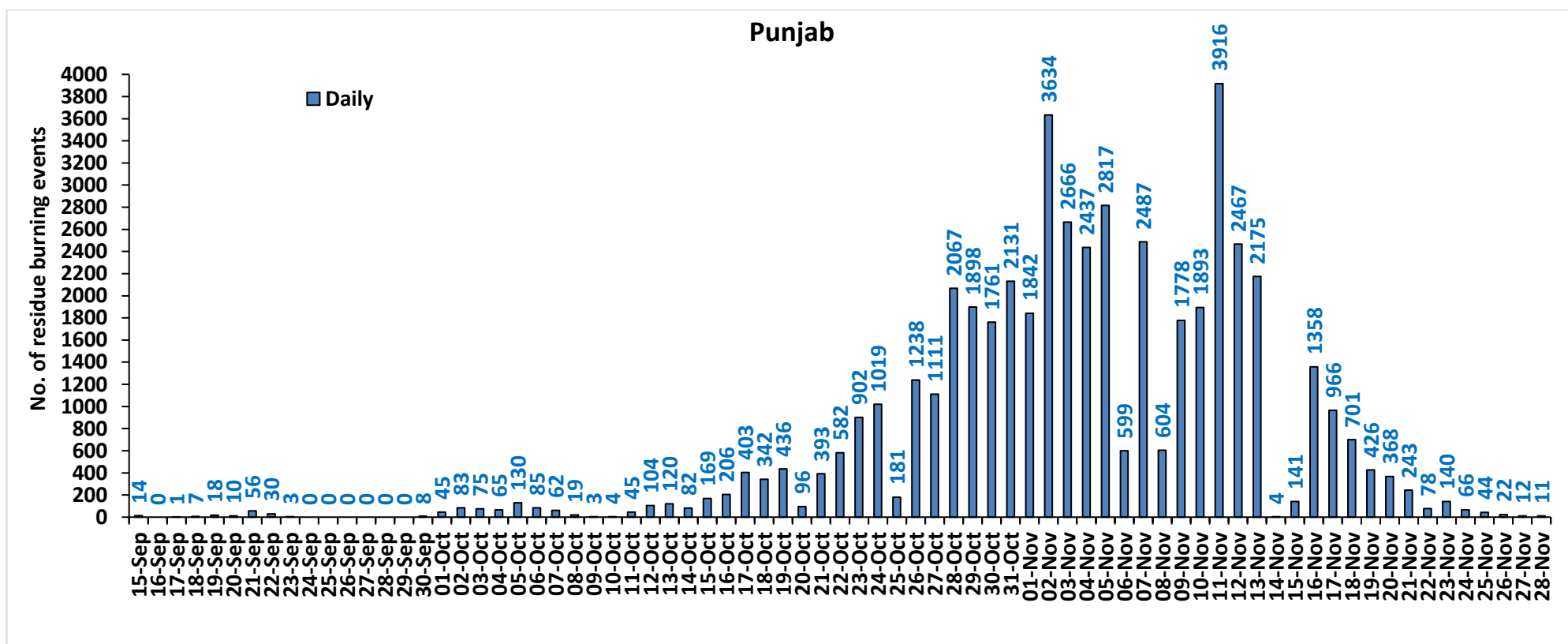
<http://creams.iari.res.in>

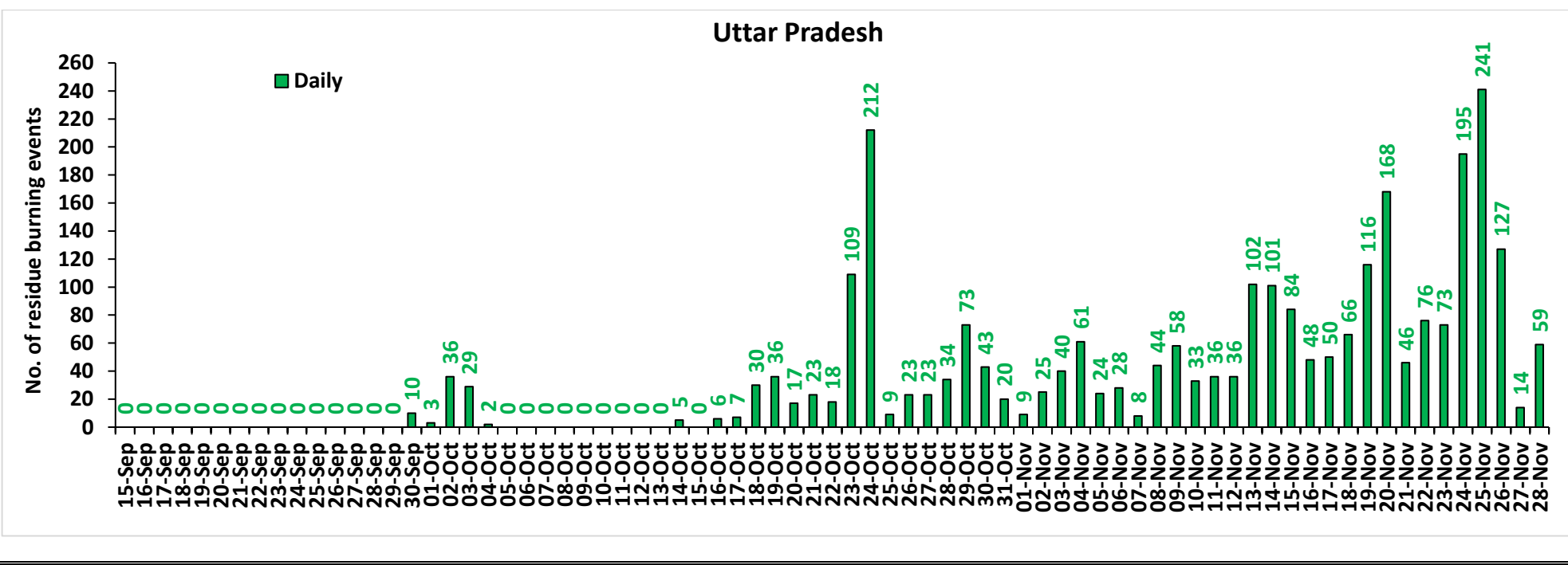
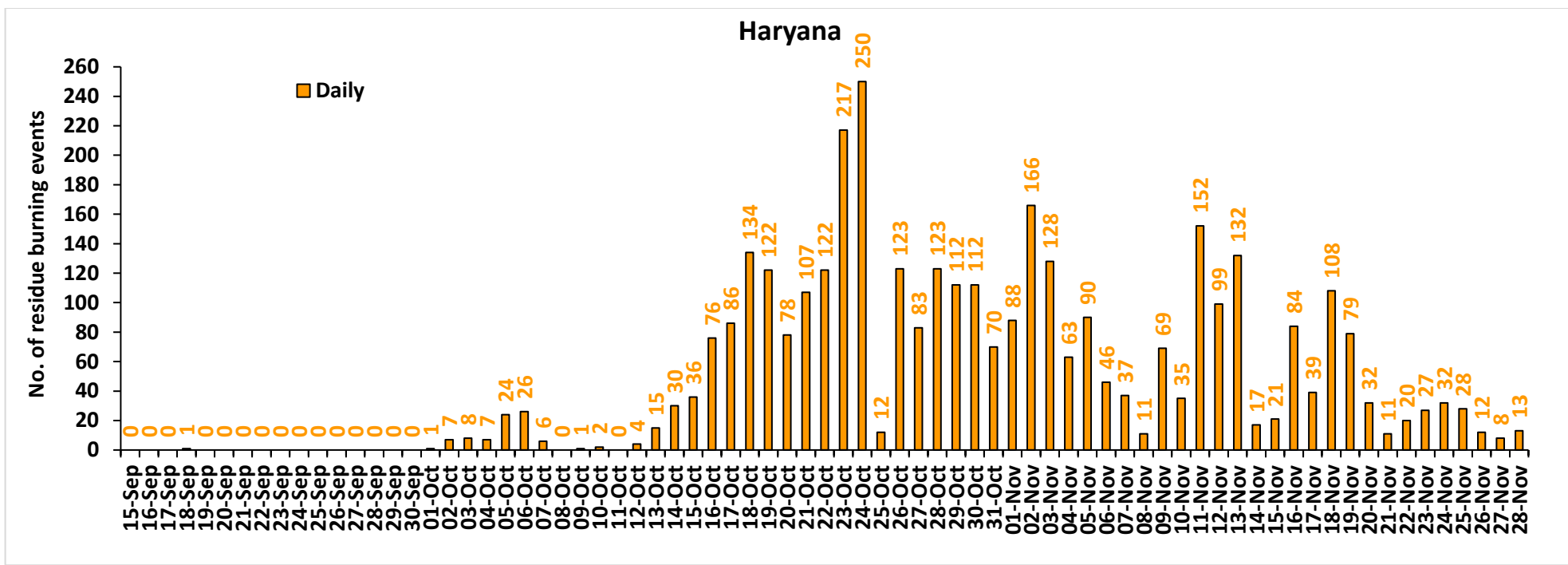


Highlights for 28-Nov-2022

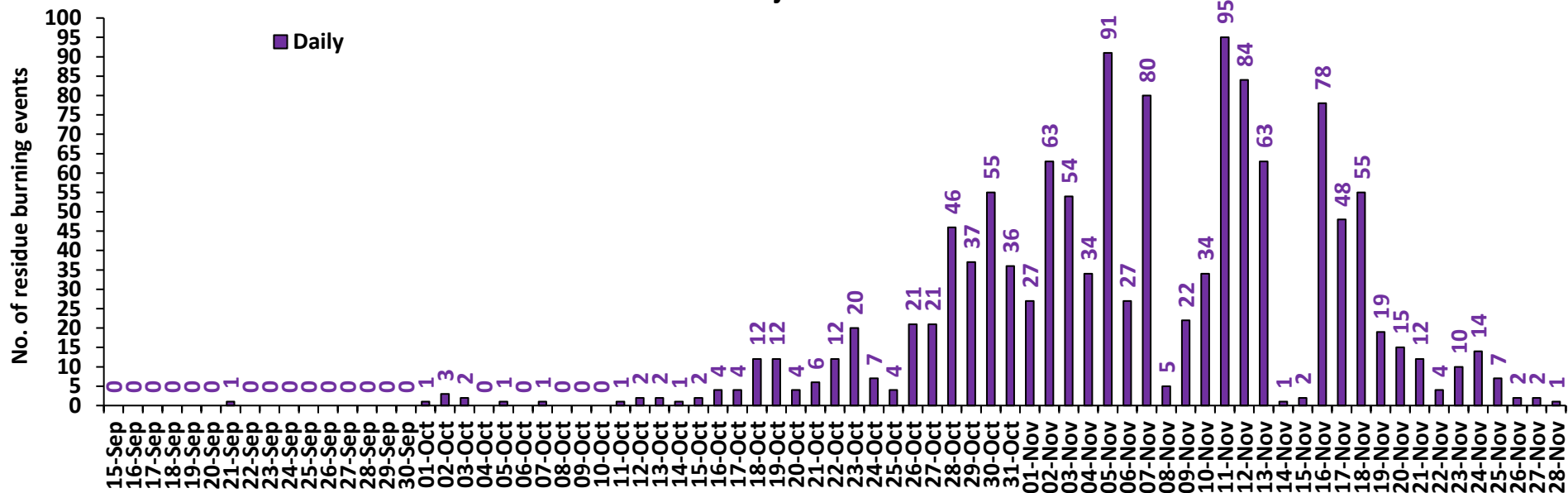
- The active fire events due to rice residue burning were monitored using satellite remote sensing, following the "Standard Protocol for Estimation of Crop Residue Burning Fire Events using Satellite Data".
- Satellites detected **193** residue burning events in the six study States on 28-Nov-2022.
- The state wise events detected on 28-Nov-2022 were **11** in Punjab, **13** in Haryana, **59** in UP, **0** in Delhi, **1** in Rajasthan and **109** in MP.
- Total **69066** burning events were detected in the six states between 15-Sept-2022 and 28-Nov-2022, which are distributed as **49899**, **3642**, **2736**, **10,1267** and **11512** in Punjab, Haryana, UP, Delhi, Rajasthan and MP respectively.

Temporal distribution of rice residue burning events for the study States in 2022

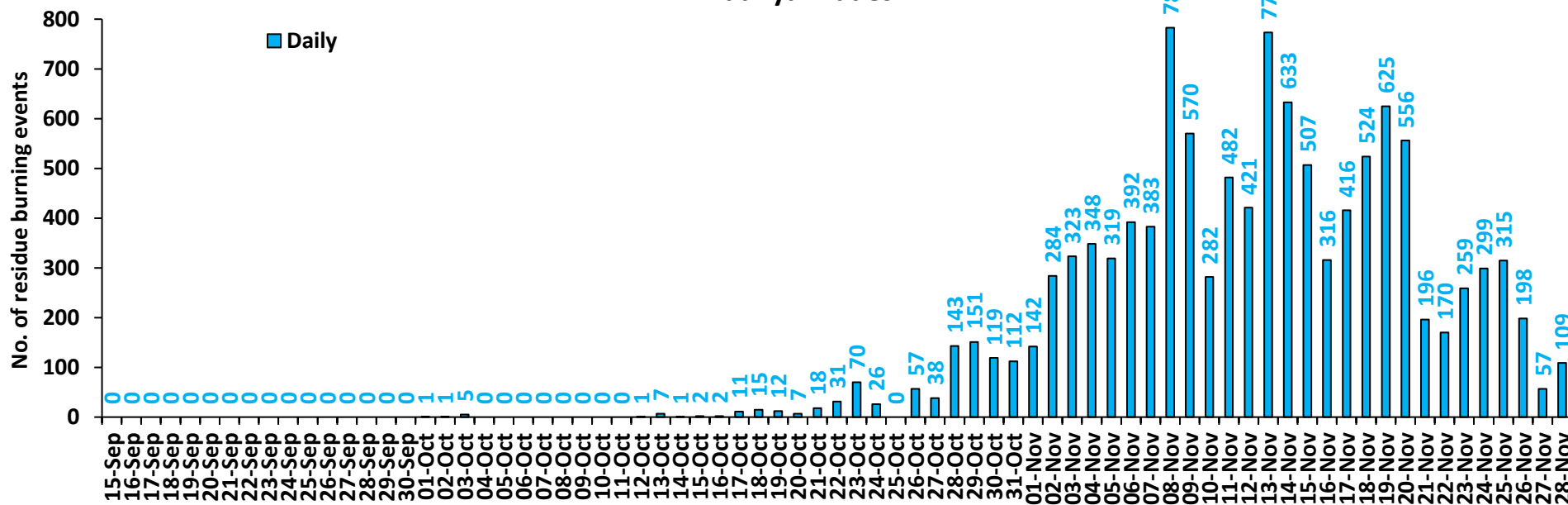




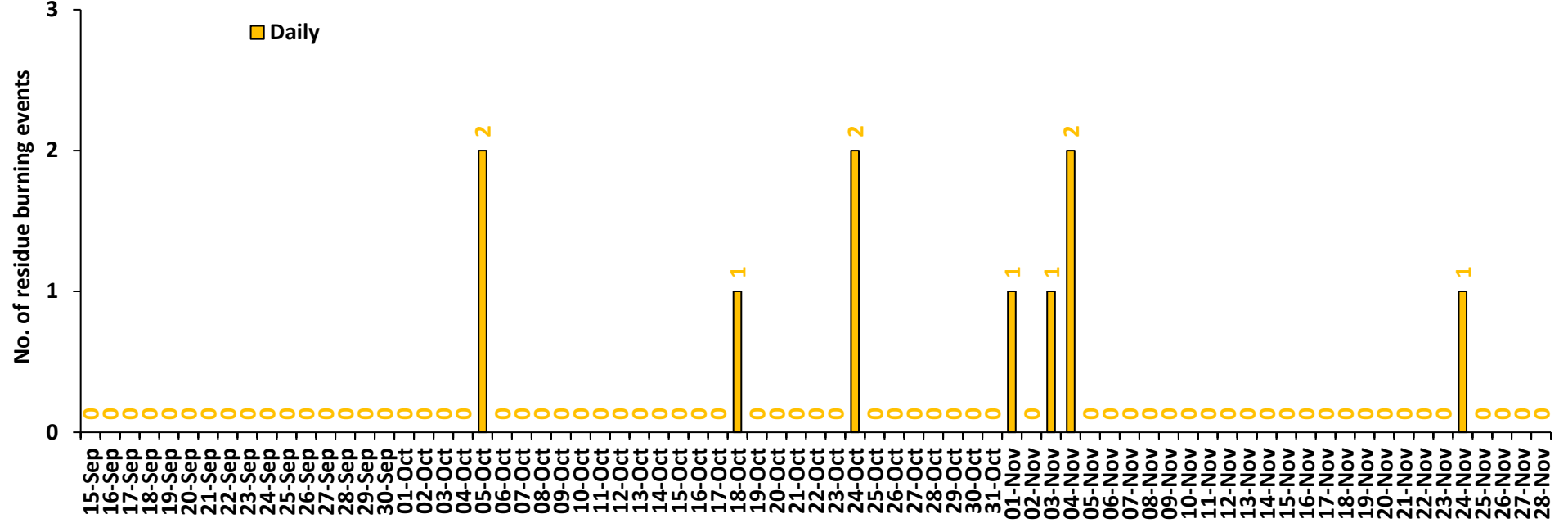
Rajasthan



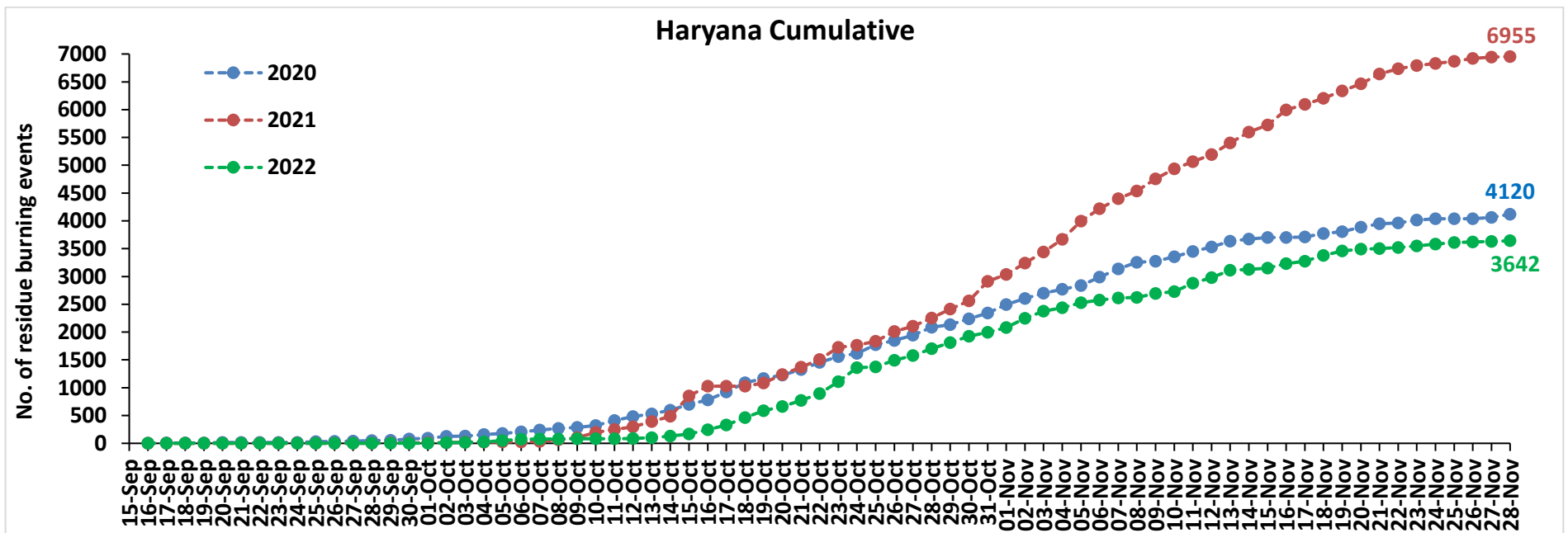
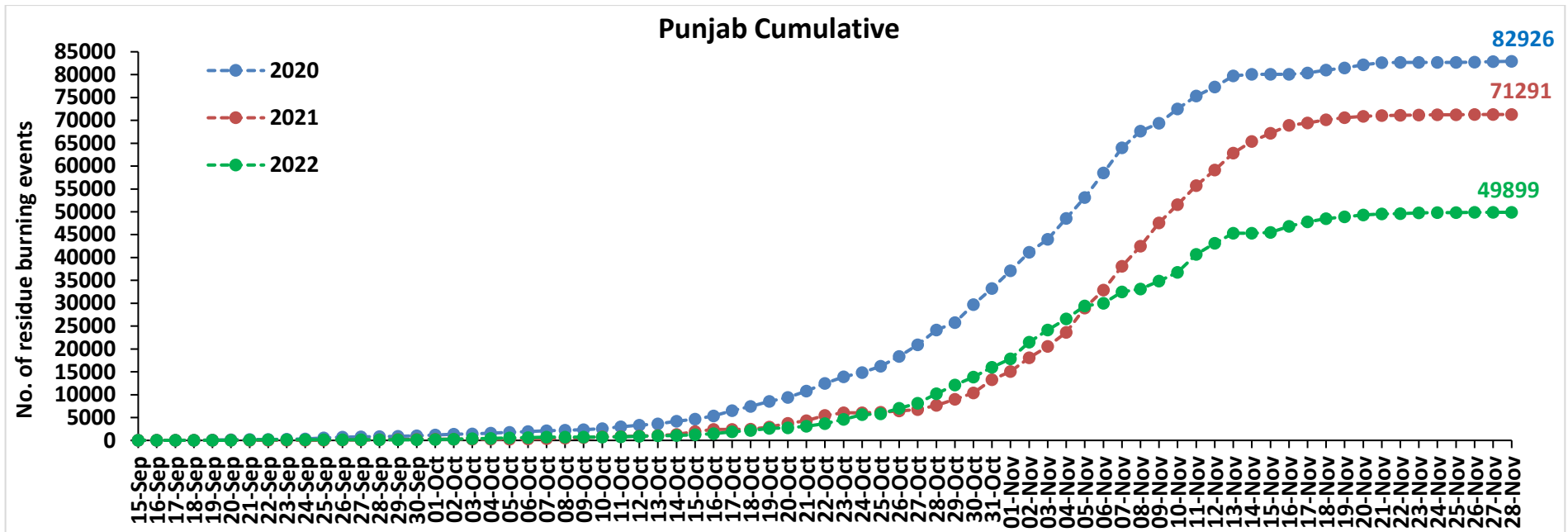
Madhya Pradesh



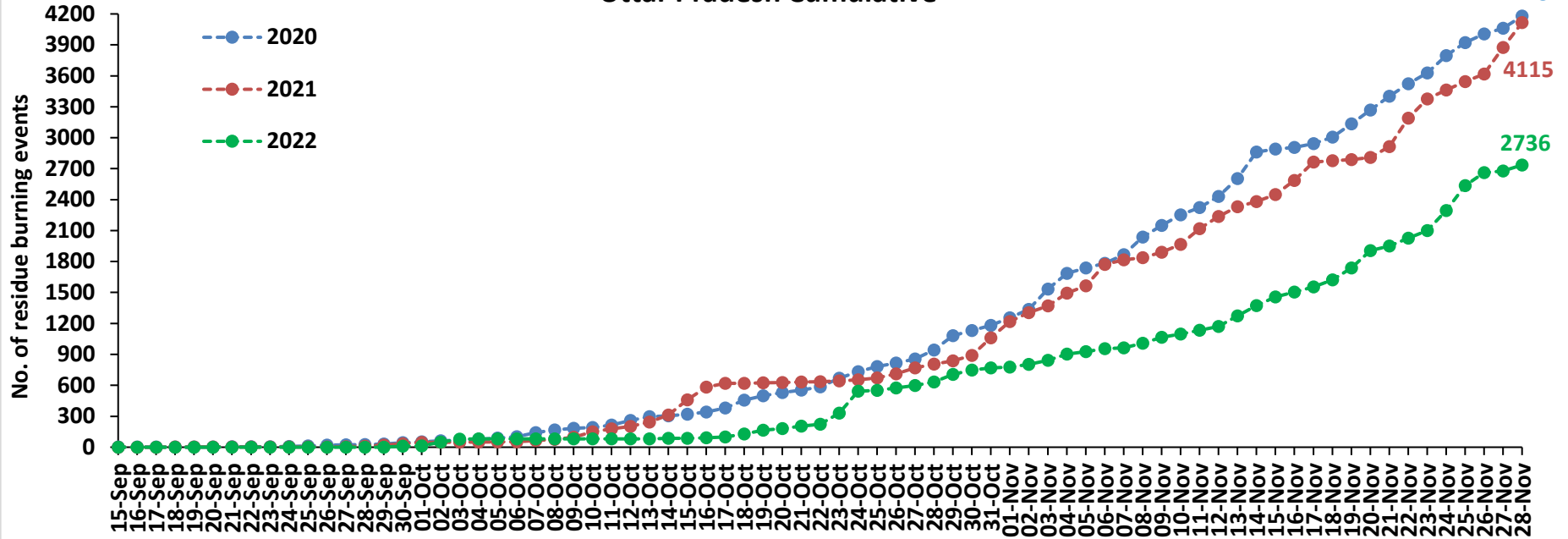
Delhi



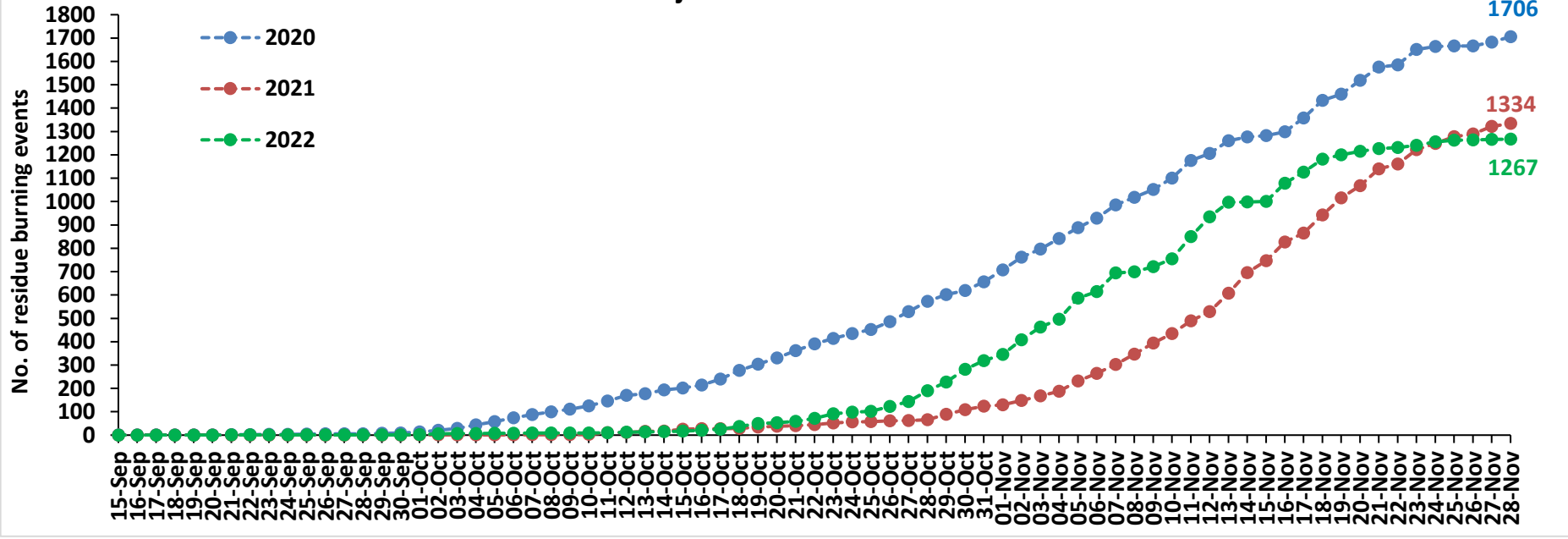
Comparison of residue burning events in current year (2022) with previous years (2020 and 2021) for the study States



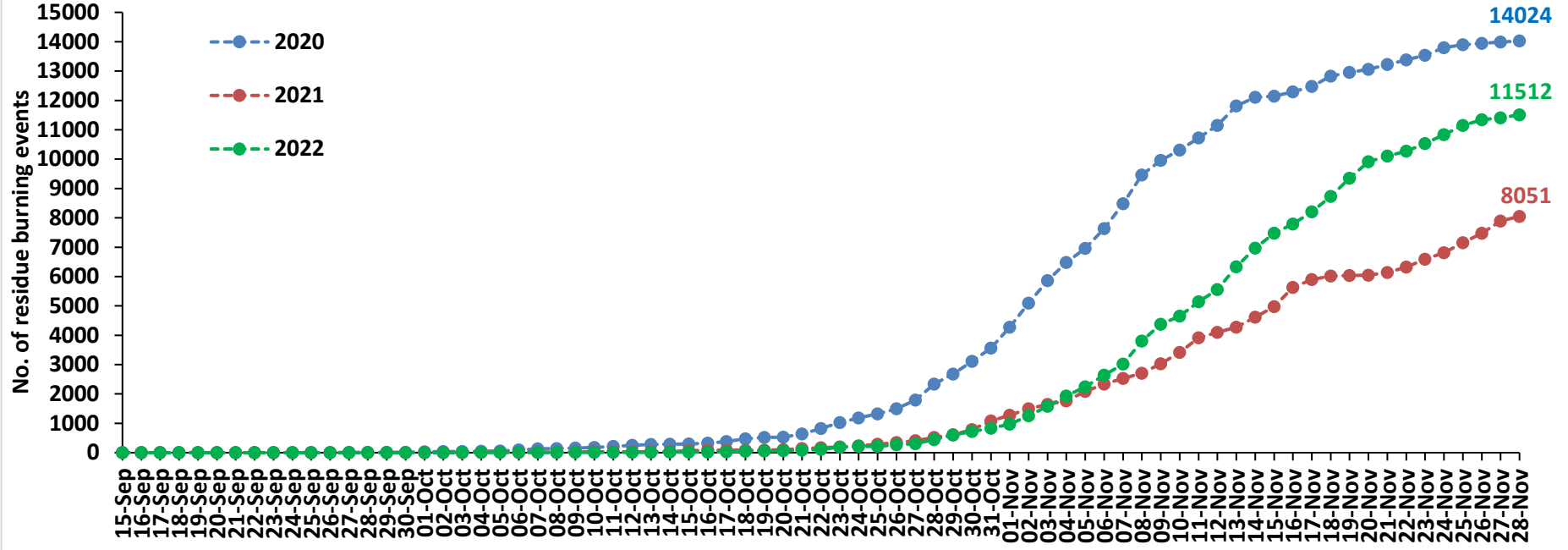
Uttar Pradesh Cumulative



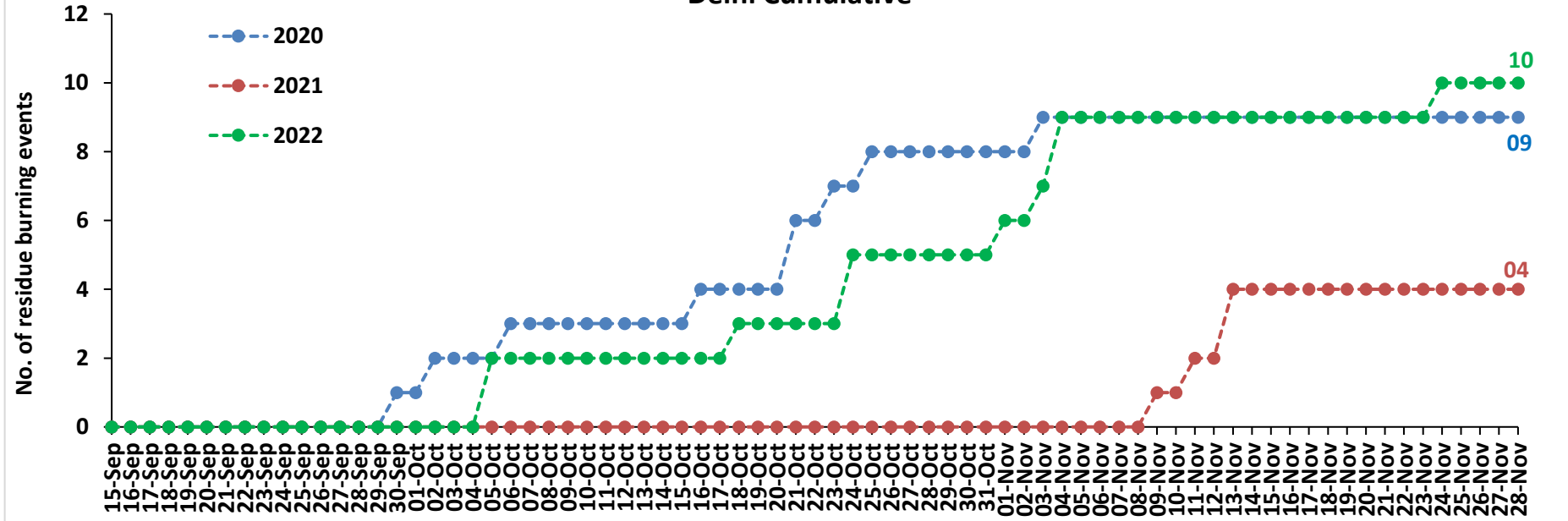
Rajasthan Cumulative



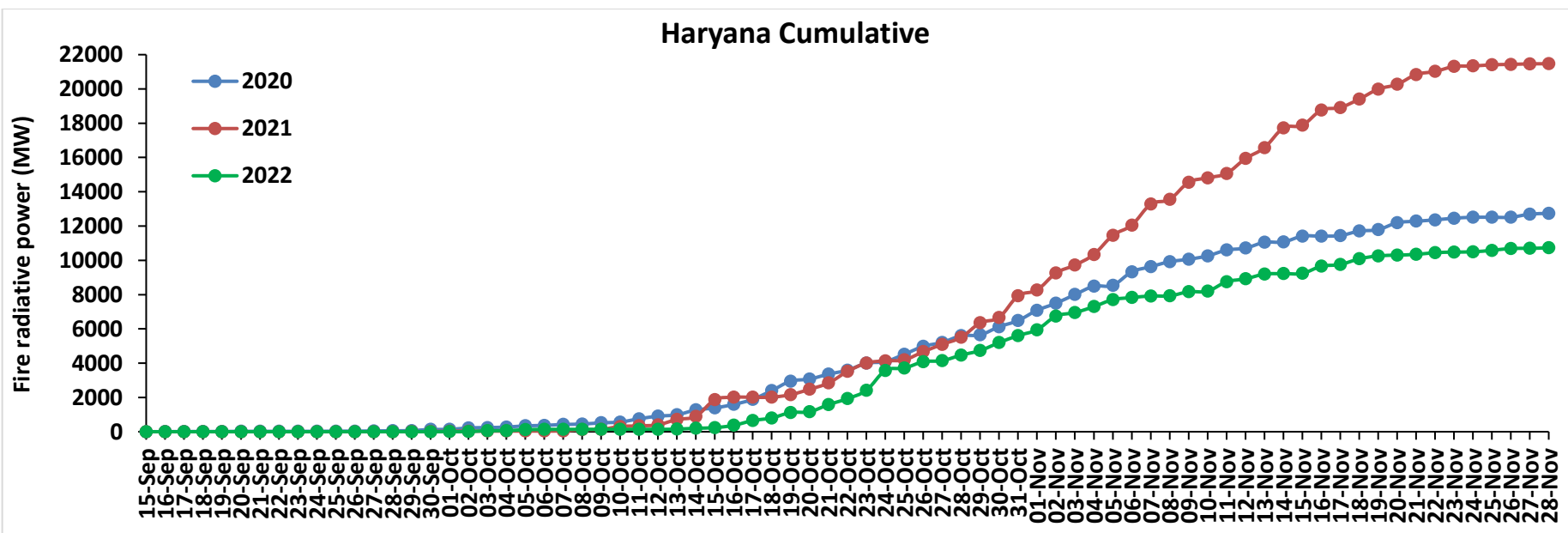
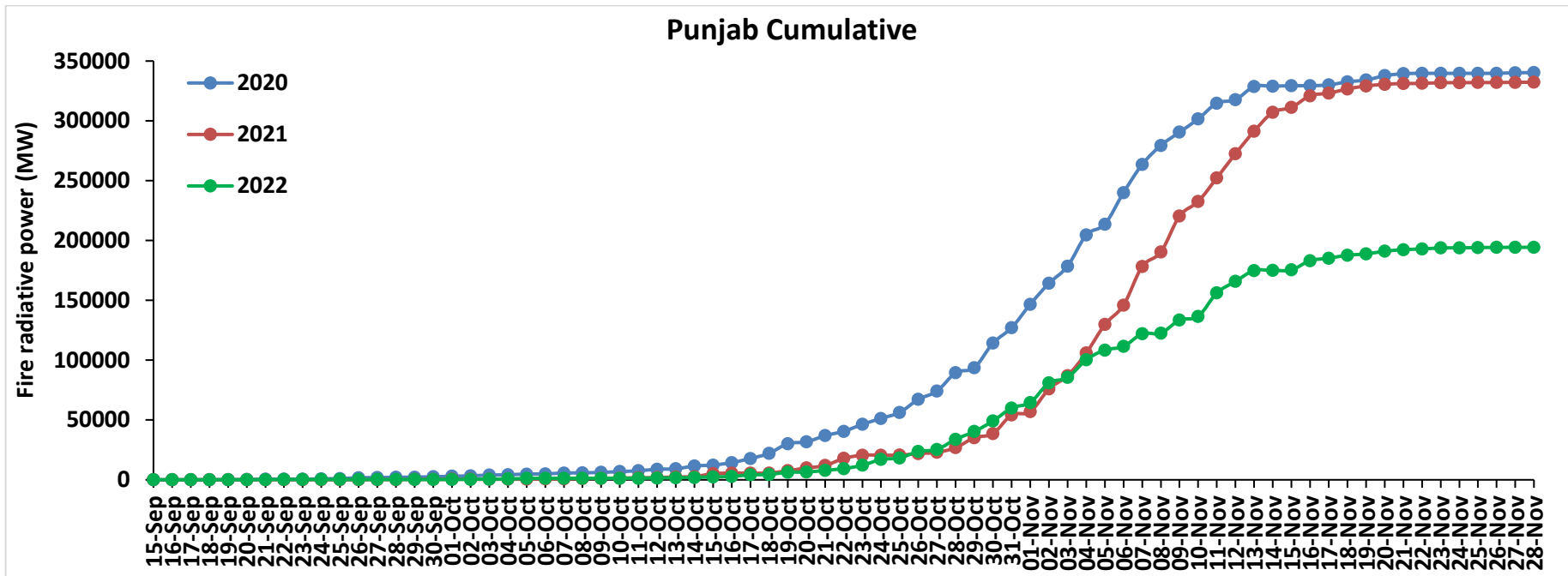
Madhya Pradesh Cumulative



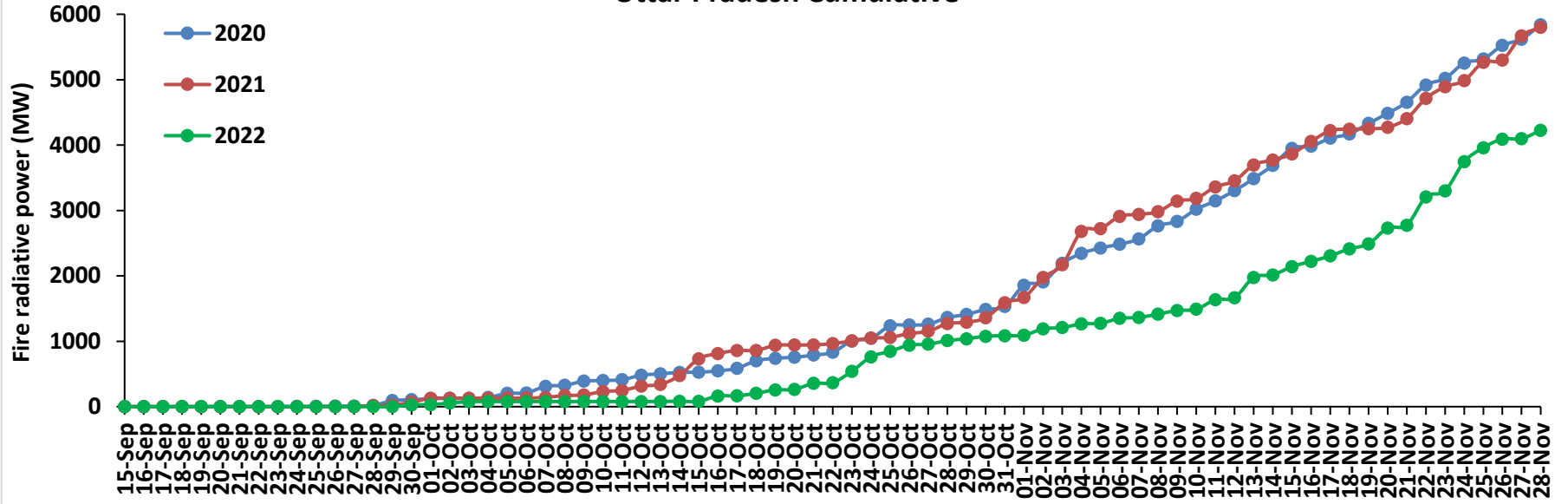
Delhi Cumulative



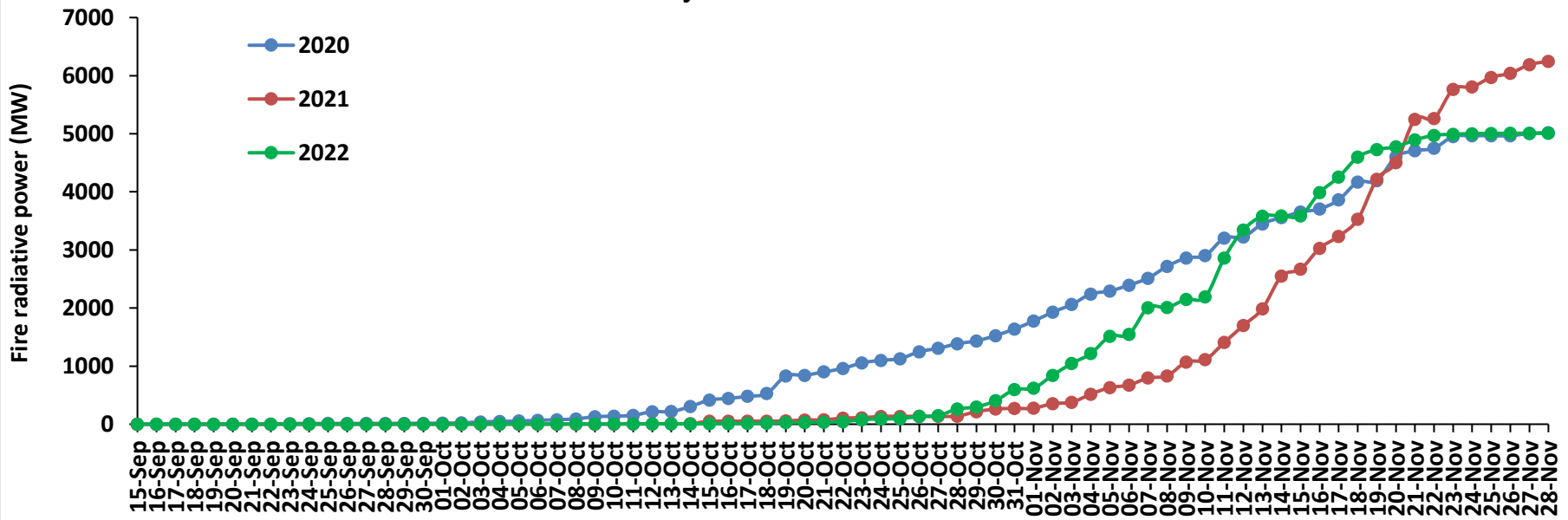
Comparison of residue burning fire power in current year (2022) with previous years (2021 and 2020) for the study States



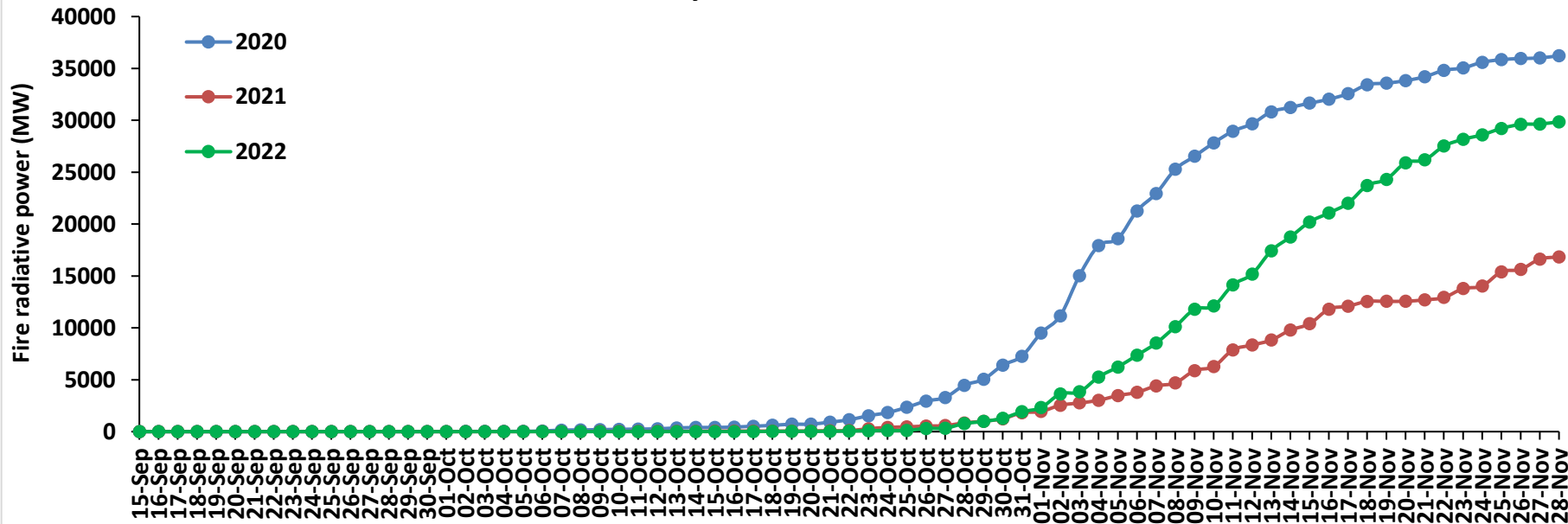
Uttar Pradesh Cumulative



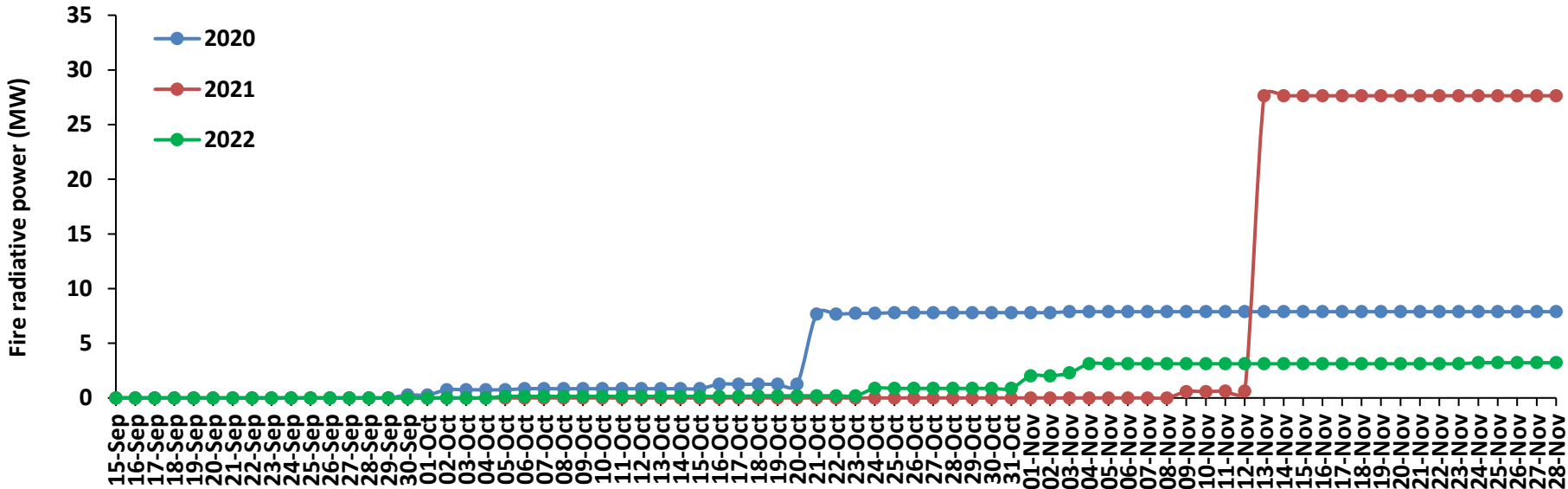
Rajasthan Cumulative



Madhya Pradesh Cumulative

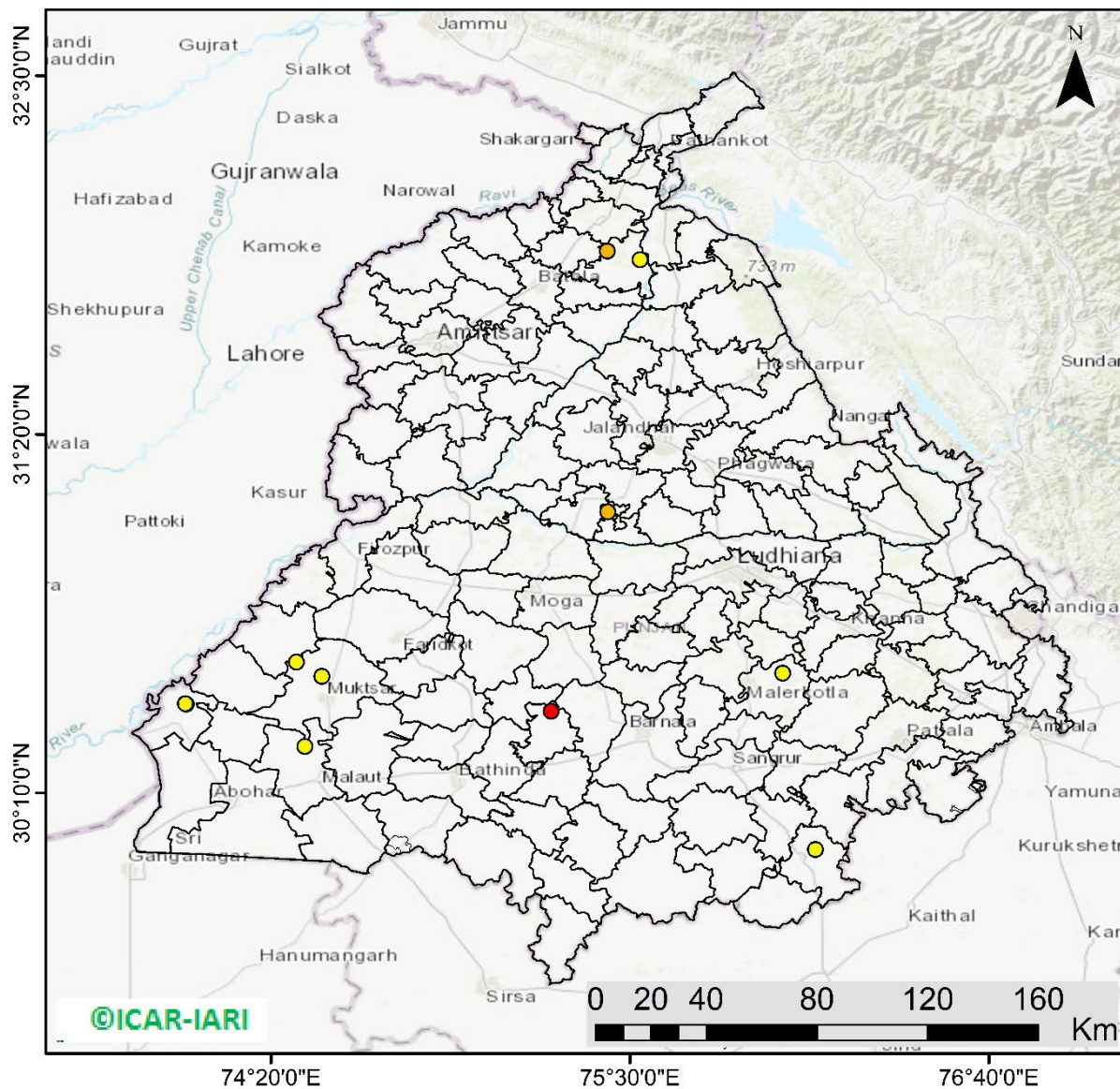


Delhi Cumulative



Punjab

RICE RESIDUE BURNING IN PUNJAB



11 burning events detected in Punjab during (28th Nov 2022)

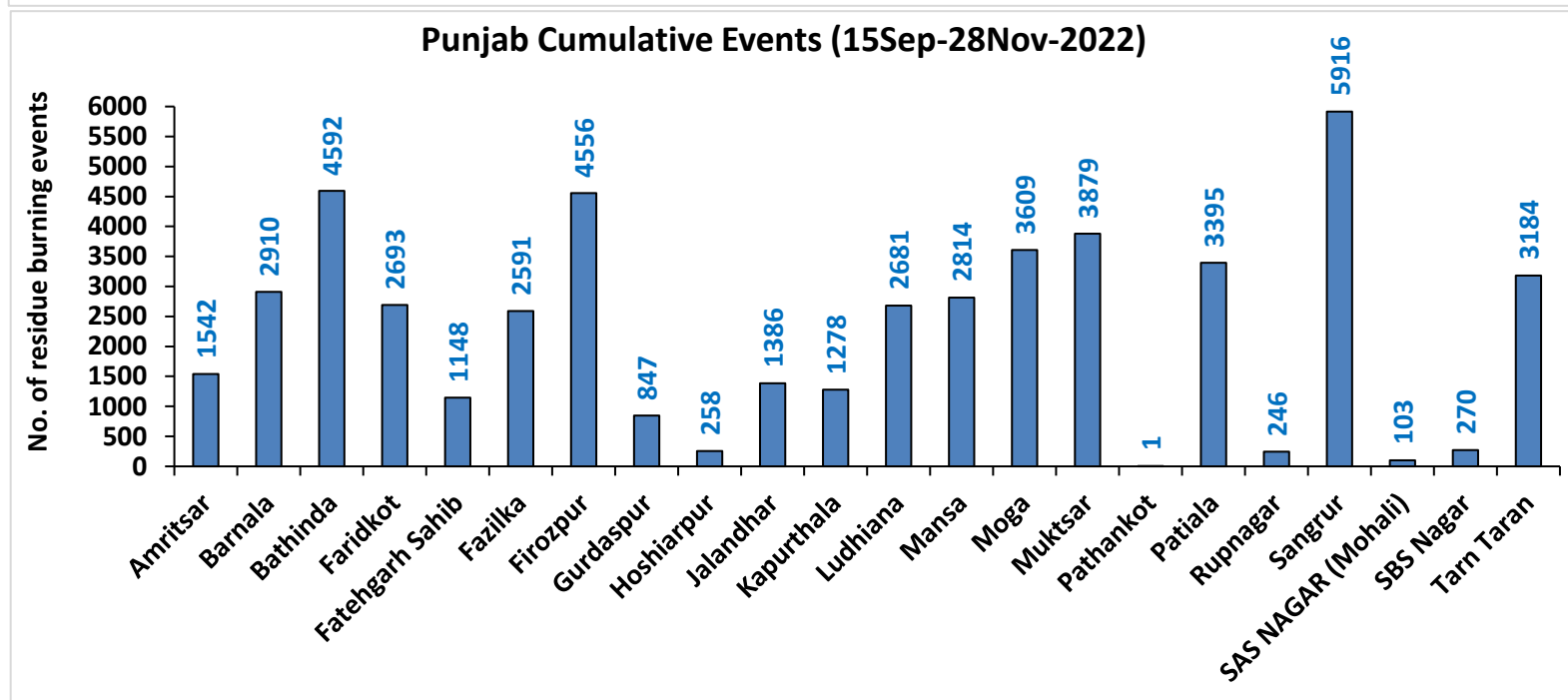
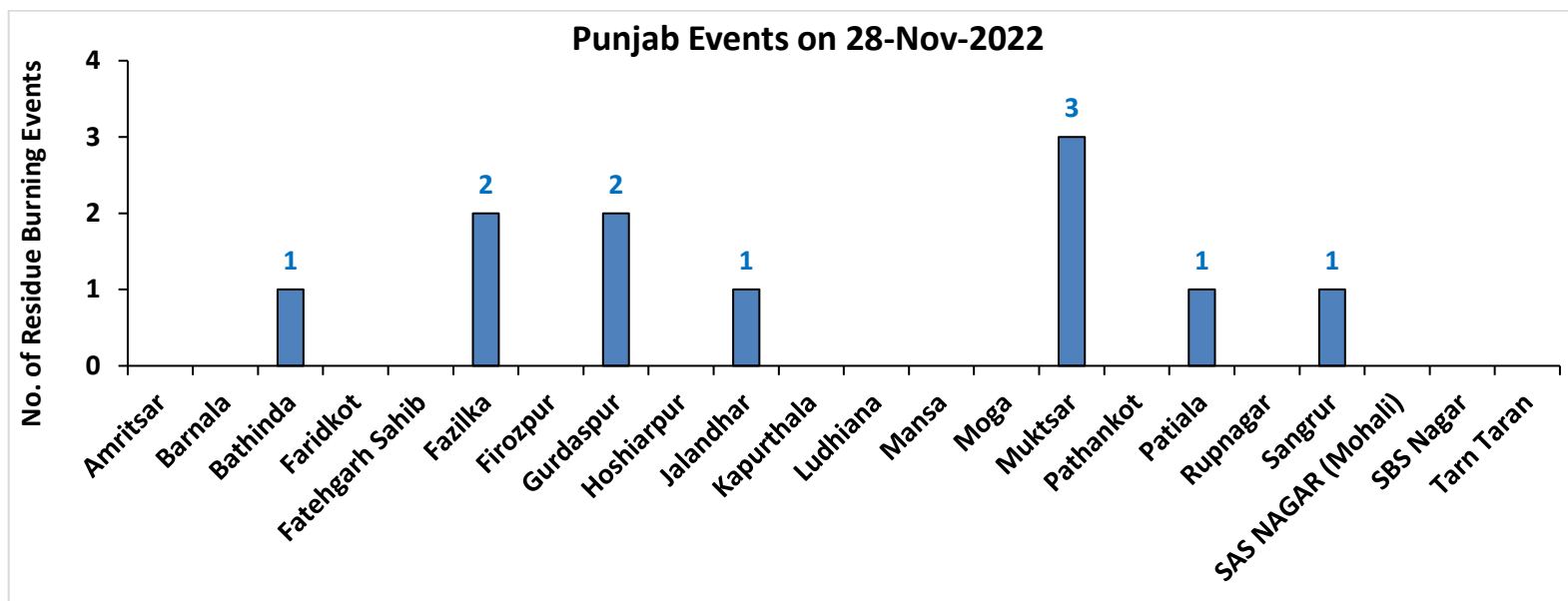
Fire Intensity (W/m²)

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



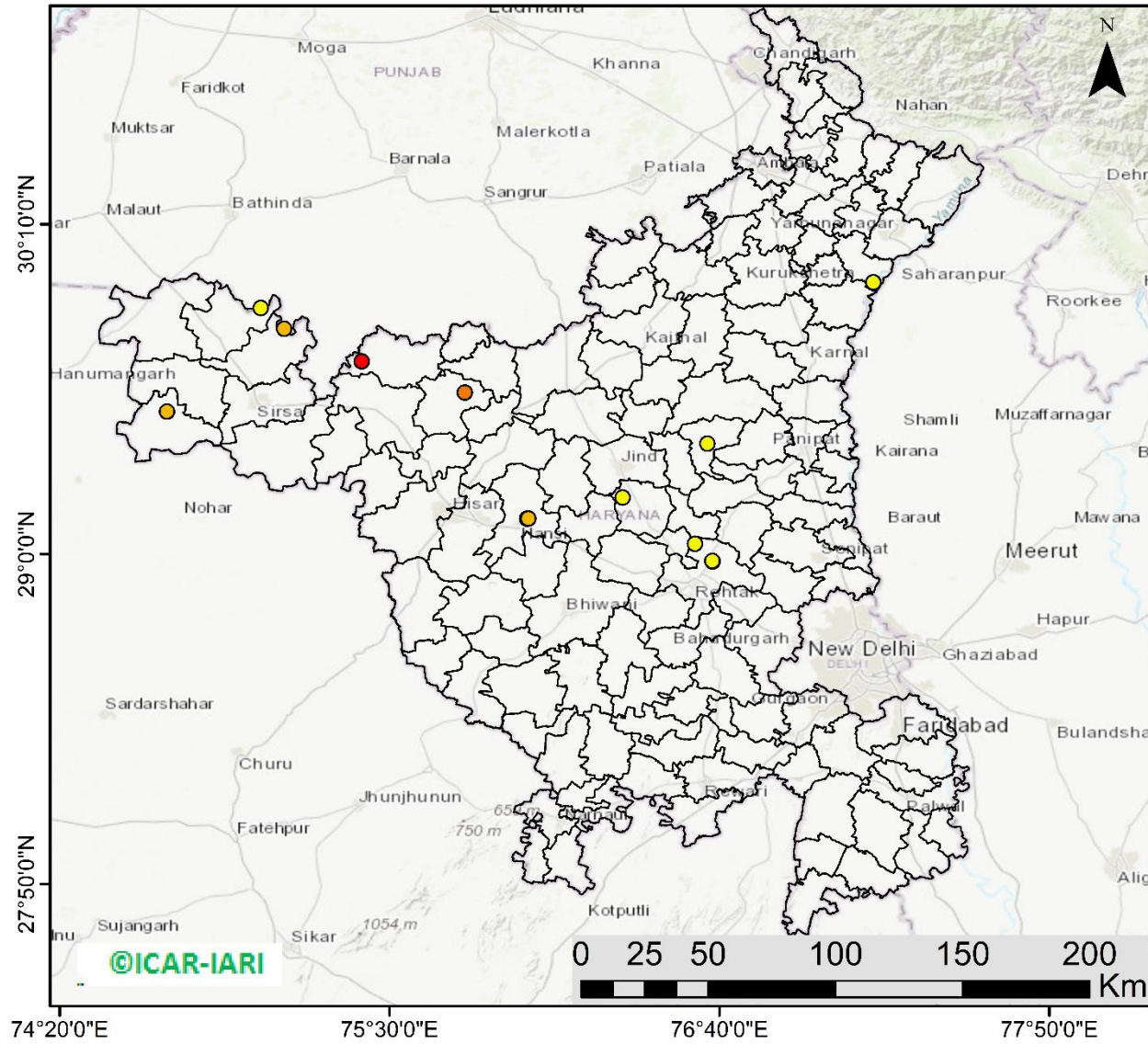
<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

District-wise cumulative number of residues burning events in Punjab (15Sep- 28Nov-2022)



Haryana

RICE RESIDUE BURNING IN HARYANA



13 burning events detected in Haryana on (28th Nov 2022)

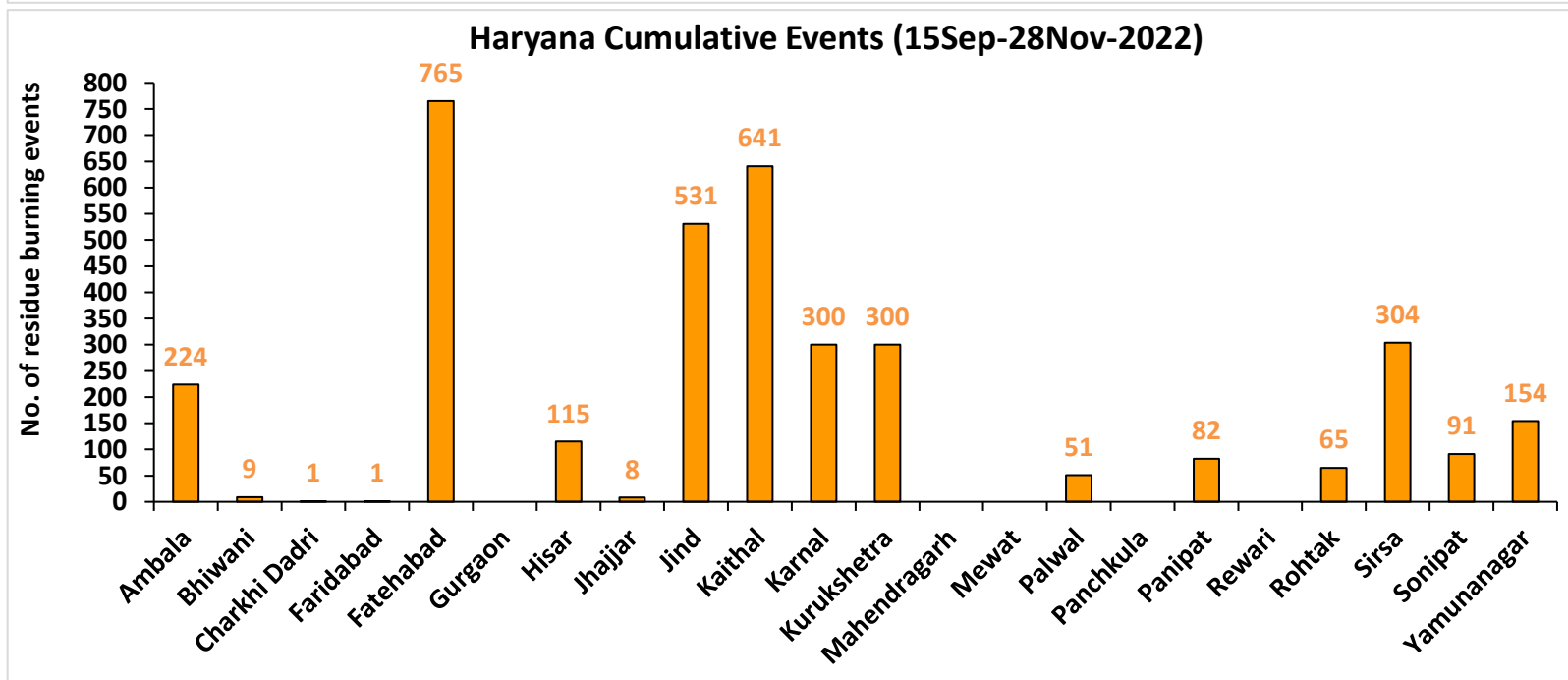
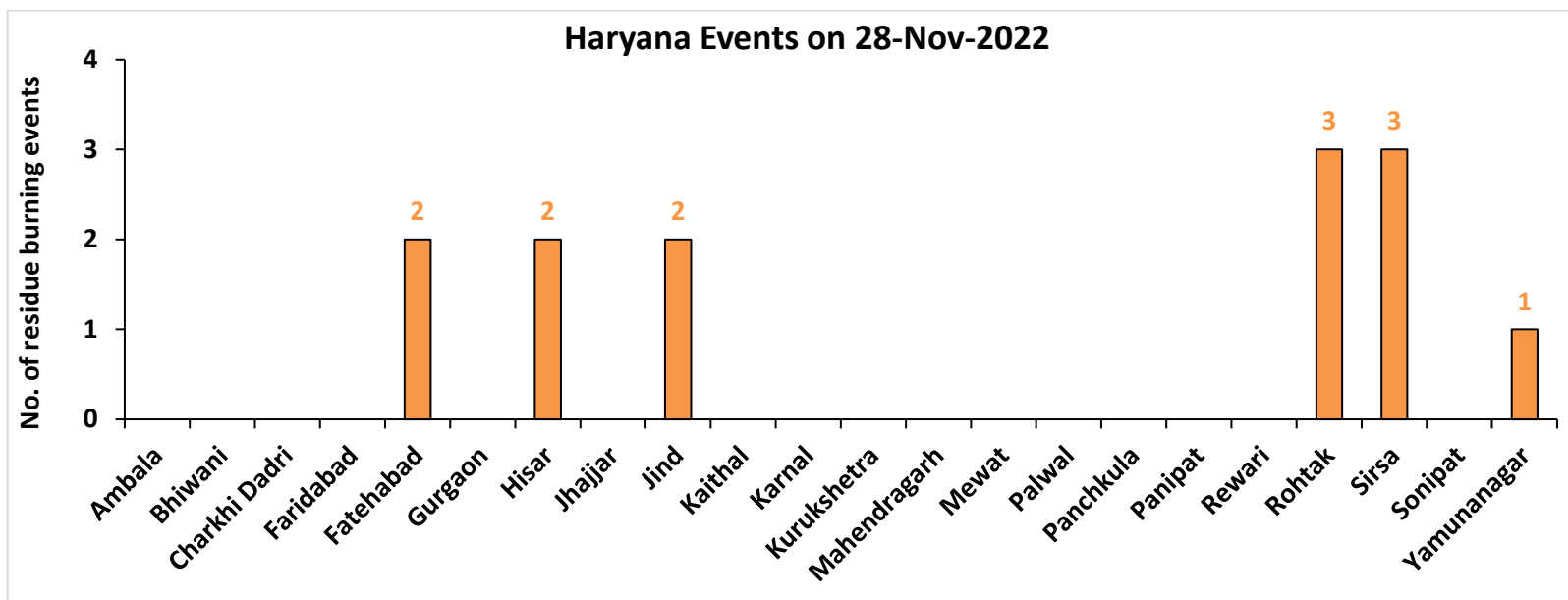
Fire Intensity (W/m²)

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



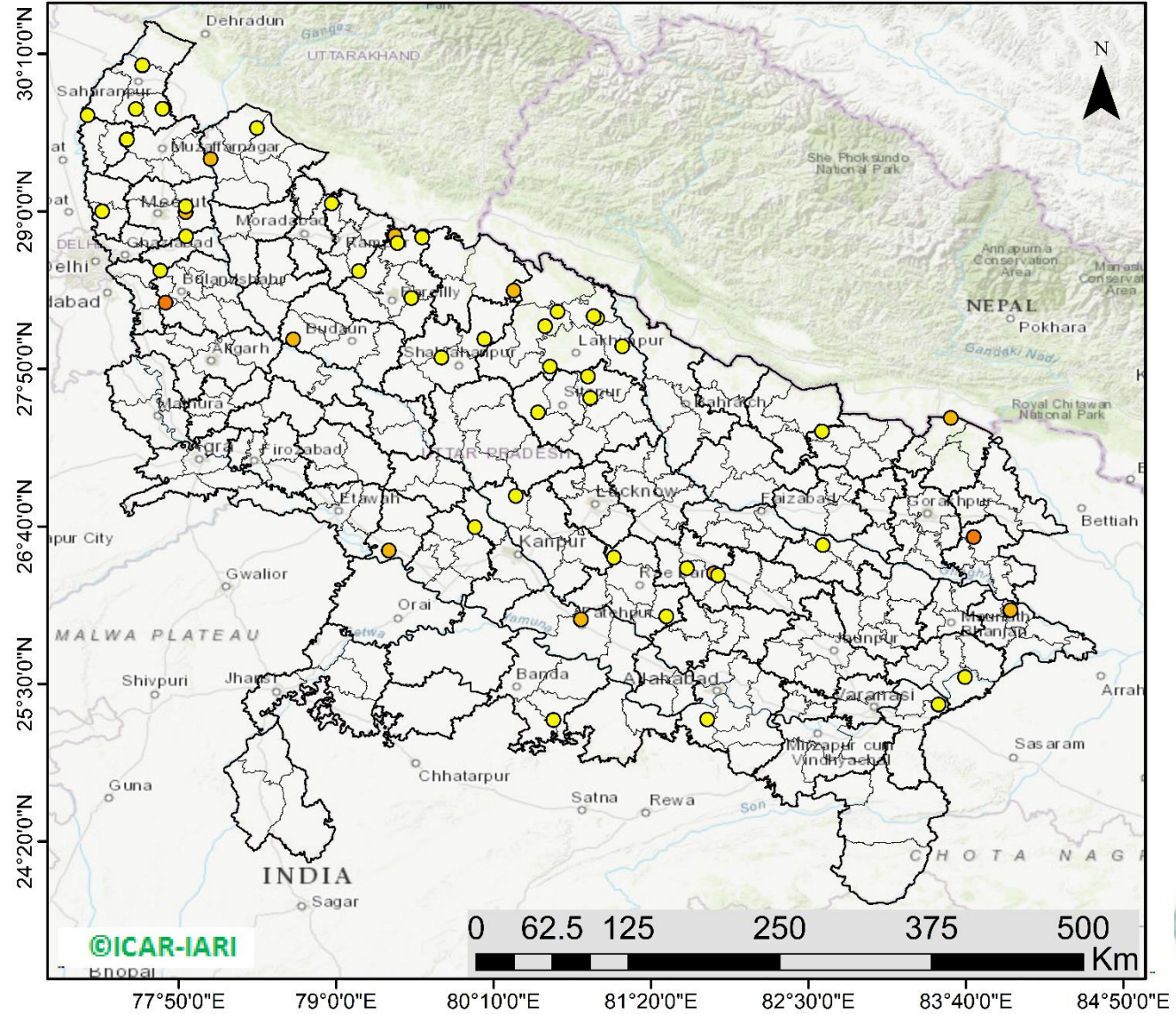
<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

District-wise cumulative number of residues burning events in Haryana (15Sep- 28Nov-2022)



Uttar Pradesh

RICE RESIDUE BURNING IN UTTAR PRADESH



59 burning events detected in Uttar Pradesh on (28th Nov 2022)

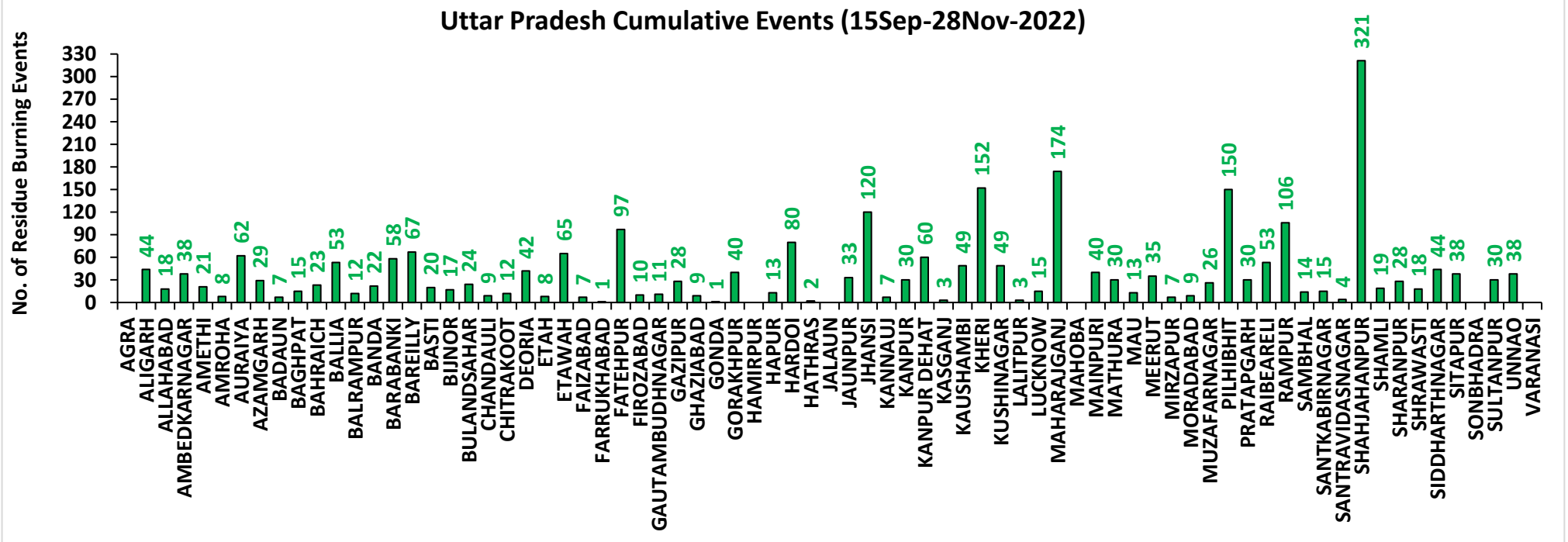
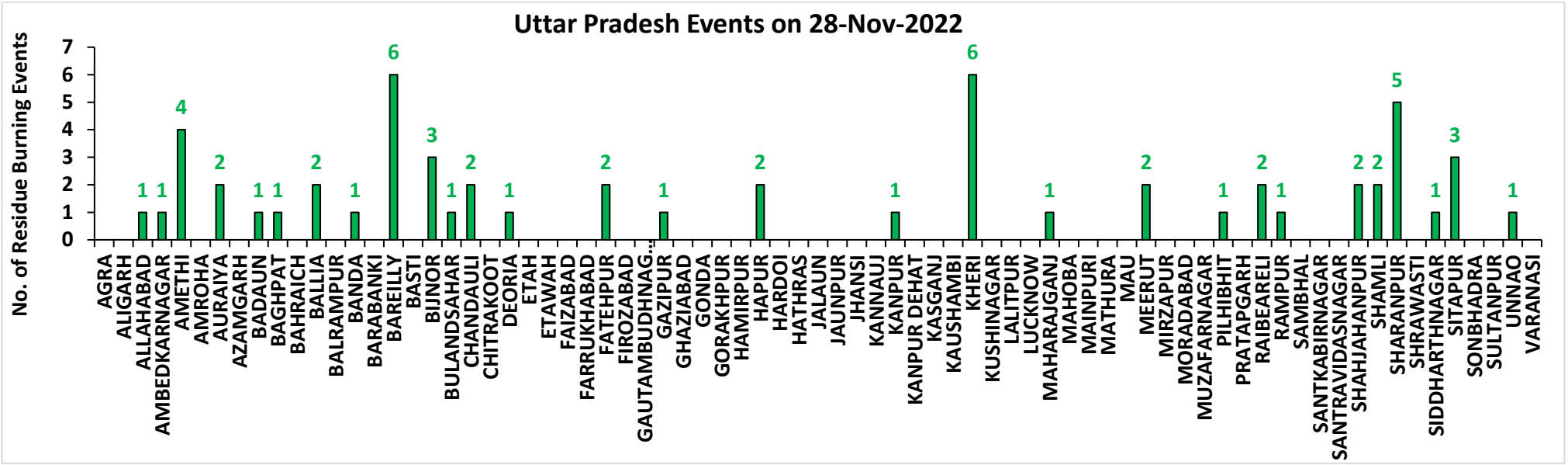
Fire Intensity (W/m2)

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



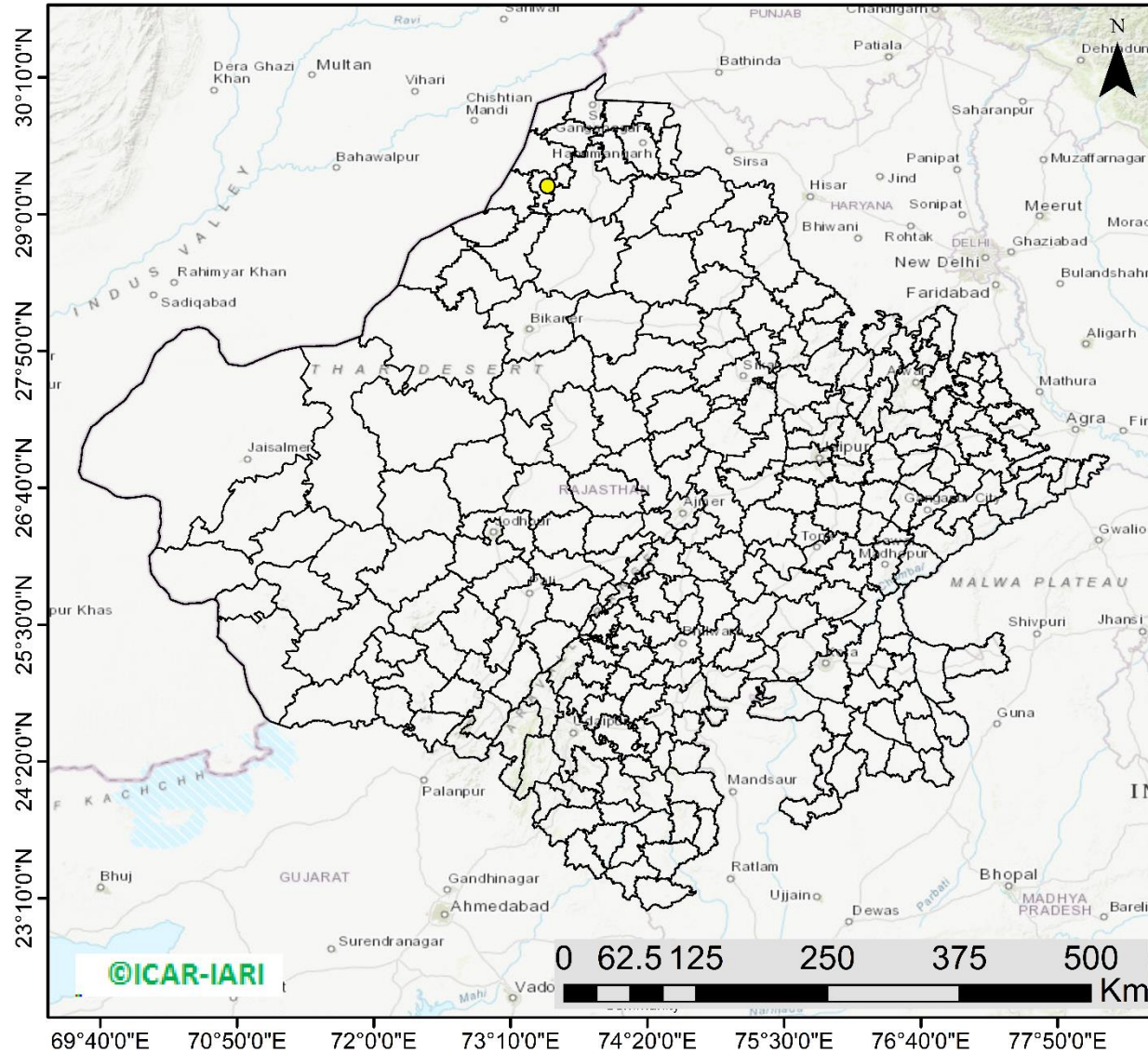
<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

District-wise cumulative number of residues burning events in Uttar Pradesh (15Sep- 28Nov-2022)



Rajasthan

RICE RESIDUE BURNING IN RAJASTHAN



01 burning events
detected in Rajasthan on
(28th Nov 2022)

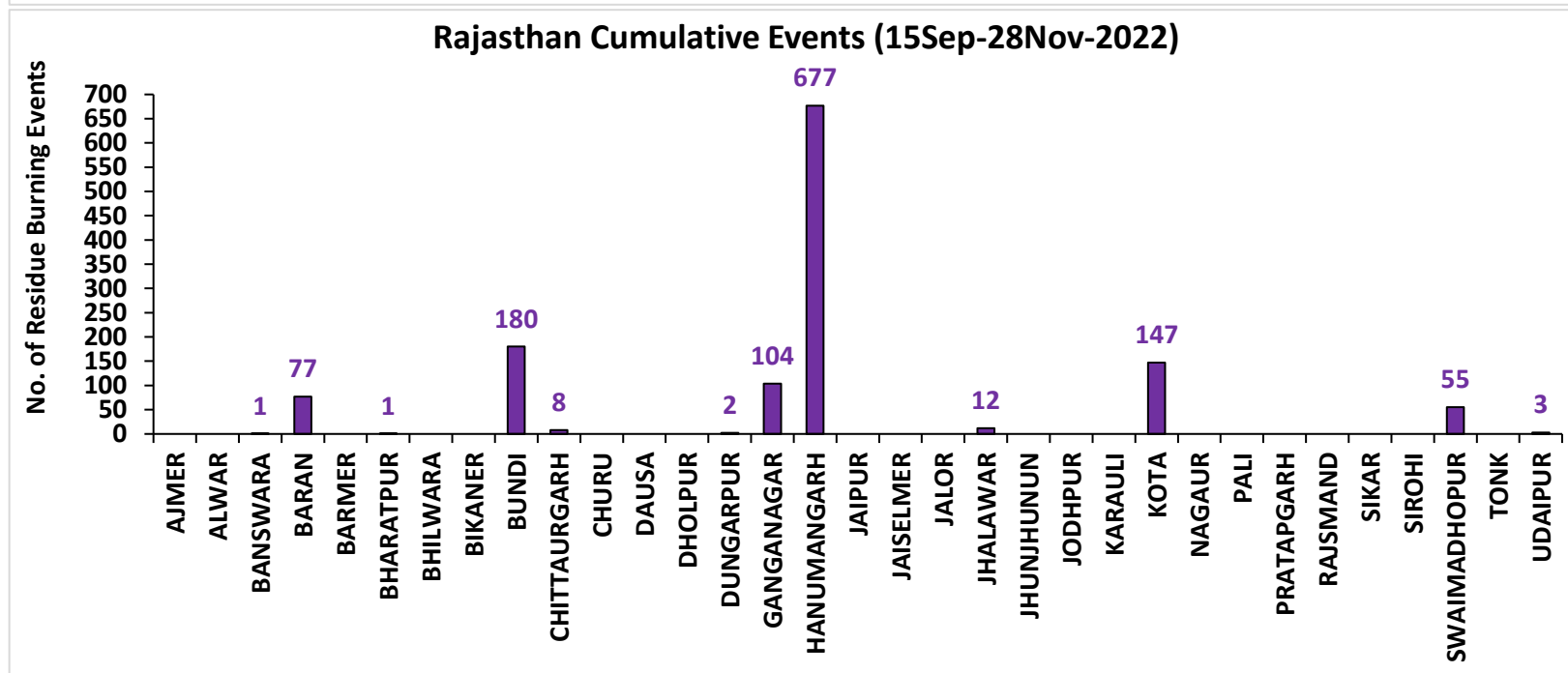
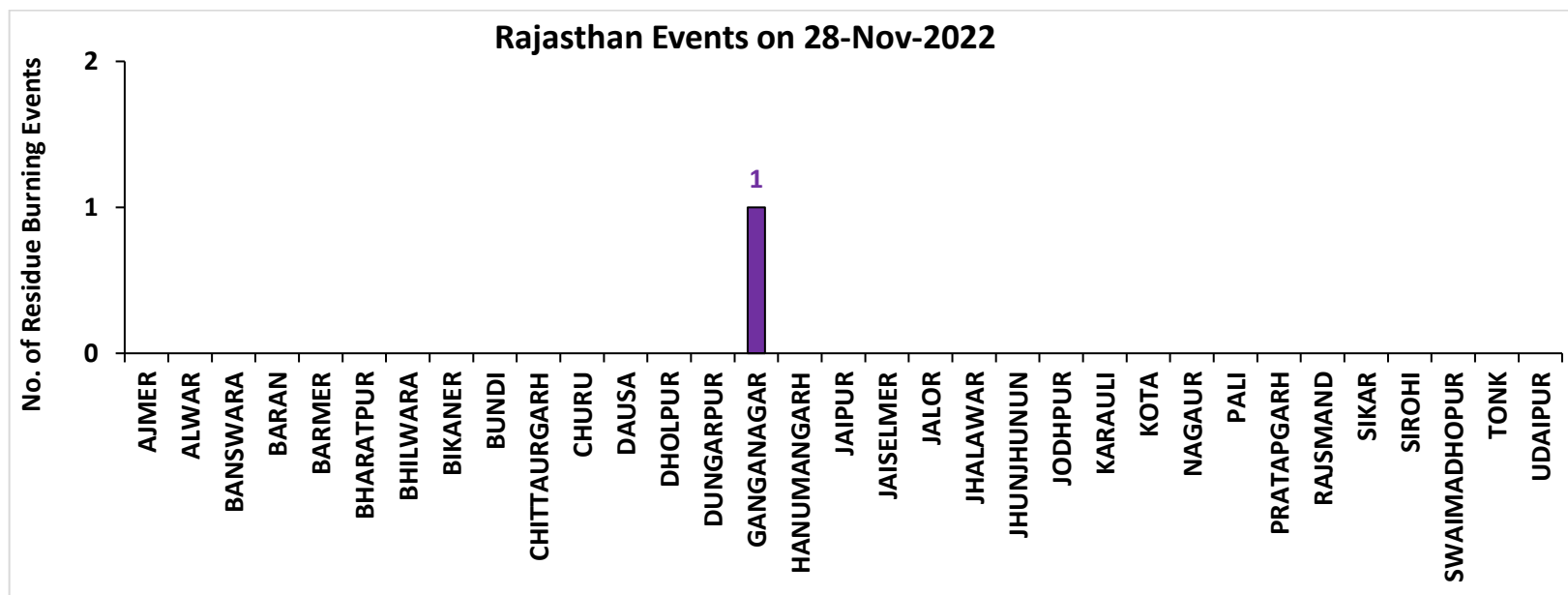
Fire Intensity (W/m²)

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



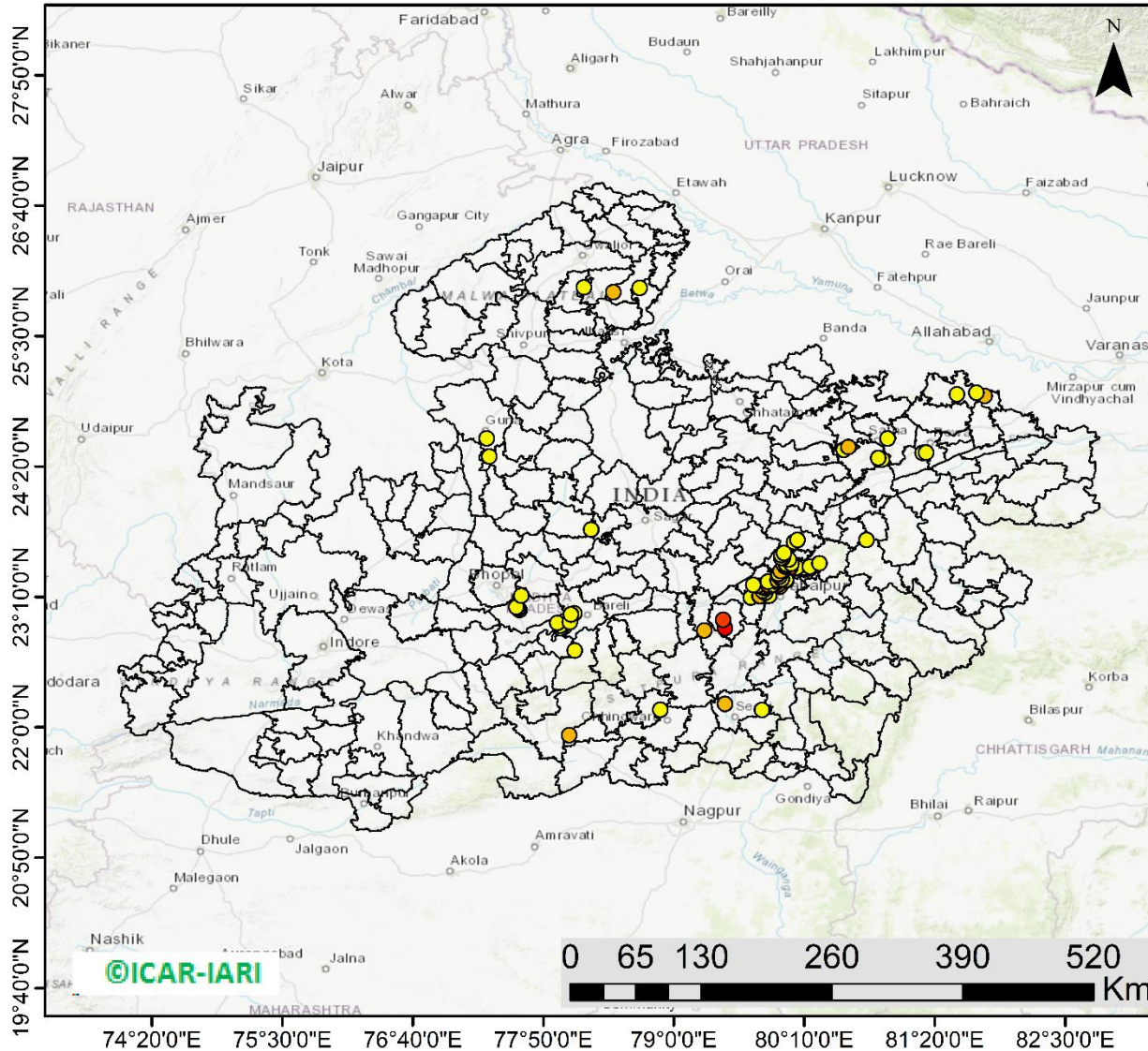
<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

District-wise cumulative number of residues burning events in Rajasthan (15Sep- 28Nov-2022)



Madhya Pradesh

RICE RESIDUE BURNING IN MADHYA PRADESH



109 burning events detected in MP on (28th Nov 2022)

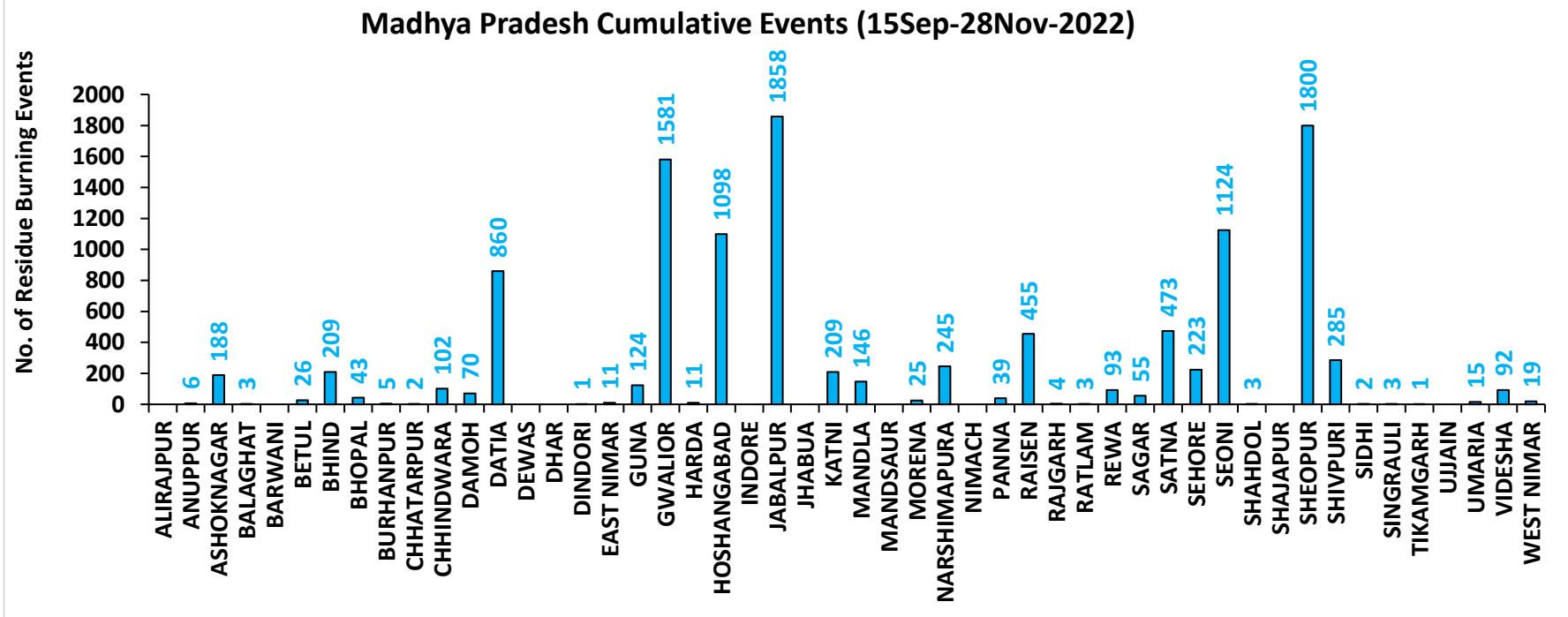
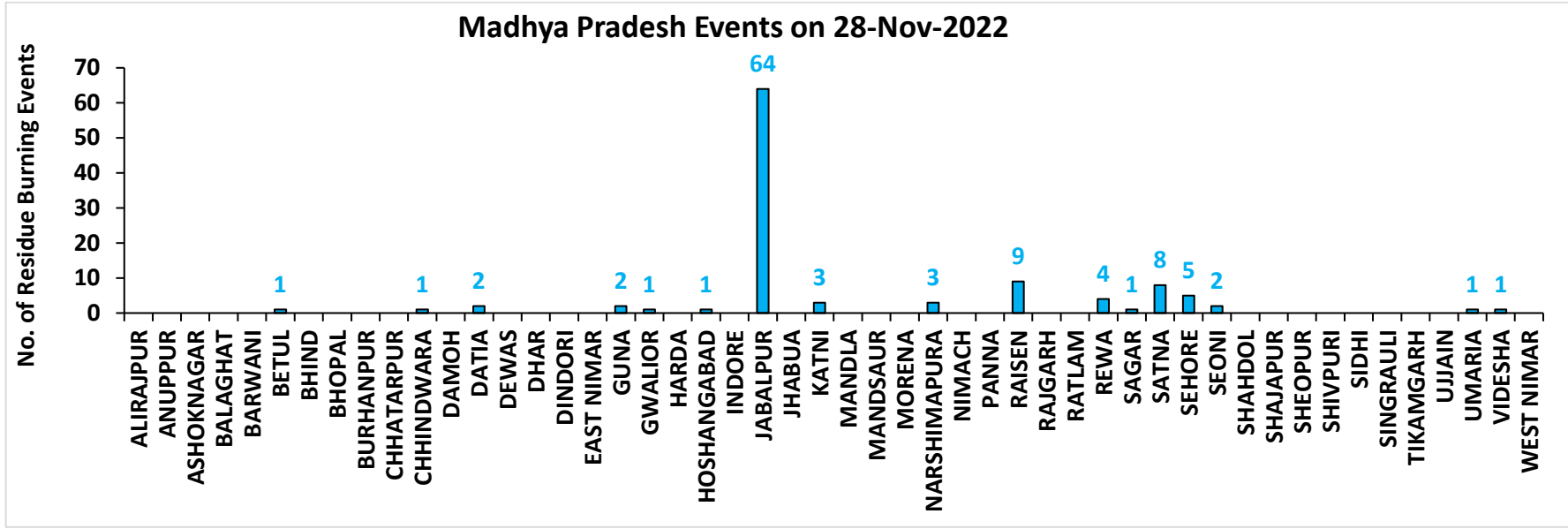
Fire Intensity (W/m²)

- 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- 28Nov-2022)



District-wise cumulative number of residues burning events detected in 2020 ,2021 and 2022
(Period: 15 September-28 November)

(a) Punjab

District	15 Sep-28 Nov 2022		
	2020	2021	2022
Amritsar	3065	2174	1542
Barnala	5338	4326	2910
Bathinda	5233	4481	4592
Faridkot	4733	3953	2693
Fatehgarh Sahib	1536	1722	1148
Fazilka	2599	2389	2591
Firozpur	8523	6289	4556
Gurdaspur	2129	1393	847
Hoshiarpur	387	331	258
Jalandhar	1949	2547	1386
Kapurthala	1884	1797	1278
Ludhiana	5061	5814	2681
Mansa	3782	3217	2814
Moga	7414	6515	3609
Muktsar	5056	4596	3879
Pathankot	13	6	1
Patiala	6432	5426	3395
Rupnagar	205	307	246
Sangrur	11724	9389	5916
SAS NAGAR (Mohali)	127	147	103
SBS Nagar	131	355	270
Tarn Taran	5605	4117	3184
Total	82926	71291	49899

(b) Haryana

District	15 Sep-28 Nov 2022		
	2020	2021	2022
AMBALA	346	307	224
BHIWANI	4	12	9
CHARKHI DADRI	0	0	1
FARIDABAD	1	3	1
FATEHABAD	868	1477	765
GURGAON	0	0	0
HISAR	56	240	115
JHAJJAR	6	7	8
JIND	344	911	531
KAITHAL	840	1154	641
KARNAL	581	955	300
KURUKSHETRA	406	538	300
MAHENDRAGARH	0	0	0
MEWAT	0	0	0
PALWAL	46	115	51
PANCHKULA	0	0	0
PANIPAT	51	249	82
REWARI	0	0	0
ROHTAK	50	76	65
SIRSA	308	548	304
SONIPAT	71	216	91
YAMUNANAGAR	142	147	154
Total	4120	6955	3642

(c) Uttar Pradesh

District	15 Sep-28 Nov 2022										
	2020	2021	2022	GAUTAMBUDHNAGAR	15	19	11	MUZAFARNAGAR	56	37	26
AGRA	7	0	0	GAZIPUR	27	28	28	PILHIBHIT	26	223	150
ALIGARH	113	40	44	GHAZIABAD	26	17	9	PRATAPGARH	41	43	30
ALLAHABAD	41	38	18	GONDA	12	13	1	RAIBEARELI	41	100	53
AMBEDKARNAGAR	42	39	38	GORAKHPUR	46	36	40	RAMPUR	163	192	106
AMETHI	9	30	21	HAMIRPUR	6	0	0	SAMBHAL	19	21	14
AMROHA	16	10	8	HAPUR	33	21	13	SANTKABIRNAGAR	32	22	15
AURAIYA	95	80	62	HARDOI	102	118	80	SANTRAVIDASNAGAR	4	6	4
AZAMGARH	64	38	29	HATHRAS	0	0	2	SHAHJAHANPUR	149	422	321
BADAUN	14	19	7	JALAUN	44	0	0	SHAMLI	49	44	19
BAGHPAT	22	21	15	JAUNPUR	49	41	33	SAHARANPUR	103	82	28
BAHRAICH	107	60	23	JHANSI	363	168	120	SHRAWASTI	47	45	18
BALLIA	154	81	53	KANNAUJ	33	6	7	SIDDHARTHANAGAR	76	137	44
BALRAMPUR	69	21	12	KANPUR	35	39	30	SITAPUR	77	55	38
BANDA	40	15	22	KANPUR DEHAT	89	53	60	SONBHADRA	0	2	0
BARABANKI	36	73	58	KASGANJ	3	2	3	SULTANPUR	11	40	30
BAREILLY	88	69	67	KAUSHAMBI	93	91	49	UNNAO	46	34	38
BASTI	58	51	20	KHERI	185	181	152	VARANASI	2	5	0
BIJNOR	45	50	17	KUSHINAGAR	82	54	49	Total	4178	4115	2736
BULANDSAHAR	64	15	24	LALITPUR	3	6	3				
CHANDAULI	29	21	9	LUCKNOW	35	34	15				
CHITRAKOOT	12	9	12	MAHARAJGANJ	56	195	174				
DEORIA	85	40	42	MAHOBA	27	0	0				
ETAH	17	10	8	MAINPURI	65	52	40				
ETAWAH	82	107	65	MATHURA	161	240	30				
FAIZABAD	15	13	7	MAU	38	20	13				
FARRUKHABAD	7	4	1	MEERUT	82	60	35				
FATEHPUR	124	108	97	MIRZAPUR	11	17	7				
FIROZABAD	27	17	10	MORADABAD	33	15	9				

(d) Delhi

District	15 Sep-28 Nov 2022		
	2020	2021	2022
CENTRAL	0	0	0
EAST	0	0	0
NEW DELHI	0	0	0
NORTH	3	3	9
NORTH EAST	0	0	0
NORTH WEST DELHI	3	1	0
SHAHADRA	0	0	0
SOUTH	1	0	0
SOUTH EAST	0	0	0
SOUTH WEST DELHI	0	0	0
WEST DELHI	2	0	1
Total	9	4	10

(e) Rajasthan

District	15 Sep-28 Nov 2022		
	2020	2021	2022
AJMER	3	0	0
ALWAR	10	0	0
BANSWARA	0	0	1
BARAN	167	13	77
BARMER	4	0	0
BHARATPUR	2	3	1
BHILWARA	11	0	0
BIKANER	1	0	0
BUNDI	128	87	180
CHITTAURGARH	4	13	8
CHURU	0	0	0
DAUSA	1	0	0
DHOLPUR	0	0	0
DUNGARPUR	0	0	2
GANGANAGAR	222	142	104
HANUMANGARH	910	983	677
JAIPUR	4	0	0
JAISELMER	5	0	0
JALOR	2	0	0
JHALAWAR	10	1	12
JHUNJHUNUN	1	0	0
JODHPUR	5	0	0
KARAULI	1	0	0
KOTA	116	57	147
NAGAUR	4	0	0
PALI	11	0	0
PRATAPGARH	8	0	0
RAJSMAND	1	0	0
SIKAR	1	0	0
SIROHI	2	0	0
SWAIMADHOPUR	65	34	55
TONK	5	0	0
UDAIPUR	2	1	3
Total	1706	1334	1267

(f) Madhya Pradesh

District	15 Sep-28 Nov 2022						
	2020	2021	2022	PANNA	50	22	39
ALIRAJPUR	0	0	0	RAISEN	607	360	455
ANUPPUR	3	2	6	RAJGARH	11	3	5
ASHOKNAGAR	156	90	188	RATLAM	10	7	3
BALAGHAT	8	6	3	REWA	137	116	93
BARWANI	5	0	0	SAGAR	28	31	55
BETUL	36	16	26	SATNA	572	526	473
BHIND	266	159	209	SEHORE	163	152	223
BHOPAL	52	40	43	SEONI	1231	892	1124
BURHANPUR	16	3	5	SHAHDOL	3	1	3
CHHATARPUR	9	0	2	SHAJAPUR	20	0	0
CHHINDWARA	135	59	102	SHEOPUR	1860	1010	1800
DAMOH	75	53	70	SHIVPURI	386	108	285
DATIA	1187	498	860	SIDHI	4	6	2
DEWAS	8	0	0	SINGRAULI	0	7	3
DHAR	47	0	0	TIKAMGARH	4	0	1
DINDORI	0	0	1	UJJAIN	14	0	0
EAST NIMAR	23	7	11	UMARIA	8	11	15
GUNA	70	12	124	VIDESHA	145	123	92
GWALIOR	2051	824	1581	WEST NIMAR	68	12	19
HARDA	14	21	11	Total	14024	8051	11512
HOSHANGABAD	1059	1067	1098				
INDORE	4	0	0				
JABALPUR	2636	1368	1857				
JHABUA	0	0	0				
KATNI	326	119	209				
MANDLA	147	113	146				
MANDSAUR	14	0	0				
MORENA	62	37	25				
NARSHIMAPURA	292	170	245				
NIMACH	2	0	0				

State-wise and date-wise number of paddy residue burning events detected in 2020, 2021 and 2022
(Period: 15 September - 28 November 2022)

Number of Paddy Residue Burning Events Detected

	Punjab			Haryana			Uttar Pradesh			Delhi			Rajasthan			Madhya Pradesh		
	2020	2021	2022	2020	2021	2022	2020	2021	2022	2020	2021	2022	2020	2021	2022	2020	2021	2022
15-Sep	5	0	14	2	0	0	1	0	0	0	0	0	1	0	0	2	0	0
16-Sep	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17-Sep	5	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18-Sep	17	9	7	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
19-Sep	30	5	18	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0
20-Sep	67	8	10	6	0	0	2	0	0	0	0	0	0	0	0	0	0	0
21-Sep	54	0	56	2	0	0	1	0	0	0	0	0	1	0	1	2	0	0
22-Sep	34	0	30	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
23-Sep	49	0	3	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0
24-Sep	78	5	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
25-Sep	184	11	0	11	0	0	5	0	0	0	0	0	1	0	0	0	0	0
26-Sep	190	19	0	5	0	0	8	0	0	0	0	0	1	0	0	2	0	0
27-Sep	78	37	0	8	0	0	4	1	0	0	0	0	0	0	0	1	0	0
28-Sep	55	28	0	6	1	0	1	6	0	0	0	0	0	0	0	1	1	0
29-Sep	63	64	0	9	4	0	6	10	0	0	0	0	3	0	0	0	4	0
30-Sep	116	27	8	22	2	0	13	13	10	1	0	0	1	0	0	5	0	0
01-Oct	165	13	45	15	4	1	7	13	3	0	0	0	4	1	1	13	0	1
02-Oct	141	0	83	30	2	7	12	0	36	1	0	0	7	0	3	12	0	1
03-Oct	110	9	75	8	6	8	4	3	29	0	0	0	9	0	2	5	1	5
04-Oct	162	23	65	29	2	7	8	0	2	0	0	0	15	0	0	4	2	0
05-Oct	161	18	130	17	3	24	14	2	0	0	0	2	14	0	1	13	1	0
06-Oct	171	42	85	30	0	26	12	1	0	1	0	0	16	0	0	37	1	0
07-Oct	197	72	62	32	11	6	41	13	0	0	0	0	14	1	1	31	1	0
08-Oct	95	108	19	29	27	0	25	11	0	0	0	0	11	0	0	17	2	0

09-Oct	121	114	3	20	39	1	15	20	0	0	0	0	12	0	0	15	4	0
10-Oct	232	150	4	33	95	2	9	54	0	0	0	0	14	1	0	18	10	0
11-Oct	377	64	45	90	51	0	23	28	0	0	0	0	21	7	1	32	2	0
12-Oct	388	97	104	69	51	4	46	23	0	0	0	0	24	1	2	44	1	1
13-Oct	266	132	120	47	91	15	36	42	0	0	0	0	7	5	2	21	2	7
14-Oct	605	229	82	69	98	30	9	68	5	0	0	0	16	1	1	15	11	1
15-Oct	449	660	169	106	363	36	15	149	0	0	0	0	9	8	2	8	27	2
16-Oct	654	429	206	80	176	76	21	121	6	1	0	0	12	2	4	23	13	2
17-Oct	1172	14	403	143	0	86	38	39	7	0	0	0	26	0	4	63	1	11
18-Oct	938	57	342	166	1	134	76	0	30	0	0	1	37	2	12	88	0	15
19-Oct	1080	496	436	72	55	122	43	5	36	0	0	0	27	5	12	49	1	12
20-Oct	890	788	96	62	155	78	31	1	17	0	0	0	26	4	4	9	21	7
21-Oct	1392	597	393	101	131	107	25	5	23	2	0	0	32	2	6	112	30	18
22-Oct	1665	1111	582	128	140	122	32	3	18	0	0	0	29	5	12	183	29	31
23-Oct	1438	620	902	106	218	217	84	8	109	1	0	0	23	7	20	204	32	70
24-Oct	911	0	1019	57	38	250	63	11	212	0	0	2	20	4	7	150	34	26
25-Oct	1416	76	181	155	71	12	50	18	9	1	0	0	18	2	4	144	60	0
26-Oct	2126	329	1238	77	175	123	33	41	23	0	0	0	34	3	21	178	55	57
27-Oct	2563	279	1111	96	93	83	40	58	23	0	0	0	42	1	21	294	62	38
28-Oct	3232	906	2067	139	149	123	87	35	34	0	0	0	45	4	46	537	110	143
29-Oct	1624	1353	1898	52	161	112	139	32	73	0	0	0	29	23	37	349	97	151
30-Oct	3946	1373	1761	100	148	112	50	53	43	0	0	0	17	20	55	428	168	119
31-Oct	3531	2895	2131	108	353	70	49	170	20	0	0	0	37	15	36	455	299	112
01-Nov	3835	1796	1842	151	124	88	74	157	9	0	0	1	51	5	27	709	198	142
02-Nov	4098	3001	3634	111	203	166	82	87	25	0	0	0	55	19	63	820	214	284
03-Nov	2818	2512	2666	93	197	128	197	66	40	1	0	1	34	20	54	771	148	323
04-Nov	4584	3032	2437	72	228	63	152	123	61	0	0	2	46	19	34	618	123	348
05-Nov	4529	5327	2817	66	331	90	52	70	24	0	0	0	46	45	91	474	320	319
06-Nov	5382	3942	599	151	219	46	43	208	28	0	0	0	40	32	27	678	248	392
07-Nov	5491	5199	2487	150	182	37	86	46	8	0	0	0	57	38	80	848	199	383
08-Nov	3674	4397	604	115	138	11	169	21	44	0	0	0	33	44	5	981	170	783

09-Nov	1718	5079	1778	21	217	69	115	51	58	0	1	0	34	48	22	495	330	570
10-Nov	3127	4008	1893	80	184	35	101	77	33	0	0	0	48	40	34	346	380	282
11-Nov	2822	4156	3916	93	126	152	71	151	36	0	1	0	75	55	95	418	506	482
12-Nov	1989	3403	2467	83	127	99	108	120	36	0	0	0	31	40	84	422	185	421
13-Nov	2441	3742	2175	105	210	132	172	95	102	0	2	0	54	78	63	670	171	773
14-Nov	307	2541	4	35	195	17	258	49	101	0	0	0	16	88	1	294	346	633
15-Nov	32	1761	141	31	129	21	29	67	84	0	0	0	6	51	2	35	353	507
16-Nov	8	1757	1358	0	269	84	15	138	48	0	0	0	16	81	78	145	660	316
17-Nov	248	523	966	9	101	39	38	177	50	0	0	0	60	38	48	191	261	416
18-Nov	670	680	701	60	111	108	62	14	66	0	0	0	75	77	55	352	126	524
19-Nov	454	448	426	37	132	79	129	11	116	0	0	0	27	73	19	124	16	625
20-Nov	677	283	368	77	127	32	134	20	168	0	0	0	59	53	15	106	6	556
21-Nov	457	168	243	65	178	11	135	106	46	0	0	0	57	72	12	159	95	196
22-Nov	46	66	78	15	91	20	120	276	76	0	0	0	9	21	4	165	188	170
23-Nov	43	91	140	52	59	27	106	186	73	0	0	0	66	61	10	150	262	259
24-Nov	9	34	66	20	37	32	167	87	195	0	0	1	13	26	14	258	224	299
25-Nov	0	31	44	1	41	28	127	80	241	0	0	0	2	30	7	106	343	315
26-Nov	16	21	22	0	48	12	83	74	127	0	0	0	0	11	2	48	318	198
27-Nov	124	19	12	26	28	8	54	257	14	0	0	0	16	33	2	39	416	57
28-Nov	84	5	11	57	9	13	118	241	59	0	0	0	24	12	1	38	163	109
Total	82926	71291	49899	4120	6955	3642	4178	4115	2736	9	4	10	1706	1334	1267	14024	8051	11512

Details of residue burning events in Punjab on 28-Nov-2022

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m ²)
1	BATHINDA	PHUL	AQUA	30.43200	75.24400	14:19:24	D	25.30
2	FAZILKA	FAZILKA	S-NPP	30.45521	74.05786	13:54:16	D	2.20
3	FAZILKA	FAZILKA	S-NPP	30.45632	74.05505	13:54:16	D	3.70
4	GURDASPUR	KAHNUWAN	S-NPP	31.90108	75.53295	13:54:16	D	3.00
5	GURDASPUR	KAHNUWAN	S-NPP	31.92923	75.42657	13:54:16	D	8.00
6	JALANDHAR	MEHATPUR	S-NPP	31.08061	75.42822	13:54:16	D	6.80
7	MUKTSAR	MALOUT	S-NPP	30.31742	74.44353	13:54:16	D	2.70
8	MUKTSAR	MUKTSAR	S-NPP	30.54549	74.49850	13:54:16	D	3.50
9	MUKTSAR	MUKTSAR	S-NPP	30.59203	74.41564	13:54:16	D	3.00
10	PATIALA	PATRAN	S-NPP	29.98210	76.10326	13:54:16	D	3.90
11	SANGRUR	MALERKOTLA-1	S-NPP	30.55561	75.99680	13:54:16	D	3.30

Details of residue burning events in Haryana on 28-Nov-2022

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m ²)
1	FATEHABAD	BHUNA	S-NPP	29.57108	75.76647	13:54:16	D	11.60
2	FATEHABAD	RATIA	AQUA	29.68100	75.40200	14:19:24	D	26.40
3	HISAR	HANSI-I	S-NPP	29.12516	75.98689	13:54:16	D	4.00
4	HISAR	HANSI-I	S-NPP	29.12563	75.99129	13:54:16	D	6.80
5	JIND	JULANA	S-NPP	29.19973	76.32480	13:54:16	D	2.60
6	JIND	SAFIDON	S-NPP	29.39051	76.62450	13:54:16	D	4.40
7	ROHTAK	ROHTAK	S-NPP	28.97373	76.64277	02:44:16	N	1.70
8	ROHTAK	ROHTAK	S-NPP	28.97536	76.64214	02:44:16	N	0.80
9	ROHTAK	ROHTAK	S-NPP	29.03608	76.58030	02:44:16	N	1.00
10	SIRSA	BARAGUNDA	S-NPP	29.79664	75.12767	13:54:16	D	6.30
11	SIRSA	ELLENABAD	S-NPP	29.50372	74.71299	13:54:16	D	5.10
12	SIRSA	ODHAN	S-NPP	29.87007	75.04488	13:54:16	D	1.50
13	YAMUNANAGAR	RADAUR	S-NPP	29.96049	77.21152	13:54:16	D	2.70

Details of residue burning events in Uttar Pradesh on 28-Nov-2022

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m ²)
1	ALLAHABAD	BARA	S-NPP	25.23651	81.75060	01:03:59	N	0.60
2	AMBEDKARNAGAR	TANDA	S-NPP	26.52808	82.60689	13:54:16	D	3.60
3	AMETHI	GAURIGANJ	TERRA	26.31900	81.80100	10:40:32	D	5.20
4	AMETHI	GAURIGANJ	S-NPP	26.30242	81.83030	13:54:16	D	3.00
5	AMETHI	GAURIGANJ	S-NPP	26.30375	81.83019	13:54:16	D	1.90
6	AMETHI	GAURIGANJ	S-NPP	26.35719	81.59971	01:03:59	N	0.60
7	AURAIYA	AURAIYA	AQUA	26.64300	79.46600	14:19:24	D	76.90
8	AURAIYA	AURAIYA	S-NPP	26.48759	79.39161	13:54:16	D	5.40
9	BADAUN	SAHASWAN	S-NPP	28.05133	78.68331	13:54:16	D	6.20
10	BAGHPAT	BAGHPAT	S-NPP	28.99965	77.26788	13:54:16	D	5.00
11	BALLIA	SIKANDARPUR	S-NPP	26.04389	83.99485	12:14:42	D	6.40
12	BALLIA	SIKANDARPUR	S-NPP	26.04619	83.99812	12:14:42	D	5.40
13	BANDA	ATARRA	S-NPP	25.23260	80.61068	13:54:16	D	2.30
14	BAREILLY	BAHERI	TERRA	28.81800	79.43700	10:40:32	D	5.80
15	BAREILLY	BAHERI	S-NPP	28.76454	79.45549	13:54:16	D	1.80
16	BAREILLY	BAHERI	S-NPP	28.76547	79.45465	13:54:16	D	1.70
17	BAREILLY	BAHERI	S-NPP	28.80637	79.63828	13:54:16	D	3.50
18	BAREILLY	BAREILY	S-NPP	28.35739	79.55802	13:54:16	D	1.70
19	BAREILLY	MIRGANJ	S-NPP	28.55707	79.16921	13:54:16	D	2.40
20	BIJNOR	BIJNOR	S-NPP	29.38738	78.07080	13:54:16	D	9.10
21	BIJNOR	NAJIBABAD	S-NPP	29.61703	78.41402	13:54:16	D	4.40
22	BIJNOR	NAJIBABAD	S-NPP	29.68199	78.27719	02:44:16	N	0.20
23	BULANDSAHAR	SIKANDARABAD	S-NPP	28.32374	77.73686	13:54:16	D	13.70
24	CHANDAULI	CHANDAULI	S-NPP	25.34653	83.46270	12:14:42	D	3.30
25	CHANDAULI	CHANDAULI	S-NPP	25.34758	83.46427	12:14:42	D	2.90
26	DEORIA	DEORIA	S-NPP	26.58740	83.72461	13:54:16	D	10.20
27	FATEHPUR	FATEHPUR	S-NPP	25.97679	80.81287	12:14:42	D	6.10
28	FATEHPUR	FATEHPUR	S-NPP	25.97737	80.81446	12:14:42	D	5.10
29	GAZIPUR	ZAMANIA	S-NPP	25.54989	83.66019	12:14:42	D	2.90

30	HAPUR	HAPUR	S-NPP	28.56039	77.69772	13:54:16	D	3.60
31	HAPUR	HAPUR	S-NPP	28.81493	77.88892	13:54:16	D	2.60
32	KANPUR	BILHAUR	S-NPP	26.66004	80.02895	13:54:16	D	1.70
33	KHERI	DHAURAHRA	S-NPP	28.00032	81.12107	13:54:16	D	1.80
34	KHERI	GOLA	TERRA	28.14900	80.54900	10:40:32	D	4.90
35	KHERI	GOLA	S-NPP	28.25627	80.64124	12:14:42	D	3.80
36	KHERI	MOHMADI	S-NPP	27.84941	80.58535	13:54:16	D	4.60
37	KHERI	NIGHASAN	S-NPP	28.20820	80.93530	13:54:16	D	2.70
38	KHERI	NIGHASAN	S-NPP	28.22323	80.90813	13:54:16	D	2.40
39	MAHARAJGANJ	NAUTANWA	S-NPP	27.46891	83.55531	13:54:16	D	5.40
40	MEERUT	MAWANA	S-NPP	28.99373	77.88609	13:54:16	D	6.50
41	MEERUT	MAWANA	S-NPP	29.03687	77.88683	13:54:16	D	2.80
42	PILHIBHIT	PURANPUR	TERRA	28.41300	80.31600	10:40:32	D	5.40
43	RAIBEARELI	MAHARAJGANG	S-NPP	26.43572	81.05801	13:54:16	D	2.90
44	RAIBEARELI	SALON	S-NPP	25.99963	81.44735	13:54:16	D	3.00
45	RAMPUR	TANDA	S-NPP	29.05870	78.96806	13:54:16	D	4.50
46	SHAHJAHANPUR	PUWANYA	S-NPP	28.05419	80.09920	13:54:16	D	3.30
47	SHAHJAHANPUR	SHAHJAHANPUR	S-NPP	27.91653	79.78088	13:54:16	D	3.60
48	SHAMLI	SHAMLI	S-NPP	29.52885	77.44805	13:54:16	D	4.80
49	SHAMLI	SHAMLI	S-NPP	29.53098	77.45071	13:54:16	D	4.40
50	SHARANPUR	DEOBAND	S-NPP	29.75904	77.71394	13:54:16	D	1.90
51	SHARANPUR	NAKUR	S-NPP	29.71051	77.15868	13:54:16	D	2.30
52	SHARANPUR	RAMPUR MANIHARRAN	S-NPP	29.75701	77.51743	13:54:16	D	3.30
53	SHARANPUR	SHARANPUR	S-NPP	30.07985	77.56454	13:54:16	D	8.20
54	SHARANPUR	SHARANPUR	S-NPP	30.08280	77.56492	13:54:16	D	4.00
55	SIDDHARTHANAGAR	ITWA	S-NPP	27.36854	82.60134	12:14:42	D	2.80
56	SITAPUR	LAHARPUR	S-NPP	27.61690	80.88390	13:54:16	D	1.90
57	SITAPUR	LAHARPUR	S-NPP	27.77634	80.86600	12:14:42	D	2.00
58	SITAPUR	MISRIK	S-NPP	27.51009	80.49577	13:54:16	D	3.20
59	UNNAO	SAFIPUR	S-NPP	26.89170	80.33237	13:54:16	D	2.00

Details of residue burning events in Madhya Pradesh on 28-Nov-2022

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m2)
1	BETUL	BETUL	TERRA	21.92900	78.06500	10:40:32	D	7.30
2	CHHINDWARA	PARASIA	S-NPP	22.15632	78.88047	13:54:16	D	3.90
3	DATIA	SEONDHA	S-NPP	25.89234	78.46121	13:54:16	D	7.60
4	DATIA	SEONDHA	S-NPP	25.92998	78.69497	13:54:16	D	3.70
5	GUNA	ARON	S-NPP	24.42171	77.35085	13:54:16	D	2.50
6	GUNA	GUNA	S-NPP	24.58297	77.32691	13:54:16	D	3.80
7	GWALIOR	BHITARWAR	S-NPP	25.93461	78.19716	13:54:16	D	3.50
8	HOSHANGABAD	SOHAGPUR	S-NPP	22.68638	78.11436	13:54:16	D	1.70
9	JABALPUR	JABALPUR	S-NPP	23.17176	79.81055	13:54:16	D	5.20
10	JABALPUR	JABALPUR	S-NPP	23.17612	79.85332	13:54:16	D	2.00
11	JABALPUR	JABALPUR	S-NPP	23.25604	79.94846	13:54:16	D	2.90
12	JABALPUR	JABALPUR	S-NPP	23.27431	79.92757	13:54:16	D	11.30
13	JABALPUR	JABALPUR	S-NPP	23.27493	79.93379	13:54:16	D	11.30
14	JABALPUR	JABALPUR	S-NPP	23.27560	79.88979	13:54:16	D	3.60
15	JABALPUR	JABALPUR	S-NPP	23.29896	79.92474	13:54:16	D	5.30
16	JABALPUR	JABALPUR	S-NPP	23.29945	79.92484	13:54:16	D	9.60
17	JABALPUR	JABALPUR	S-NPP	23.30127	79.84332	13:54:16	D	6.60
18	JABALPUR	JABALPUR	S-NPP	23.30134	79.84305	13:54:16	D	4.40
19	JABALPUR	JABALPUR	S-NPP	23.31184	80.00737	13:54:16	D	1.10
20	JABALPUR	JABALPUR	S-NPP	23.31276	80.00572	13:54:16	D	6.40
21	JABALPUR	JABALPUR	S-NPP	23.31518	79.92944	13:54:16	D	7.10
22	JABALPUR	JABALPUR	S-NPP	23.31660	80.00367	13:54:16	D	4.30
23	JABALPUR	JABALPUR	S-NPP	23.32326	79.96635	13:54:16	D	8.00
24	JABALPUR	JABALPUR	S-NPP	23.32406	79.96642	13:54:16	D	4.50
25	JABALPUR	JABALPUR	S-NPP	23.34666	79.94476	13:54:16	D	8.00
26	JABALPUR	JABALPUR	S-NPP	23.36558	79.93002	13:54:16	D	10.80
27	JABALPUR	JABALPUR	S-NPP	23.37123	79.93572	13:54:16	D	4.20
28	JABALPUR	MAJHOULI	AQUA	23.38200	79.97300	14:19:24	D	37.50
29	JABALPUR	MAJHOULI	TERRA	23.44200	80.06600	10:40:32	D	3.80

30	JABALPUR	MAJHOULI	S-NPP	23.39734	79.95593	13:54:16	D	5.40
31	JABALPUR	MAJHOULI	S-NPP	23.42792	80.04273	13:54:16	D	13.70
32	JABALPUR	MAJHOULI	S-NPP	23.43109	80.04337	13:54:16	D	15.20
33	JABALPUR	MAJHOULI	S-NPP	23.43702	79.99776	13:54:16	D	3.30
34	JABALPUR	MAJHOULI	S-NPP	23.43732	80.00092	13:54:16	D	5.10
35	JABALPUR	MAJHOULI	S-NPP	23.45312	80.00559	13:54:16	D	3.80
36	JABALPUR	MAJHOULI	S-NPP	23.45373	80.01194	13:54:16	D	4.60
37	JABALPUR	MAJHOULI	S-NPP	23.45464	80.02146	13:54:16	D	3.40
38	JABALPUR	MAJHOULI	S-NPP	23.45605	79.98287	13:54:16	D	2.20
39	JABALPUR	MAJHOULI	S-NPP	23.45818	80.00504	13:54:16	D	3.80
40	JABALPUR	MAJHOULI	S-NPP	23.46278	80.05281	13:54:16	D	1.80
41	JABALPUR	MAJHOULI	S-NPP	23.50153	80.02922	13:54:16	D	2.40
42	JABALPUR	MAJHOULI	S-NPP	23.51136	79.97359	13:54:16	D	3.20
43	JABALPUR	MAJHOULI	S-NPP	23.51530	79.96200	13:54:16	D	4.80
44	JABALPUR	MAJHOULI	S-NPP	23.53980	79.96256	13:54:16	D	2.00
45	JABALPUR	MAJHOULI	S-NPP	23.55740	79.98617	13:54:16	D	1.90
46	JABALPUR	PATAN	S-NPP	23.20270	79.81699	13:54:16	D	4.00
47	JABALPUR	PATAN	S-NPP	23.20293	79.81946	13:54:16	D	4.90
48	JABALPUR	PATAN	S-NPP	23.22086	79.79646	13:54:16	D	5.00
49	JABALPUR	PATAN	S-NPP	23.24382	79.82481	13:54:16	D	9.80
50	JABALPUR	PATAN	S-NPP	23.24699	79.80590	13:54:16	D	13.30
51	JABALPUR	PATAN	S-NPP	23.26072	79.79205	13:54:16	D	3.10
52	JABALPUR	PATAN	S-NPP	23.26626	79.84717	13:54:16	D	11.50
53	JABALPUR	PATAN	S-NPP	23.26636	79.74839	13:54:16	D	8.70
54	JABALPUR	PATAN	S-NPP	23.27126	79.84661	13:54:16	D	11.50
55	JABALPUR	PATAN	S-NPP	23.27259	79.71103	13:54:16	D	4.30
56	JABALPUR	SAHPURA	S-NPP	23.15941	79.68983	13:54:16	D	4.70
57	JABALPUR	SAHPURA	S-NPP	23.17162	79.80814	13:54:16	D	5.30
58	JABALPUR	SAHPURA	S-NPP	23.17239	79.76750	13:54:16	D	5.00
59	JABALPUR	SAHPURA	S-NPP	23.17312	79.77108	13:54:16	D	7.20
60	JABALPUR	SIHORA	S-NPP	23.40952	80.16797	13:54:16	D	4.90
61	JABALPUR	SIHORA	S-NPP	23.41559	80.17715	13:54:16	D	3.10
62	JABALPUR	SIHORA	S-NPP	23.41591	80.18038	13:54:16	D	5.70

63	JABALPUR	SIHORA	S-NPP	23.41975	80.21944	13:54:16	D	3.30
64	JABALPUR	SIHORA	S-NPP	23.42032	80.09300	13:54:16	D	8.20
65	JABALPUR	SIHORA	S-NPP	23.42258	80.09174	13:54:16	D	5.30
66	JABALPUR	SIHORA	S-NPP	23.42290	80.09494	13:54:16	D	6.50
67	JABALPUR	SIHORA	S-NPP	23.42354	80.10135	13:54:16	D	2.60
68	JABALPUR	SIHORA	S-NPP	23.42489	80.21891	13:54:16	D	3.30
69	JABALPUR	SIHORA	S-NPP	23.42632	80.10209	13:54:16	D	6.10
70	JABALPUR	SIHORA	S-NPP	23.42690	80.16402	13:54:16	D	1.30
71	JABALPUR	SIHORA	S-NPP	23.42863	80.10081	13:54:16	D	3.20
72	JABALPUR	SIHORA	S-NPP	23.43516	80.21783	13:54:16	D	3.20
73	KATNI	BAHURIBAND	S-NPP	23.65616	80.07669	13:54:16	D	3.00
74	KATNI	BAHURIBAND	S-NPP	23.67452	80.10735	13:54:16	D	4.00
75	KATNI	DHIMERKHEDA	S-NPP	23.46567	80.30224	13:54:16	D	1.40
76	NARSHIMAPURA	GOTECAON	TERRA	22.88500	79.45800	10:40:32	D	45.40
77	NARSHIMAPURA	GOTECAON	TERRA	22.96000	79.44100	10:40:32	D	17.00
78	NARSHIMAPURA	NARSIMHAPUR	TERRA	22.86500	79.27300	10:40:32	D	8.10
79	RAISEN	BARELI	TERRA	22.94700	78.02100	10:40:32	D	5.00
80	RAISEN	BARELI	TERRA	23.01800	78.11100	10:40:32	D	4.90
81	RAISEN	BARELI	S-NPP	22.94006	78.07110	13:54:16	D	0.90
82	RAISEN	BARELI	S-NPP	23.00728	78.08270	13:54:16	D	4.30
83	RAISEN	BARELI	S-NPP	23.00872	78.08141	13:54:16	D	5.00
84	RAISEN	GOHARGANJ	S-NPP	23.04899	77.61969	13:54:16	D	2.80
85	RAISEN	GOHARGANJ	S-NPP	23.06266	77.60671	13:54:16	D	2.20
86	RAISEN	GOHARGANJ	S-NPP	23.07414	77.59188	13:54:16	D	2.70
87	RAISEN	GOHARGANJ	S-NPP	23.17688	77.63749	13:54:16	D	2.40
88	REWA	HUZUR	S-NPP	24.45694	81.25722	13:54:16	D	3.90
89	REWA	TEONTHAR	TERRA	24.96300	81.78100	10:40:32	D	6.70
90	REWA	TEONTHAR	S-NPP	24.97825	81.53218	13:54:16	D	2.40
91	REWA	TEONTHAR	S-NPP	24.99245	81.70668	13:54:16	D	3.50
92	SAGAR	RAHAT GARH	S-NPP	23.76682	78.26376	13:54:16	D	2.30
93	SATNA	AMARPATAN	S-NPP	24.45415	81.22549	13:54:16	D	1.30
94	SATNA	MAIHAR	S-NPP	24.39471	80.86423	13:54:16	D	2.60
95	SATNA	NAGOD	S-NPP	24.48031	80.52020	13:54:16	D	1.70

96	SATNA	NAGOD	S-NPP	24.50546	80.56091	13:54:16	D	6.40
97	SATNA	RAGURAJNAGAR	S-NPP	24.58214	80.91213	13:54:16	D	4.40
98	SATNA	UCHAHAR	S-NPP	24.39240	80.83817	13:54:16	D	3.60
99	SATNA	UCHAHAR	S-NPP	24.39273	80.84190	13:54:16	D	5.10
100	SATNA	UCHAHAR	S-NPP	24.40793	80.82909	13:54:16	D	2.00
101	SEHORE	BUDHNI	TERRA	22.90000	78.02400	10:40:32	D	5.70
102	SEHORE	BUDHNI	S-NPP	22.88626	77.98846	13:54:16	D	2.60
103	SEHORE	BUDHNI	S-NPP	22.88638	77.98686	13:54:16	D	1.50
104	SEHORE	BUDHNI	S-NPP	22.90830	77.98564	13:54:16	D	3.20
105	SEHORE	BUDHNI	S-NPP	22.93220	77.95921	13:54:16	D	4.90
106	SEONI	BARGHAT	S-NPP	22.15396	79.78999	13:54:16	D	3.50
107	SEONI	SEONI	S-NPP	22.20760	79.45822	13:54:16	D	7.40
108	UMARIA	BANDHOGARH	S-NPP	23.67454	80.72333	13:54:16	D	3.60
109	VIDESHA	BASODA	S-NPP	23.76766	78.26096	13:54:16	D	2.50

Details of residue burning events in Rajasthan on 28-Nov-2022

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m2)
1	GANGANAGAR	VIJAY NAGAR	S-NPP	29.24039	73.48267	13:54:16	D	1.50

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

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

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

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GIS Maps of fire events can be visualized online on ICAR KRISHI Geoportal website: <http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

(Part of KRISHI Portal: <https://krishi.icar.gov.in> initiative)

and on IARI CREAMS website (<http://creams.iari.res.in/cms2/index.php>)
