



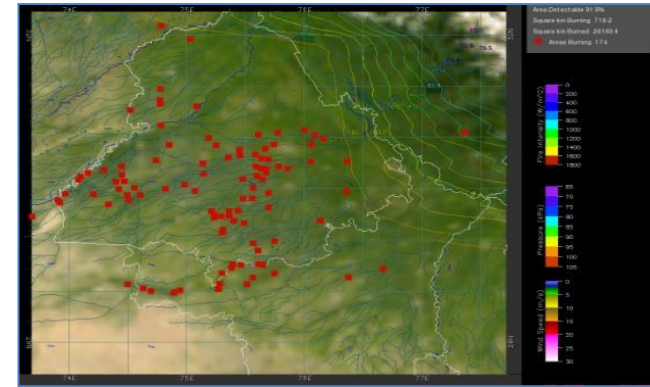
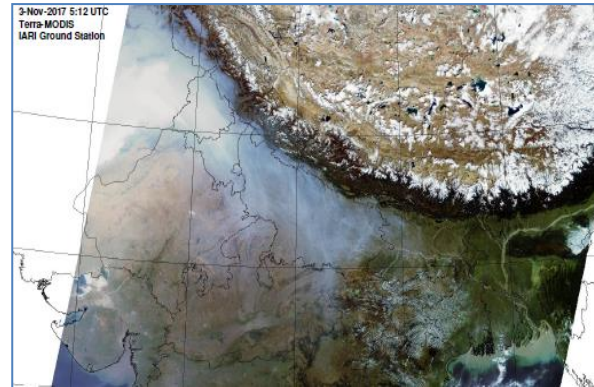
Bulletin No. 76

Events Date:
29-Nov-2022

Issued on:
29-Nov-2022



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



Prepared by:

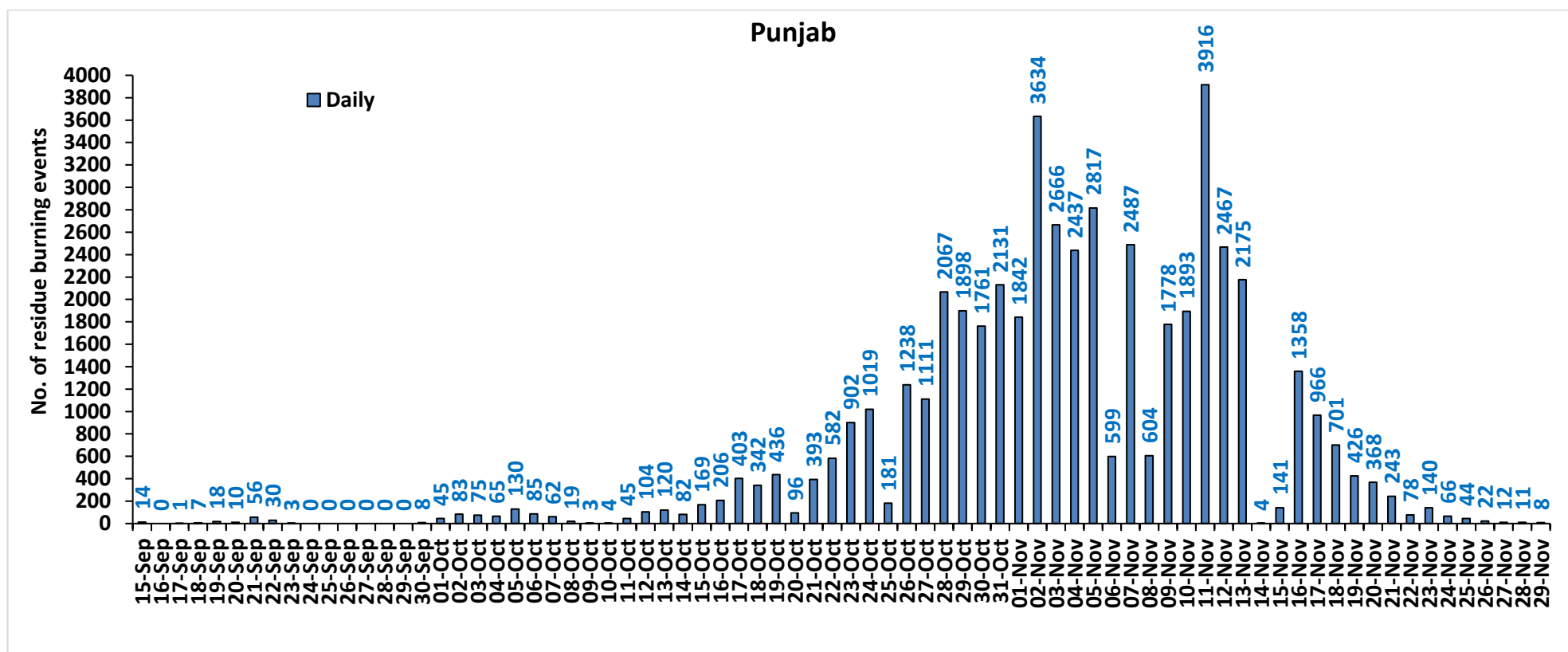
Consortium for Research on Agroecosystem Monitoring and Modeling from Space (CREAMS) Laboratory,
Division of Agricultural Physics, ICAR – Indian Agricultural Research Institute, New Delhi – 110012

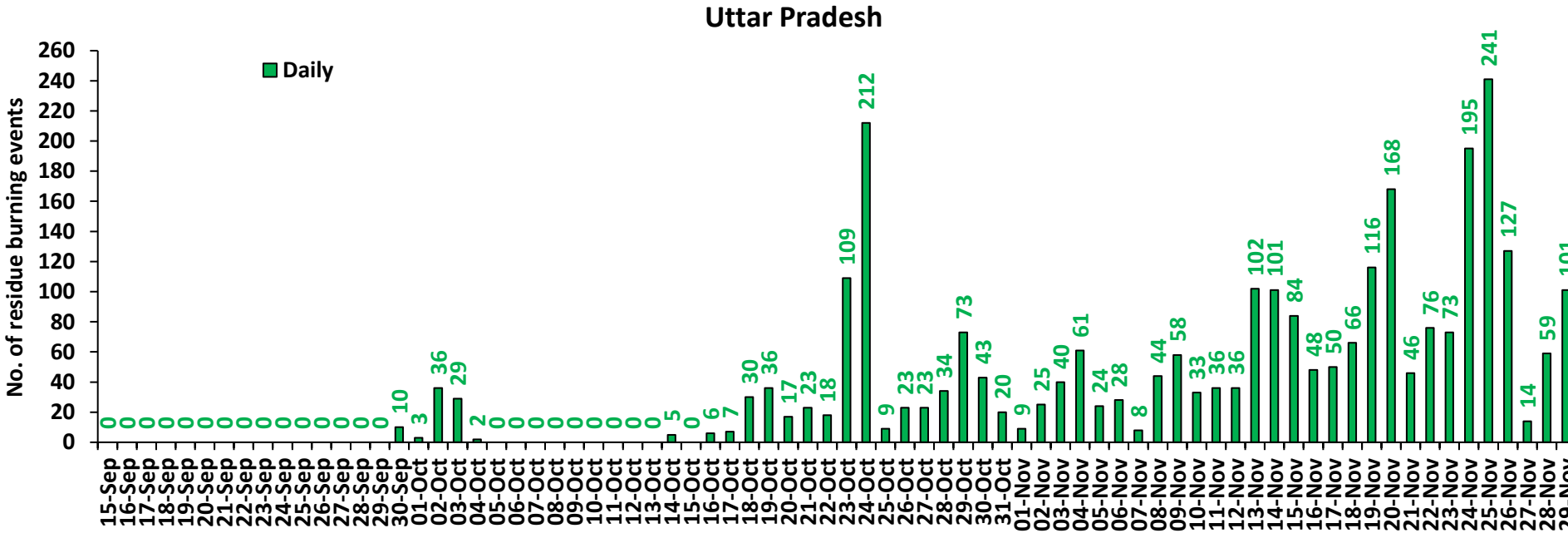
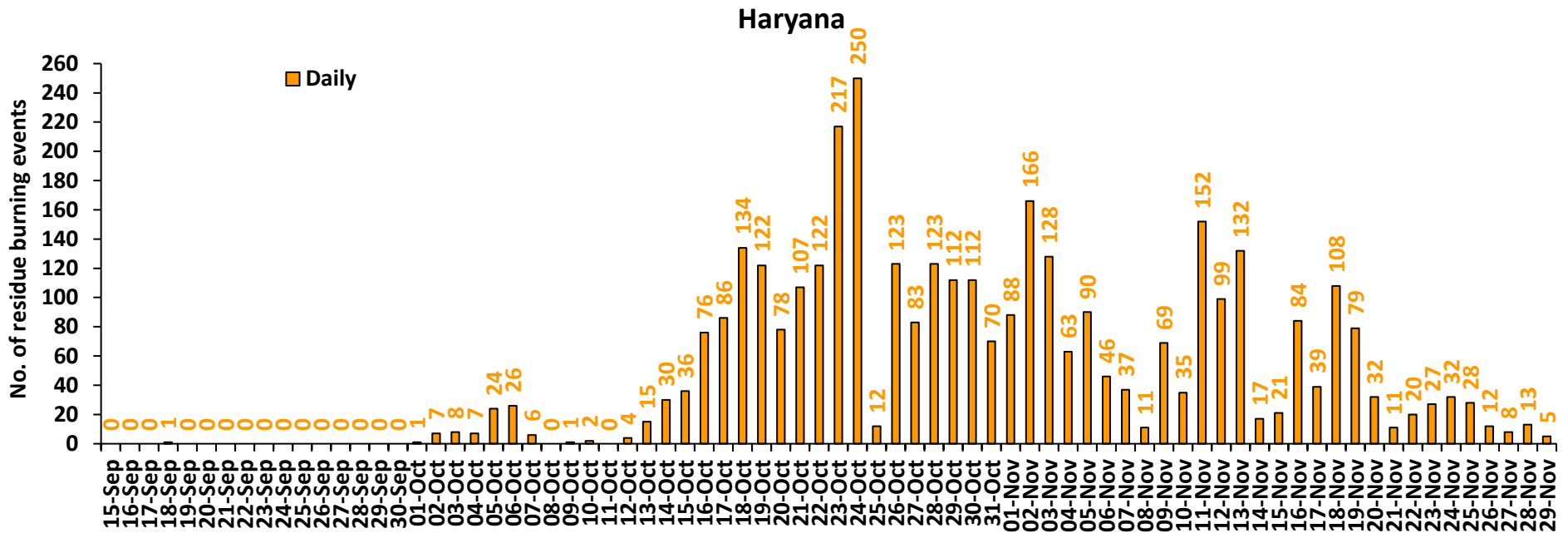
<http://creams.iari.res.in>

Highlights for 29-Nov-2022

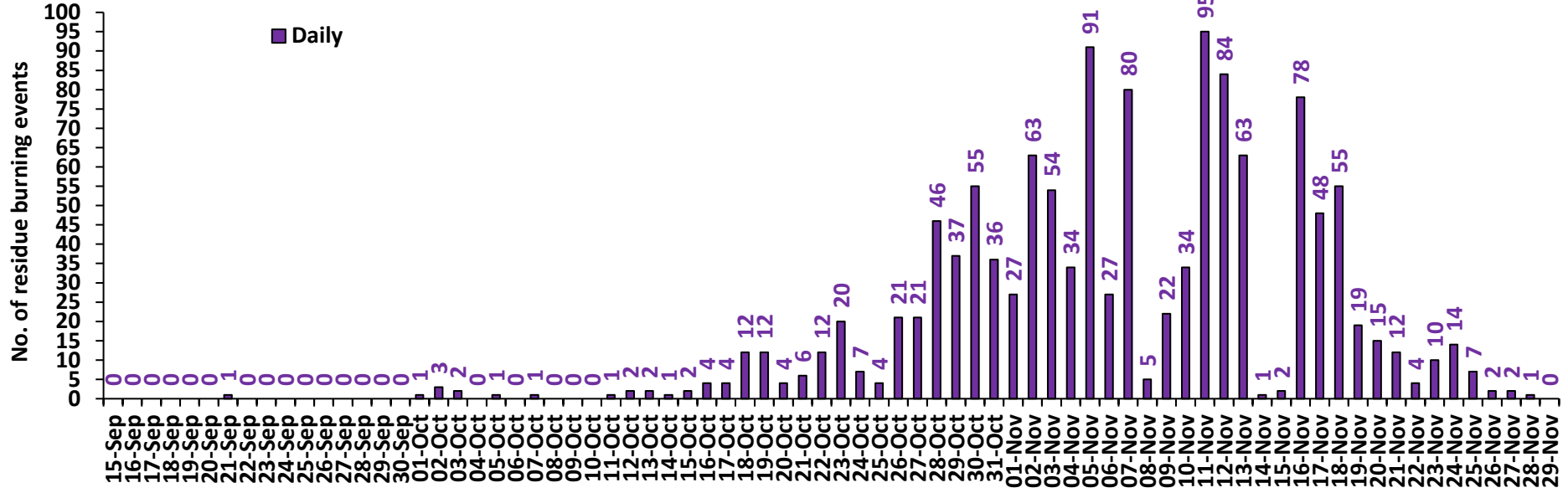
- The active fire events due to rice residue burning were monitored using satellite remote sensing, following the "Standard Protocol for Estimation of Crop Residue Burning Fire Events using Satellite Data".
- Satellites detected **188** residue burning events in the six study States on 29-Nov-2022.
- The state wise events detected on 29-Nov-2022 were **8** in Punjab, **5** in Haryana, **101** in UP, **0** in Delhi, **0** in Rajasthan and **74** in MP.
- Total **69254** burning events were detected in the six states between 15-Sept-2022 and 29-Nov-2022, which are distributed as **49907**, **3647**, **2837**, **10,1267** and **11586** in Punjab, Haryana, UP, Delhi, Rajasthan and MP respectively.

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

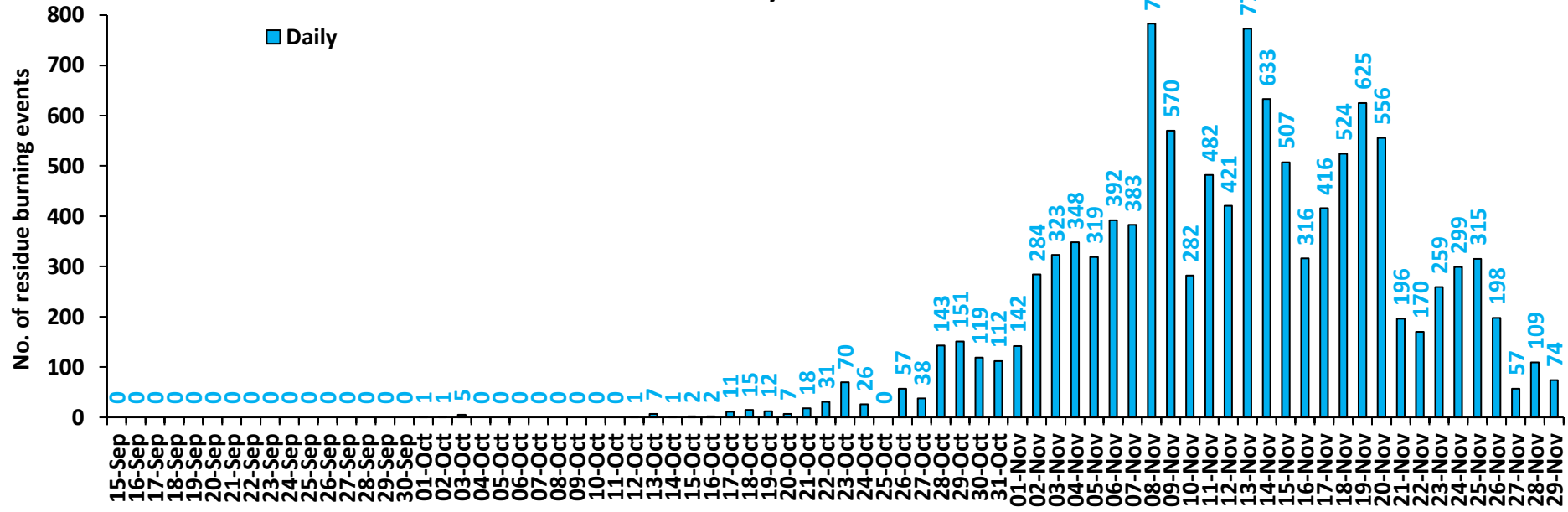




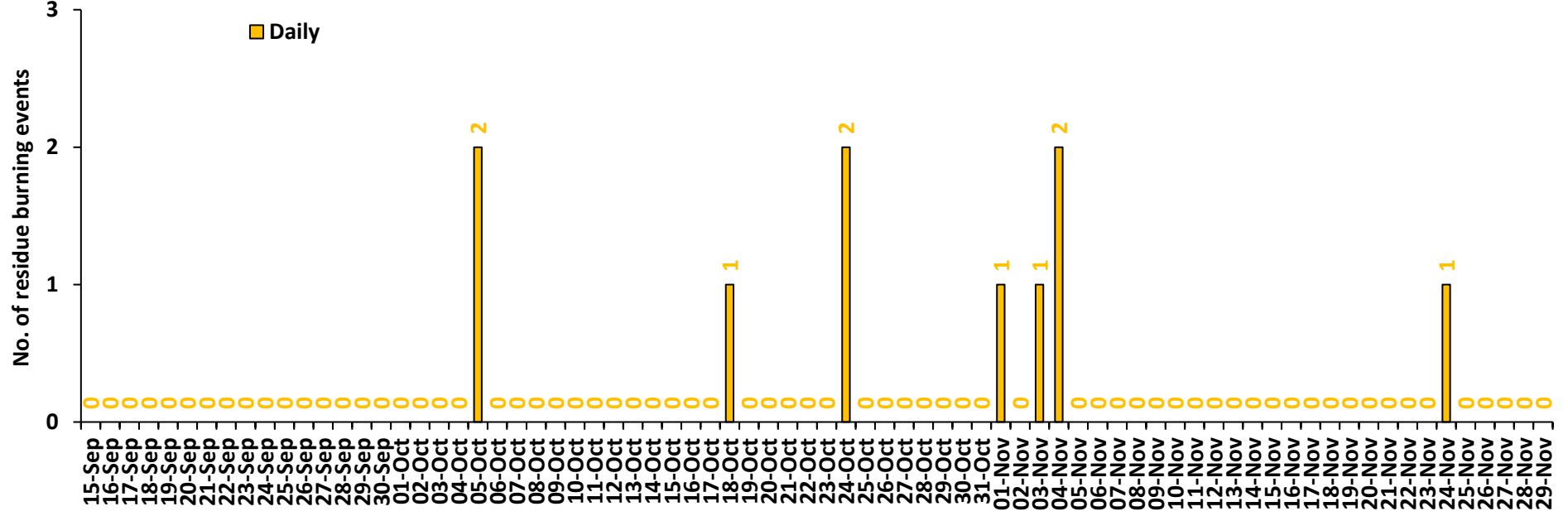
Rajasthan



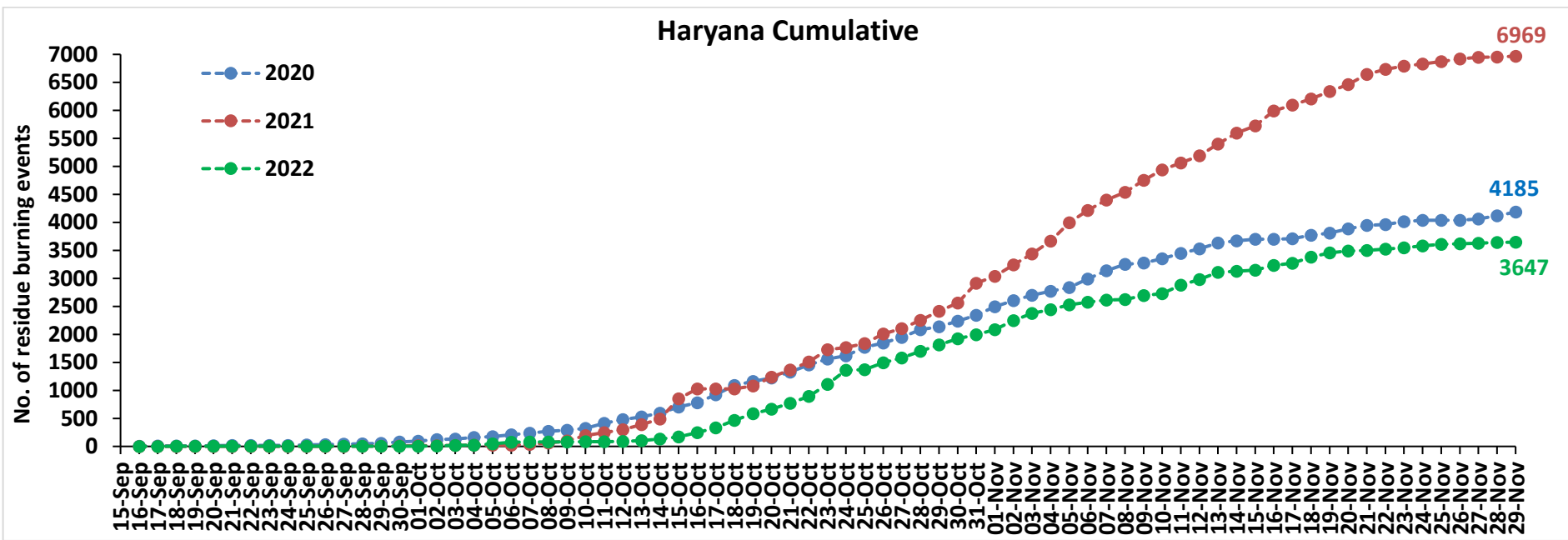
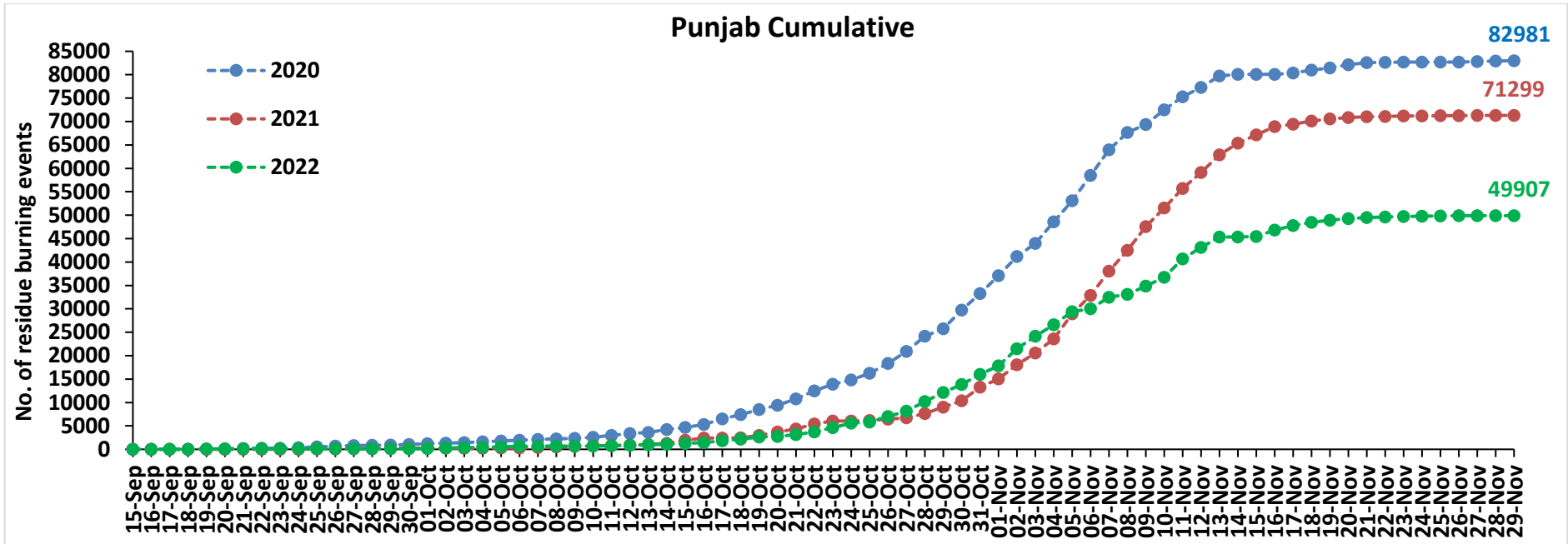
Madhya Pradesh



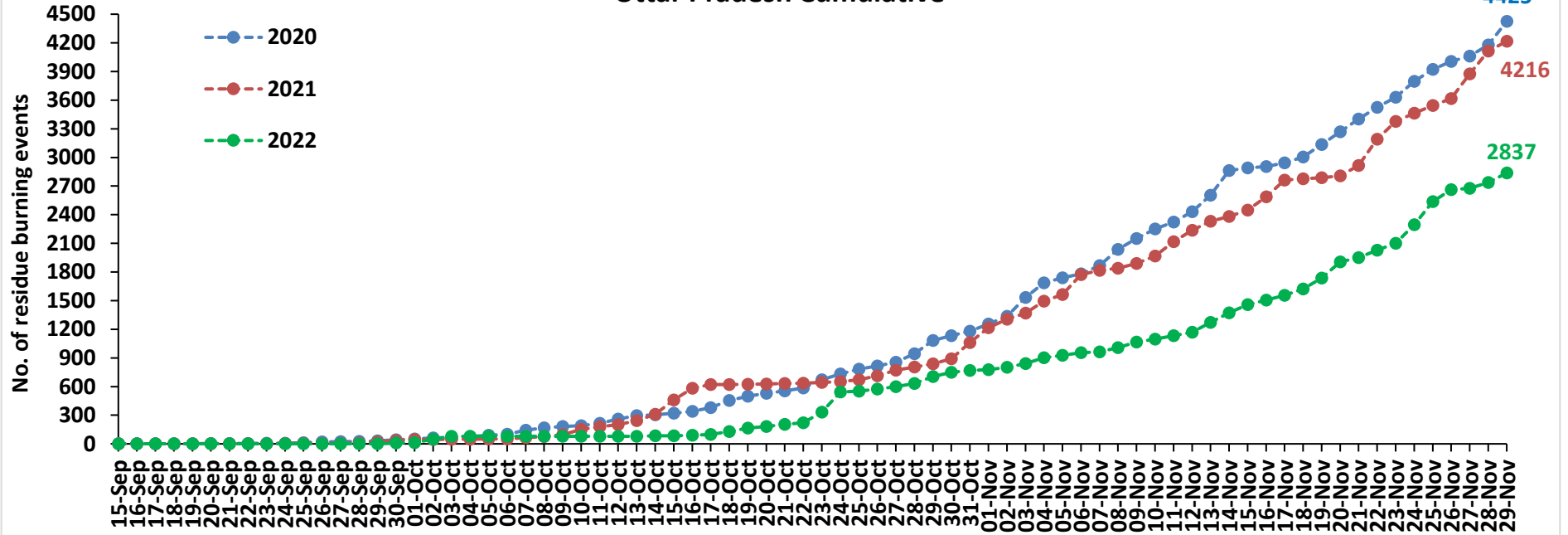
Delhi



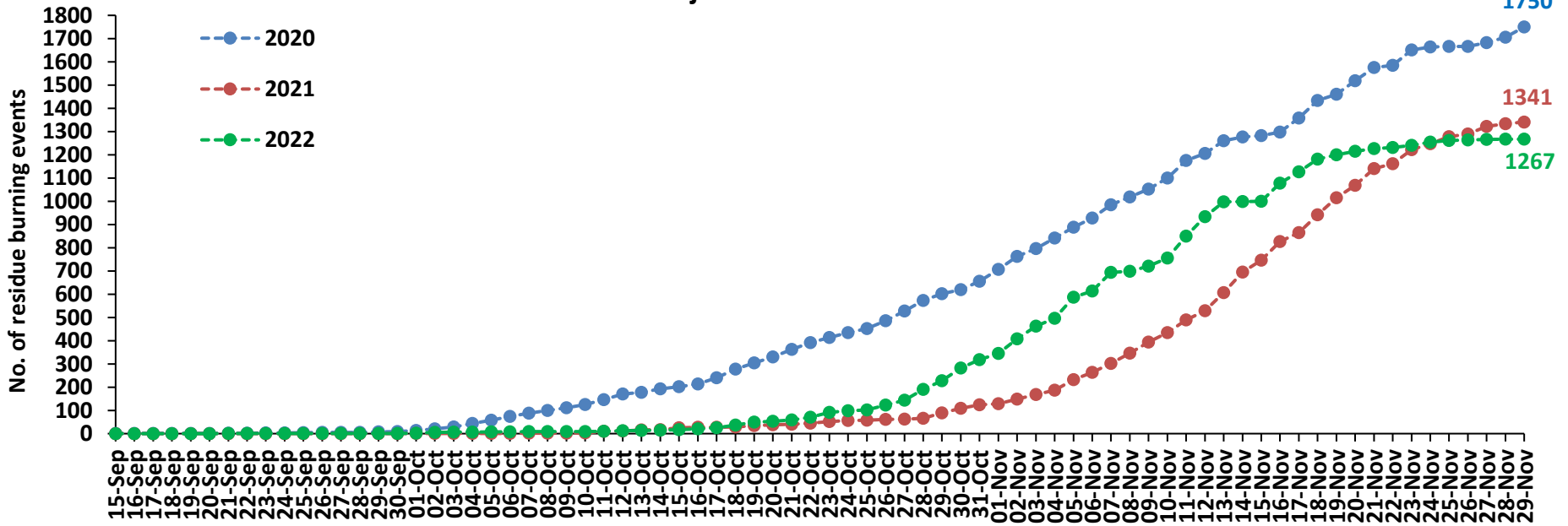
Comparison of residue burning events in current year (2022) with previous years (2020 and 2021) for the study States



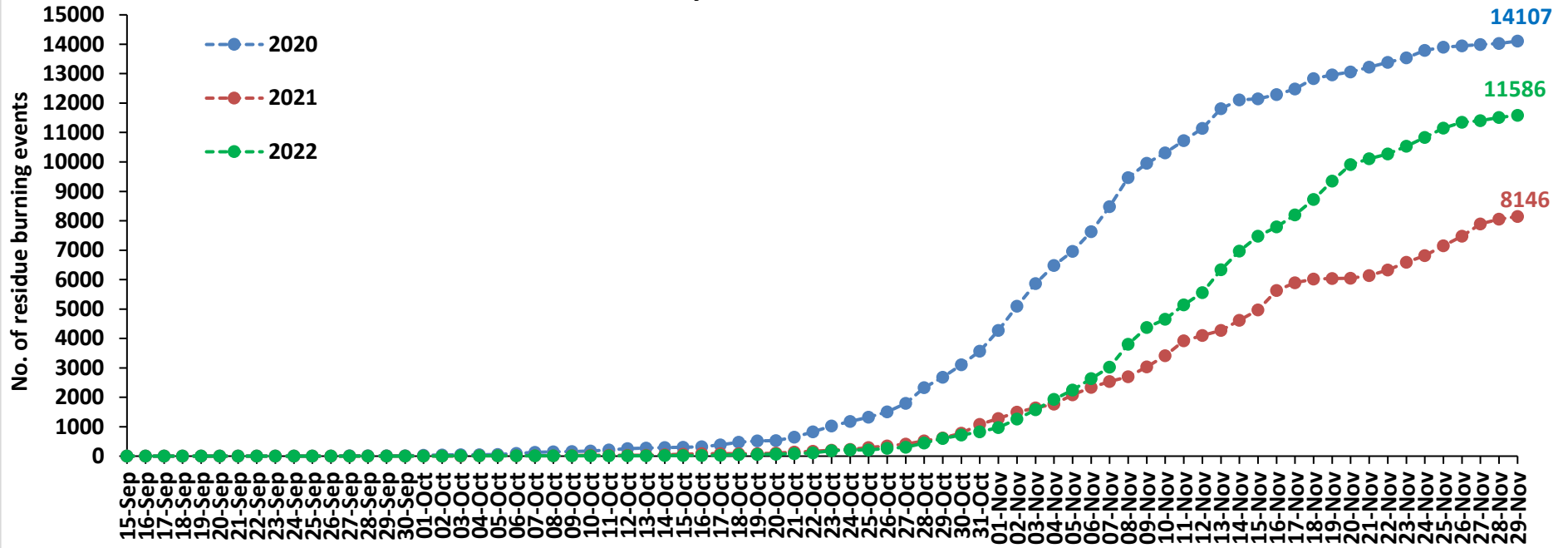
Uttar Pradesh Cumulative



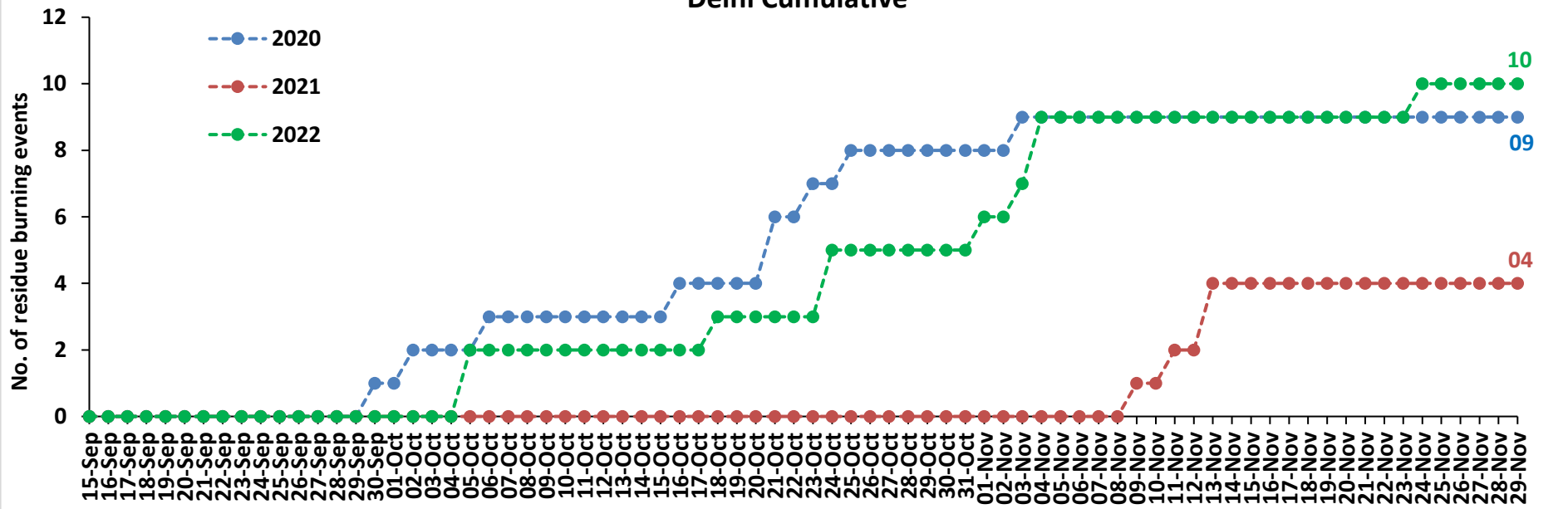
Rajasthan Cumulative



Madhya Pradesh Cumulative

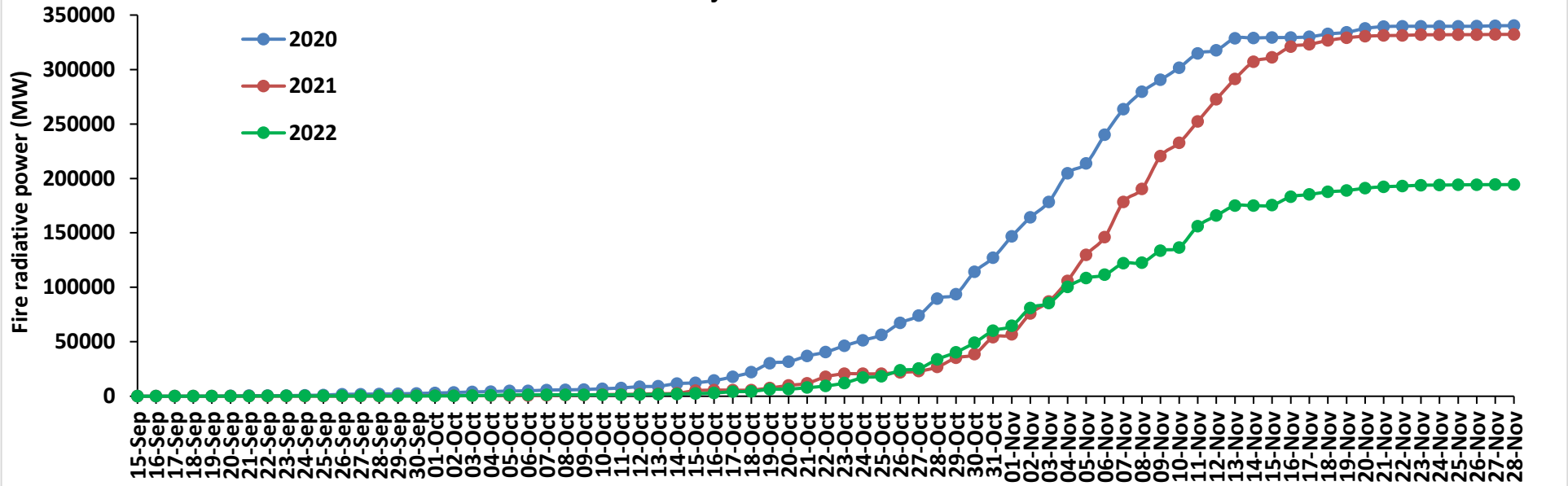


Delhi Cumulative

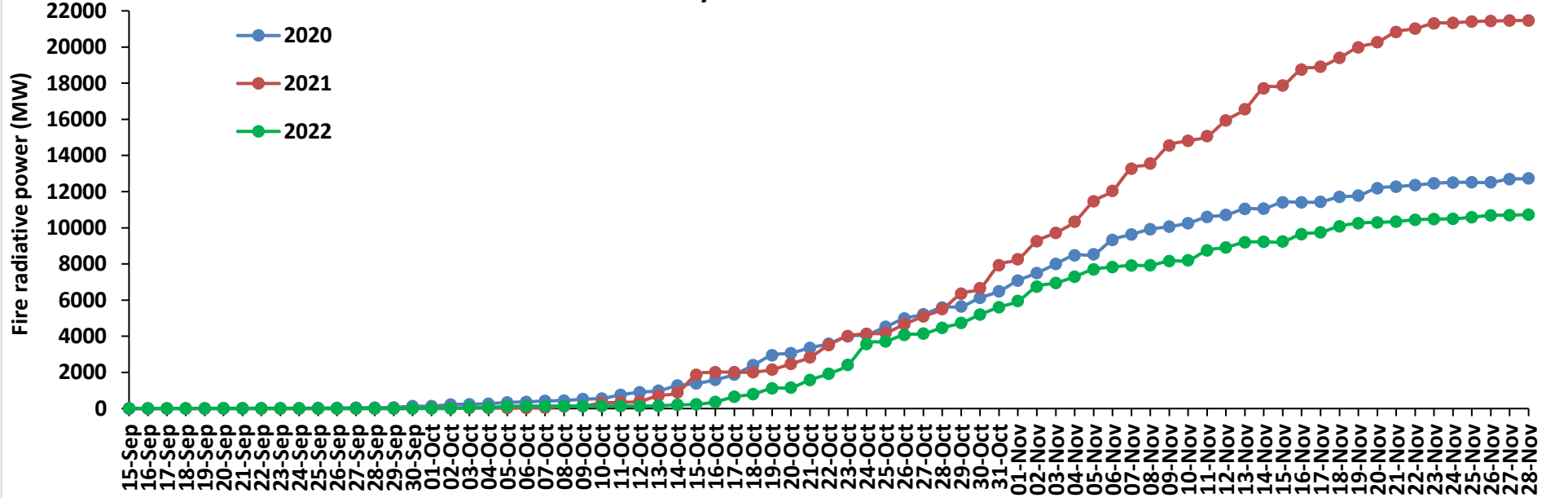


Comparison of residue burning fire power in current year (2022) with previous years (2021 and 2020) for the study States

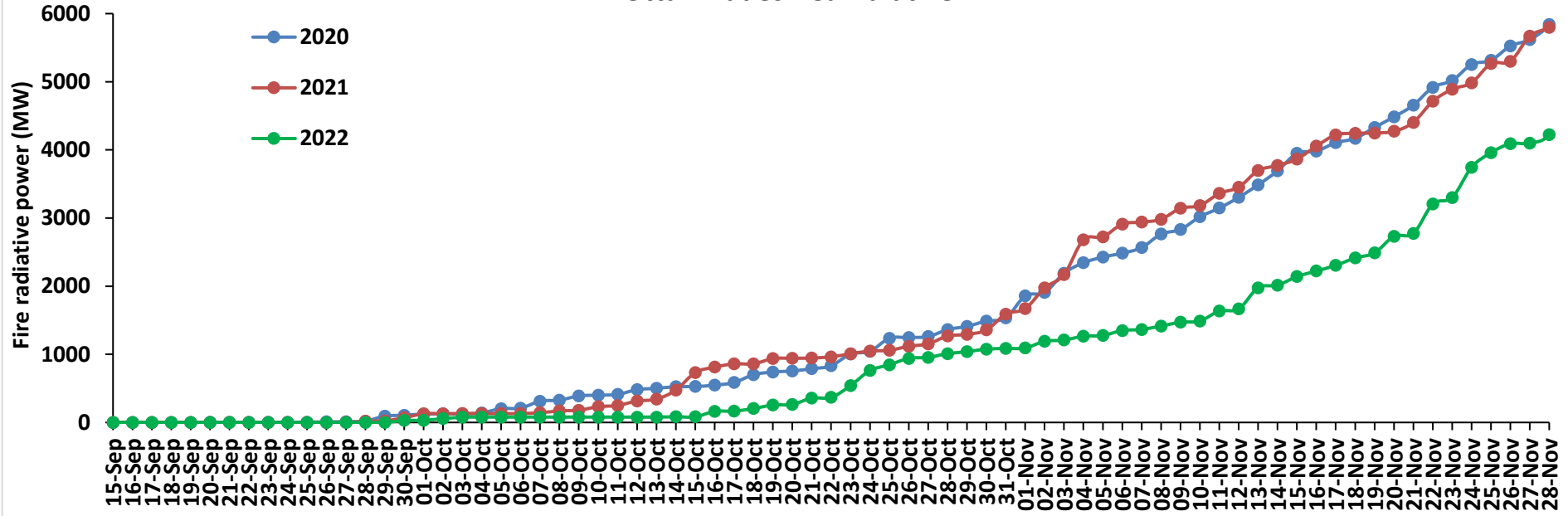
Punjab Cumulative



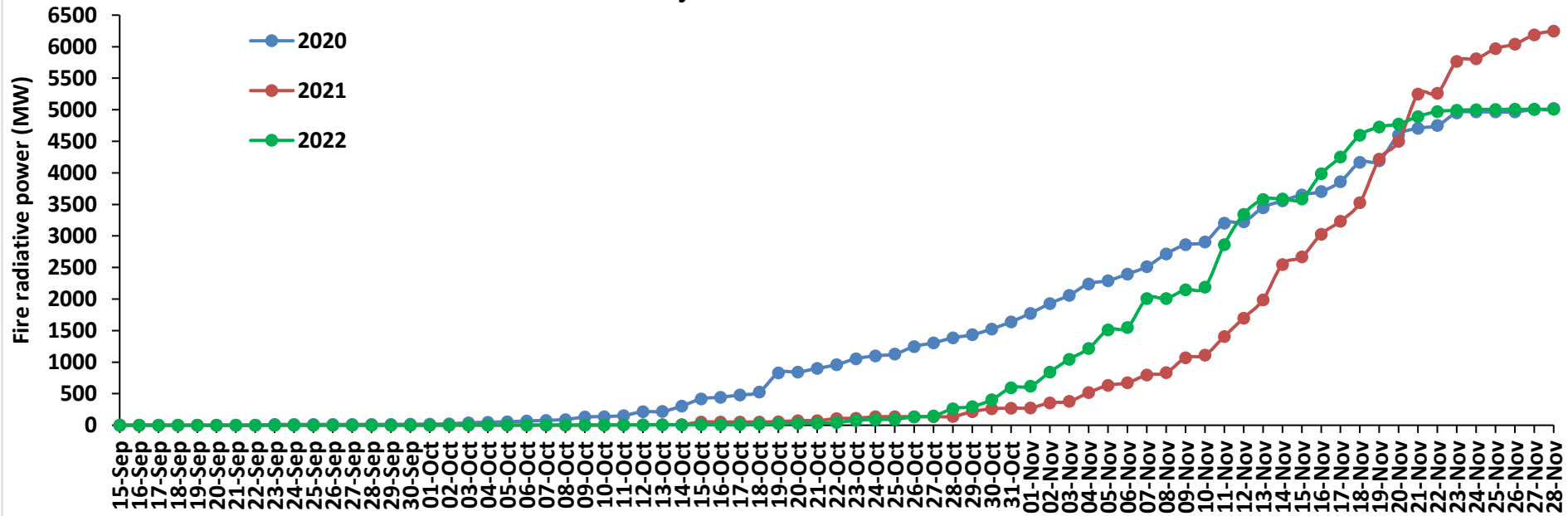
Haryana Cumulative



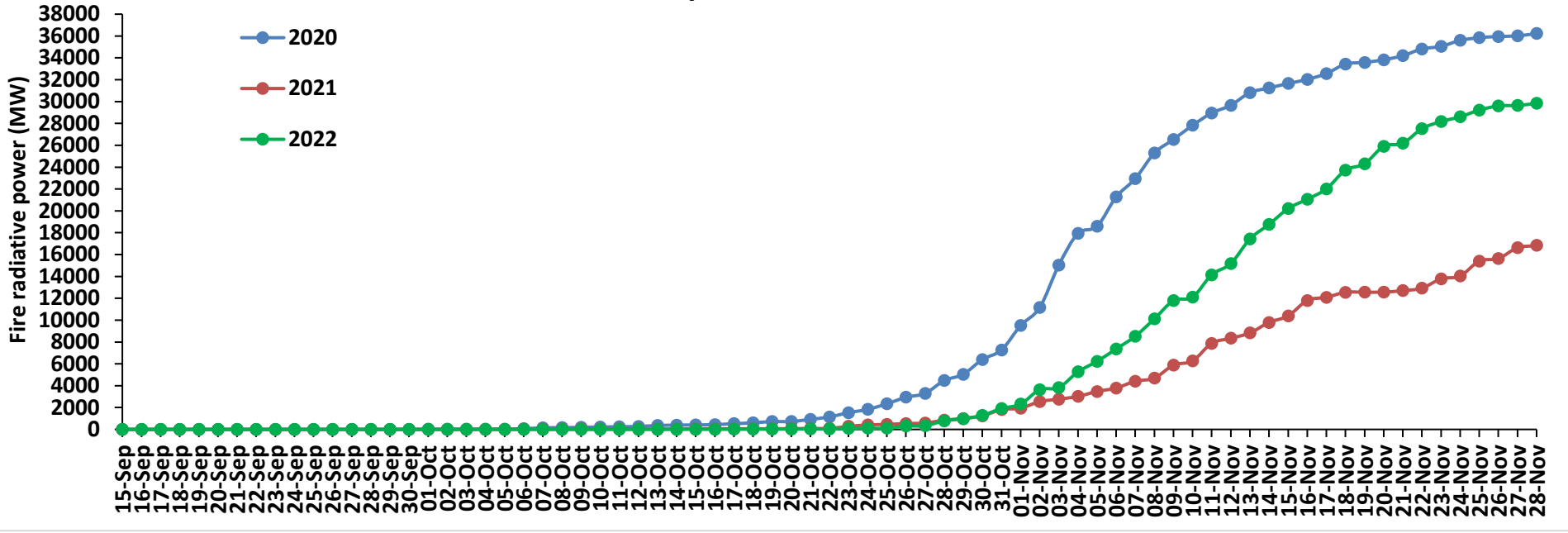
Uttar Pradesh Cumulative



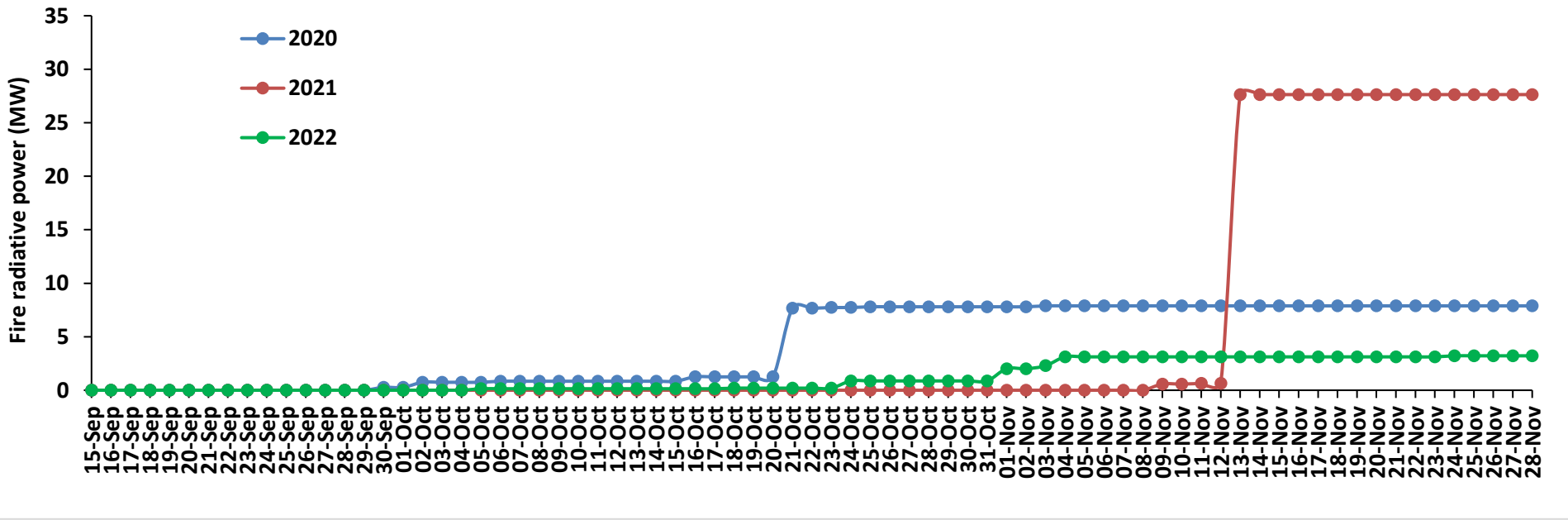
Rajasthan Cumulative



Madhya Pradesh Cumulative

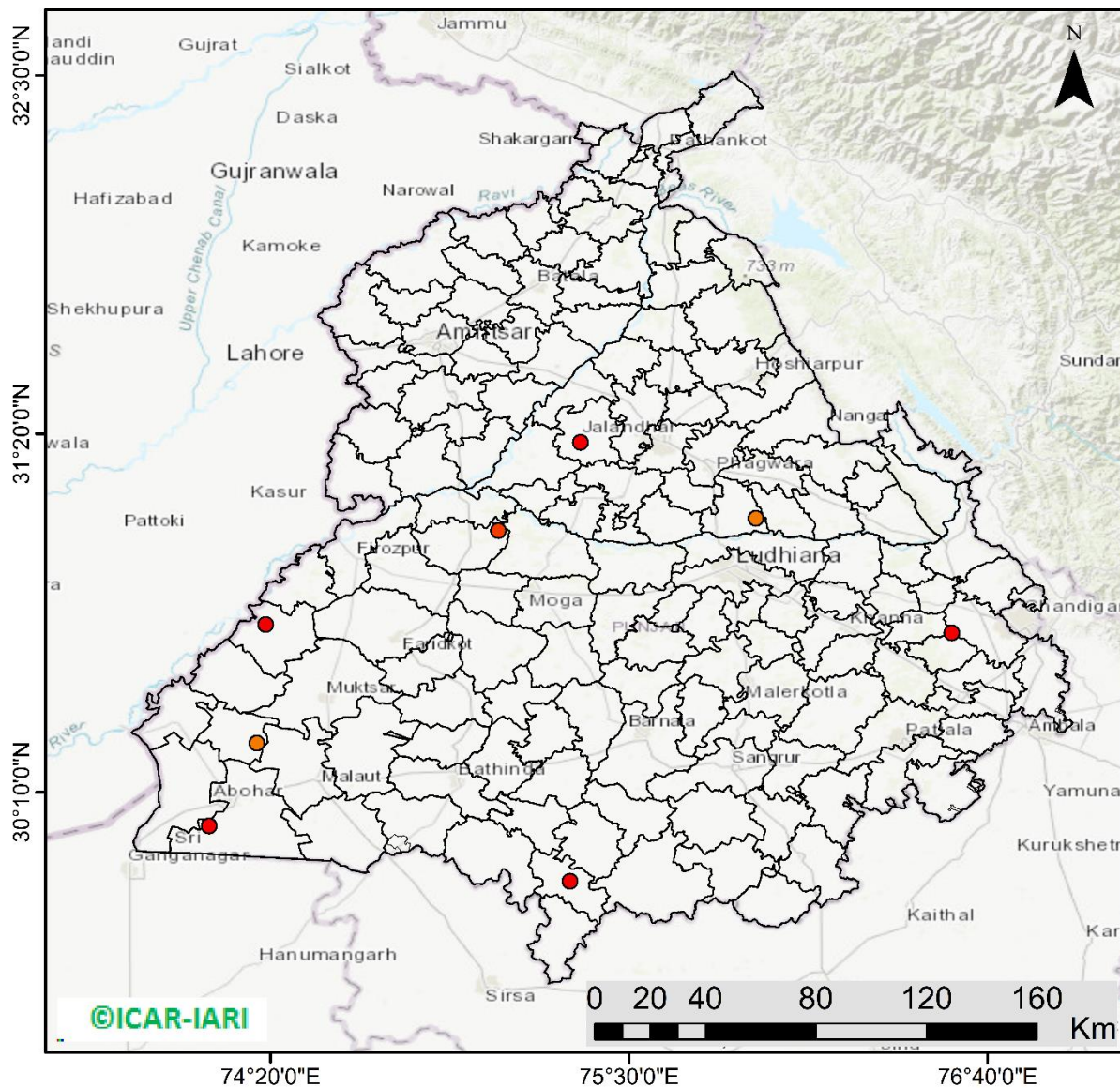


Delhi Cumulative



Punjab

RICE RESIDUE BURNING IN PUNJAB



08 burning events detected in Punjab during (29th Nov 2022)

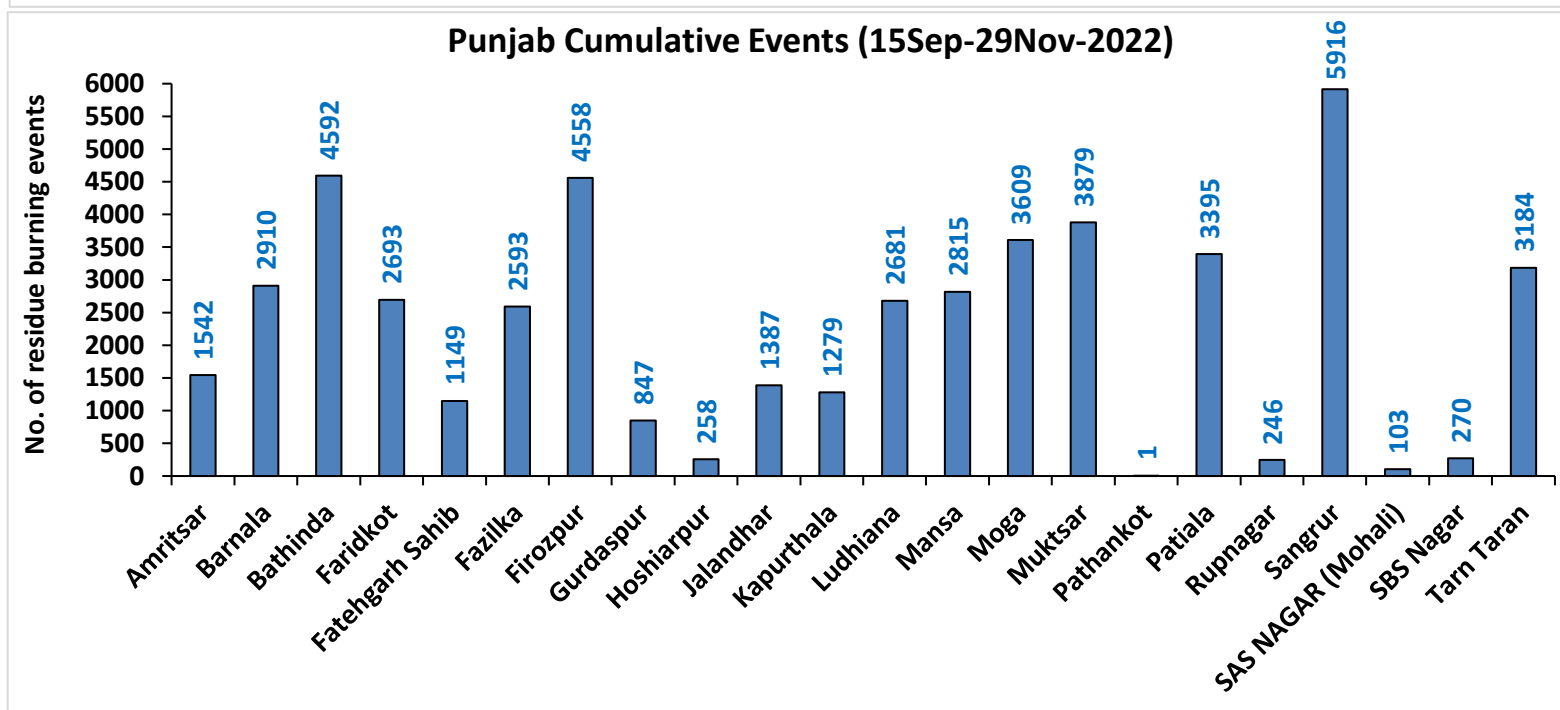
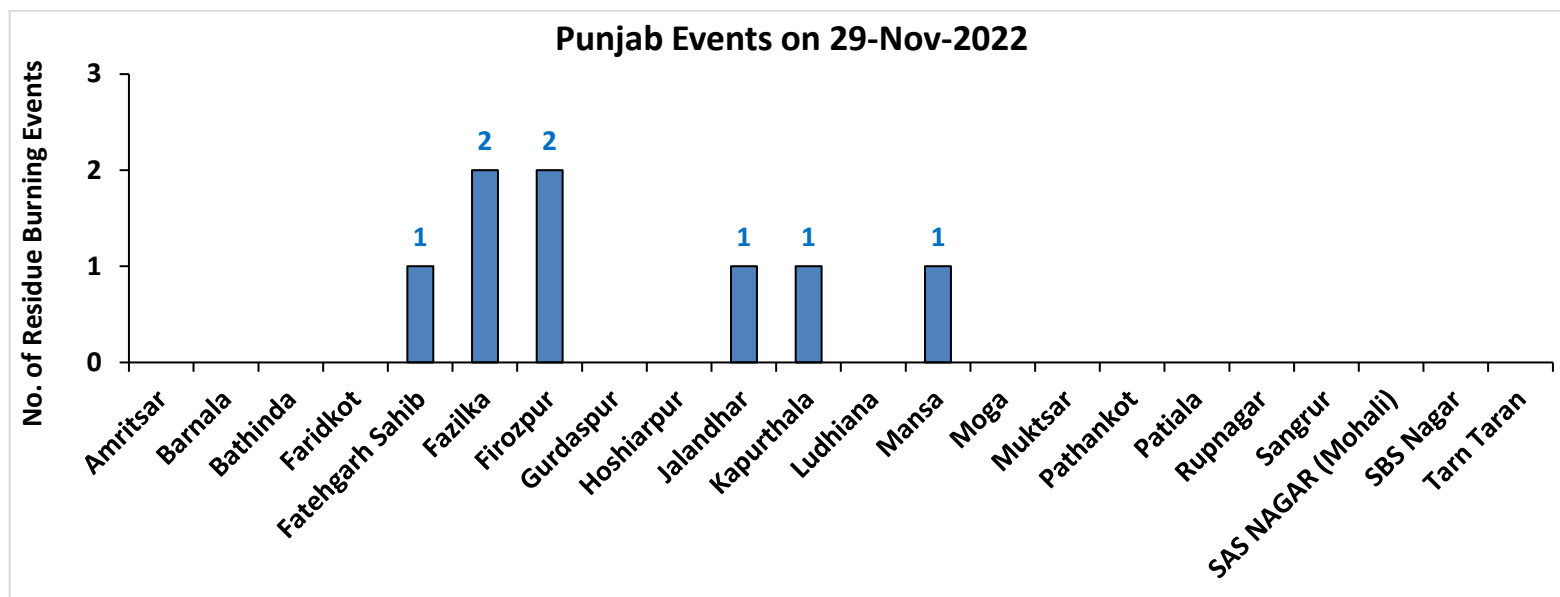
Fire Intensity (W/m²)

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



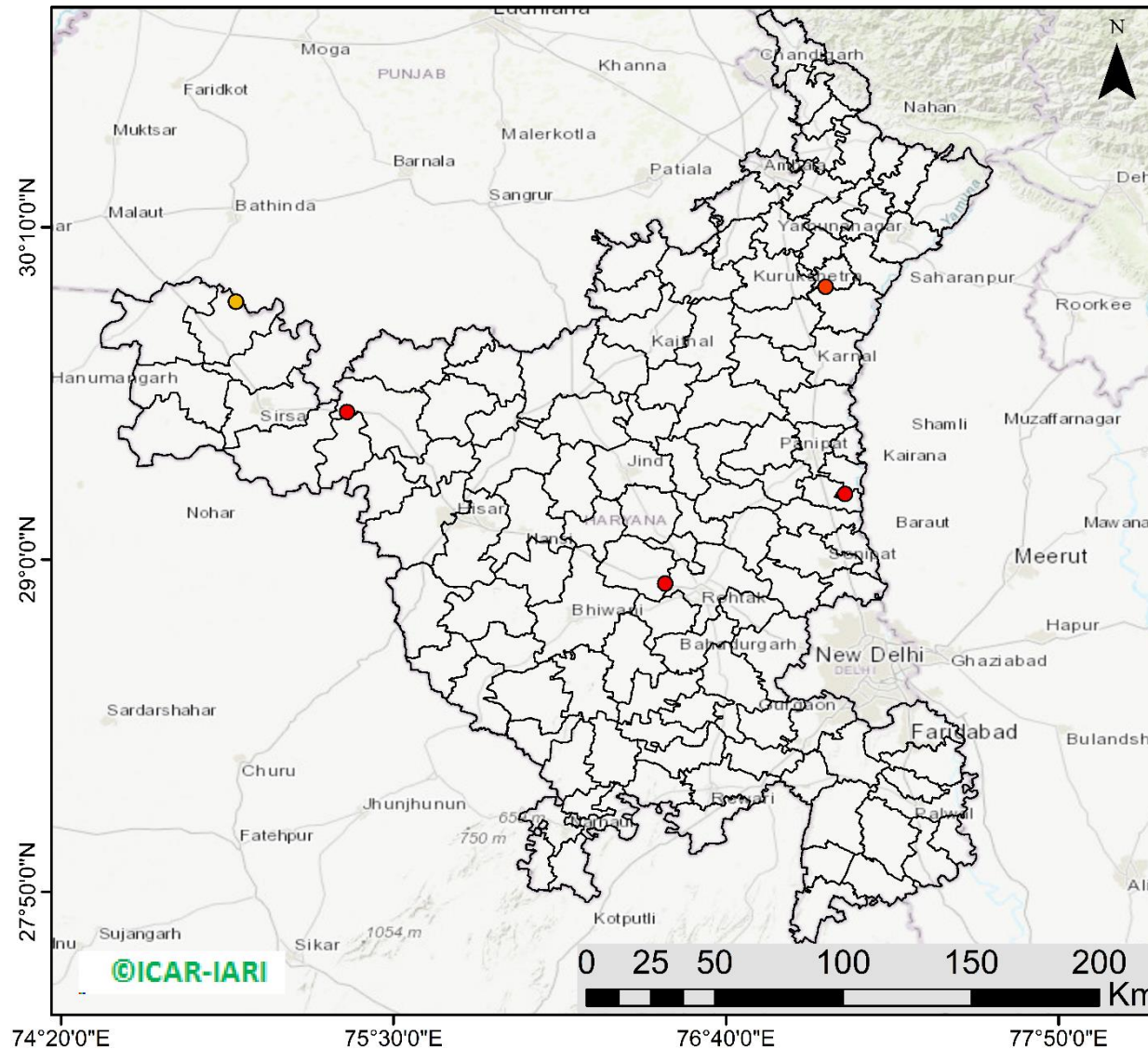
<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

District-wise cumulative number of residues burning events in Punjab (15Sep- 29Nov-2022)



Haryana

RICE RESIDUE BURNING IN HARYANA



05 burning events detected in Haryana on (29th Nov 2022)

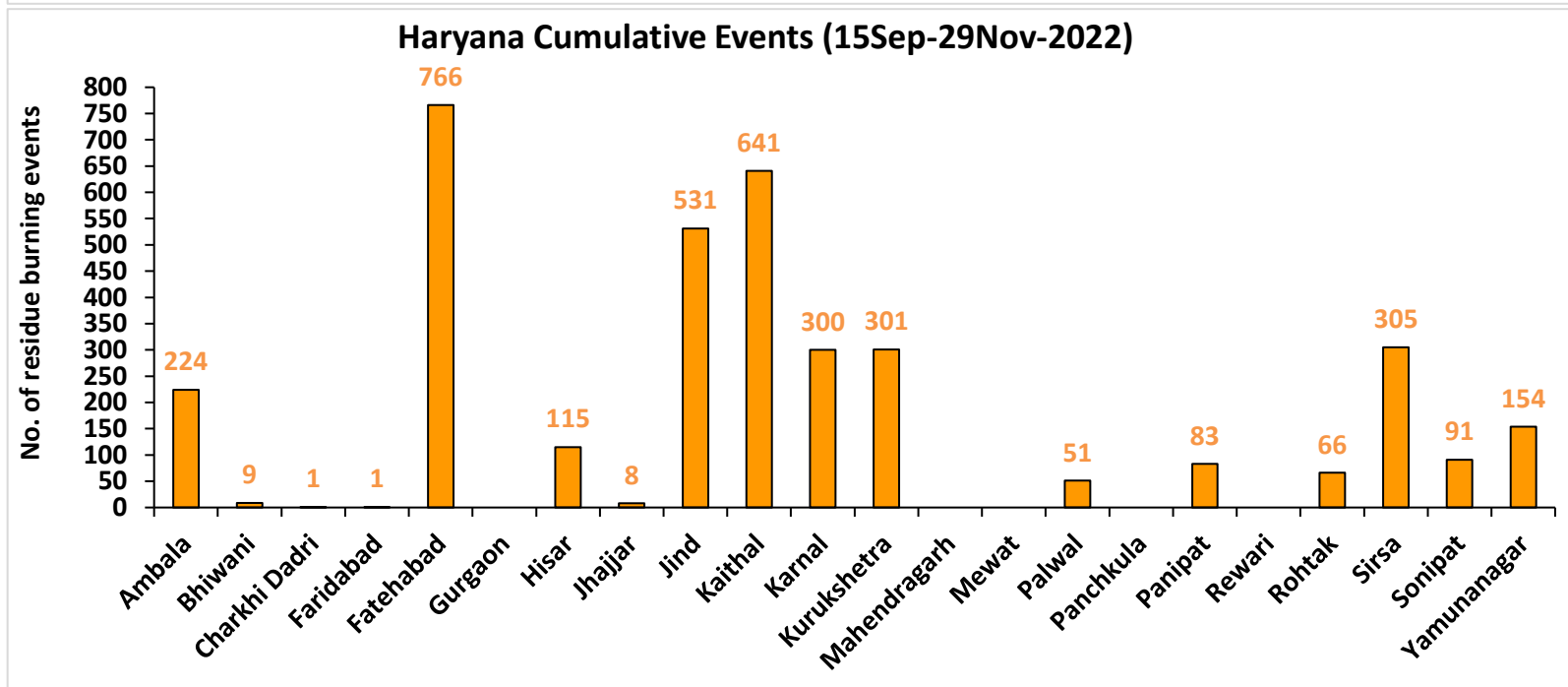
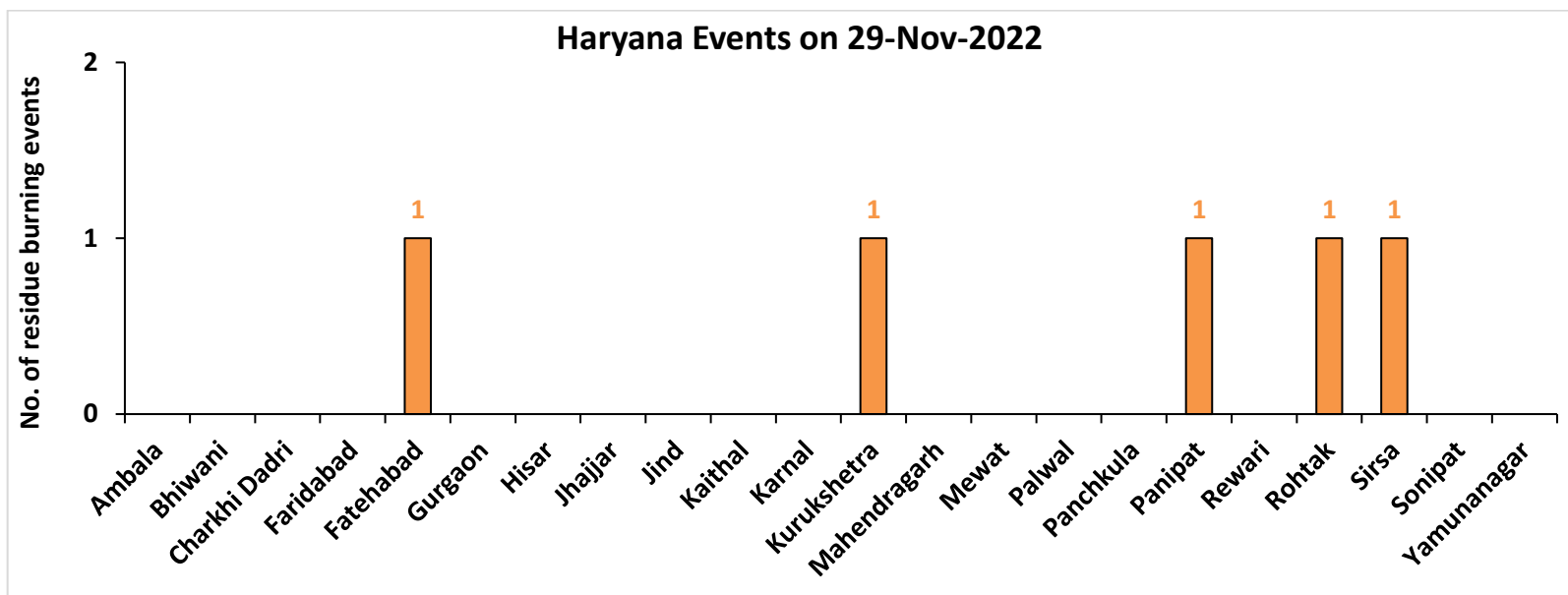
Fire Intensity (W/m²)

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



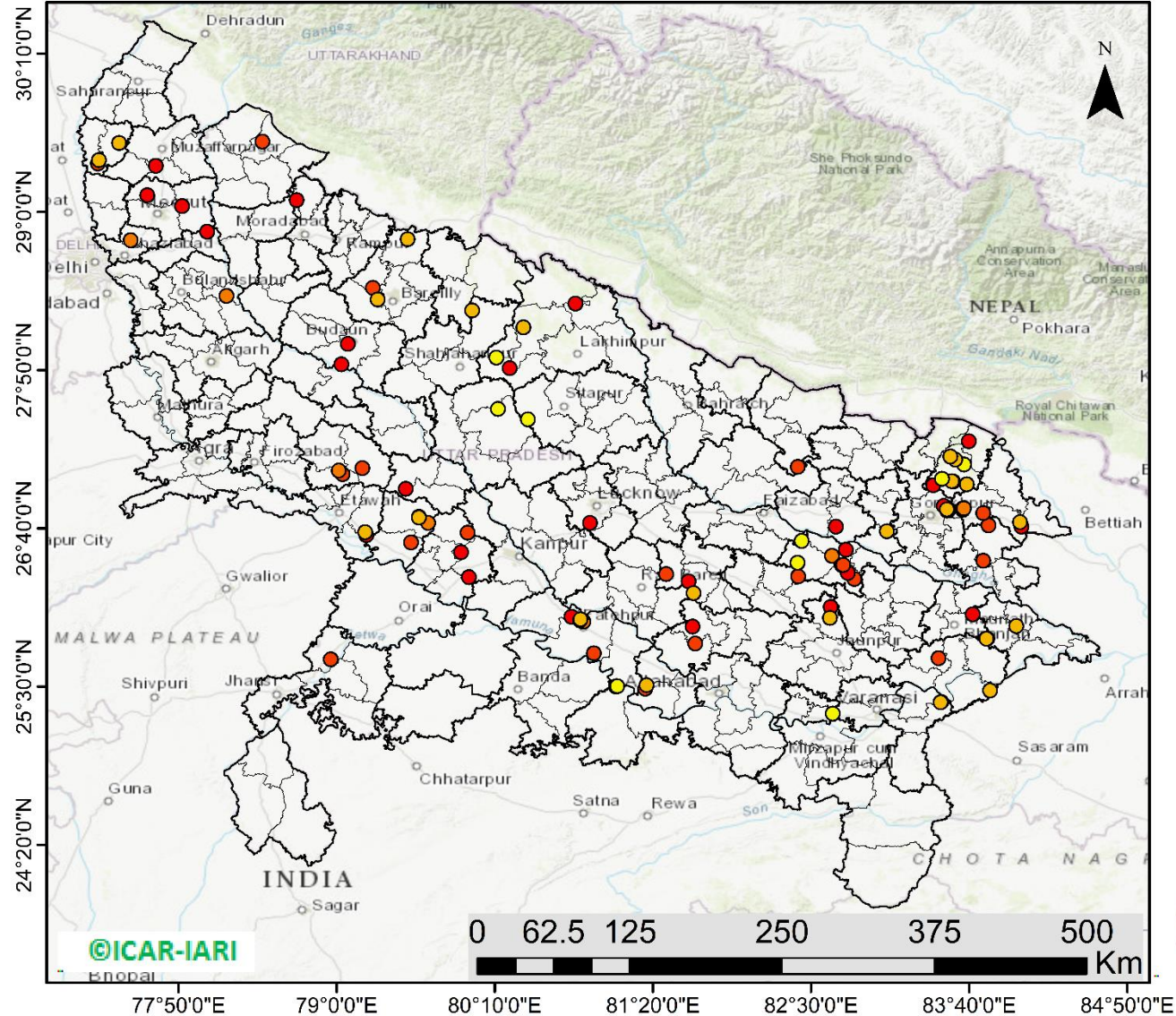
<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

District-wise cumulative number of residues burning events in Haryana (15Sep- 29Nov-2022)



Uttar Pradesh

RICE RESIDUE BURNING IN UTTAR PRADESH



101 burning events detected in Uttar Pradesh on (29th Nov 2022)

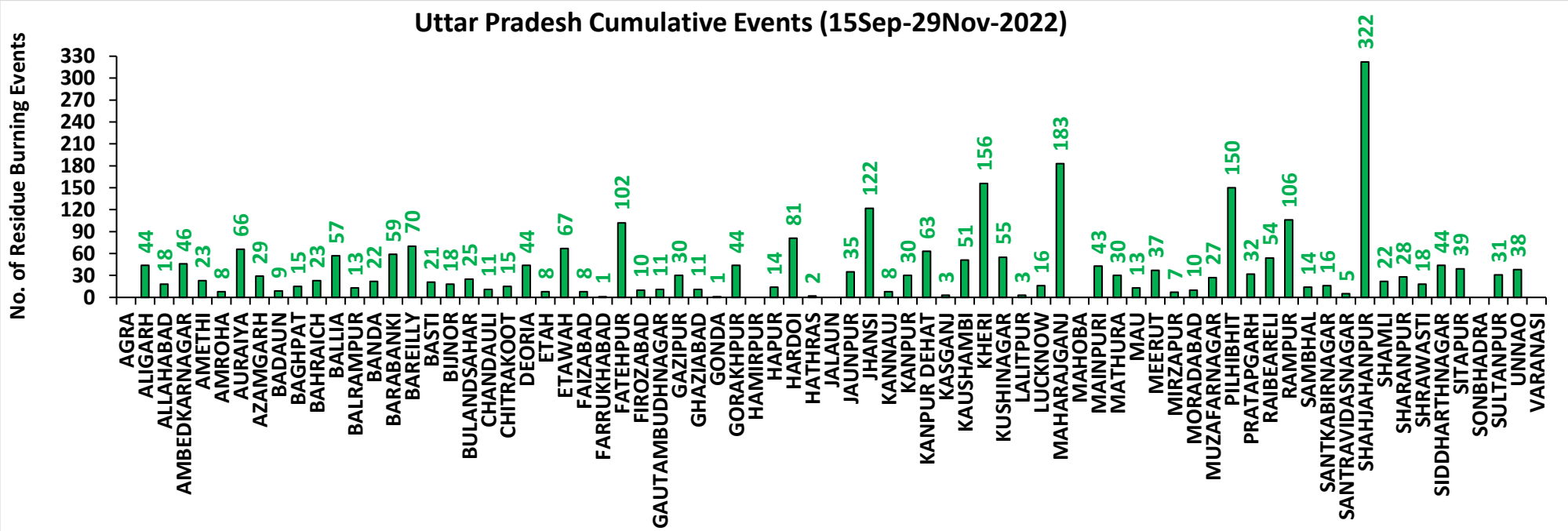
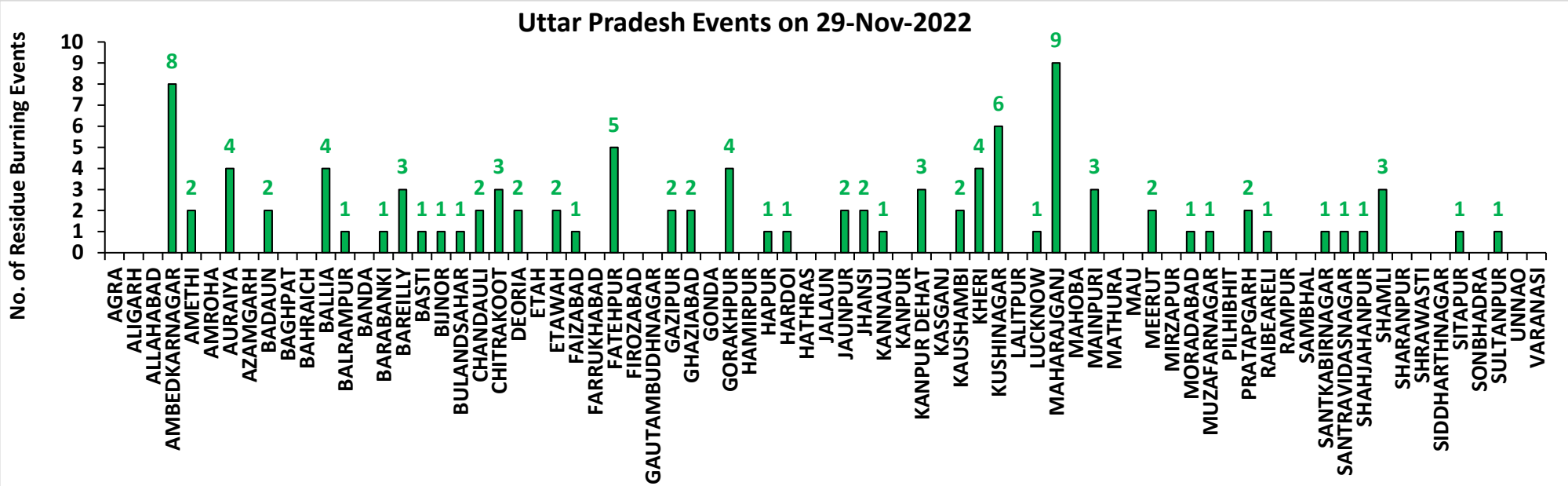
Fire Intensity (W/m²)

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



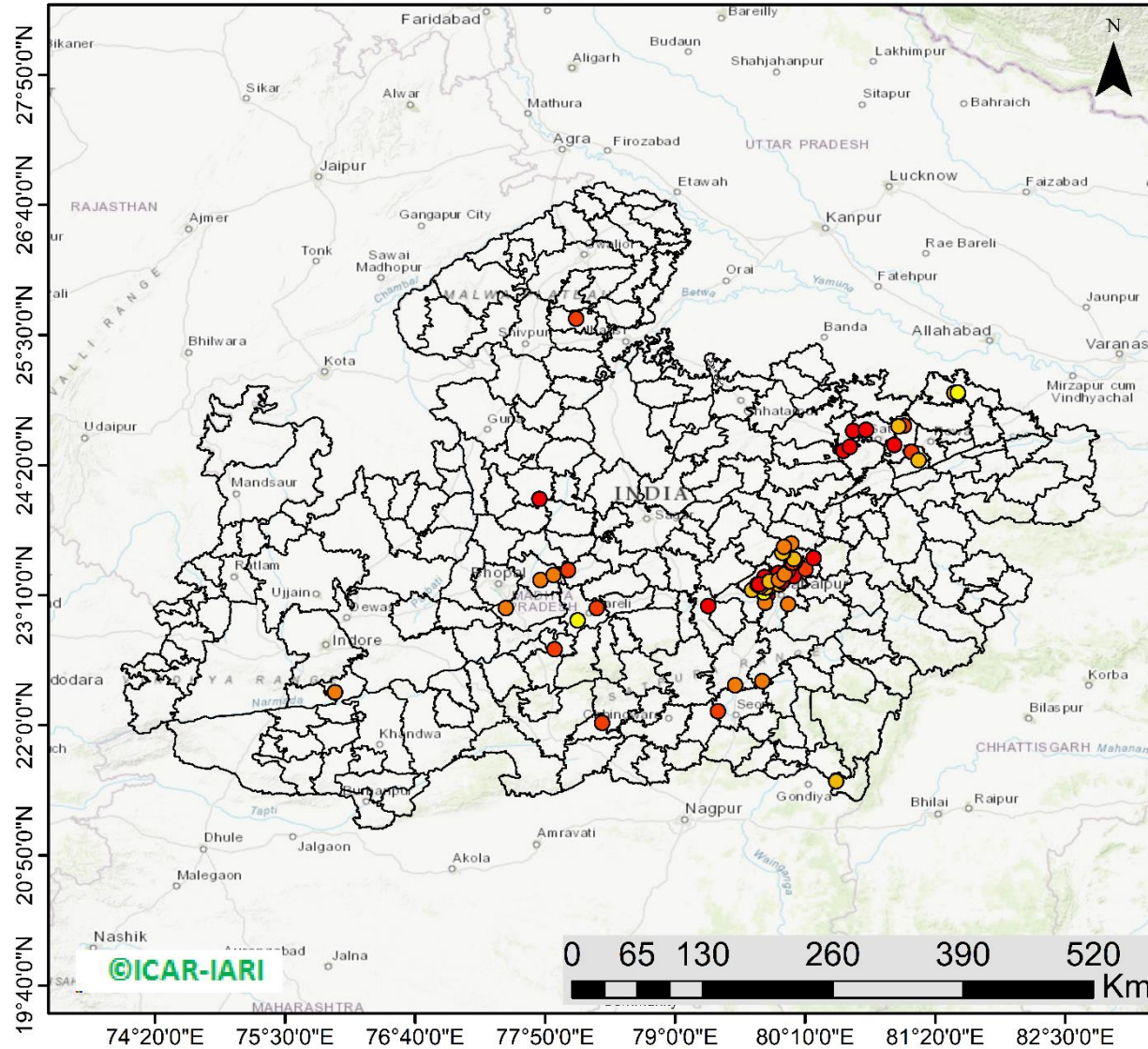
<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

District-wise cumulative number of residues burning events in Uttar Pradesh (15Sep- 29Nov-2022)



Madhya Pradesh

RICE RESIDUE BURNING IN MADHYA PRADESH



74 burning events detected in MP on (29th Nov 2022)

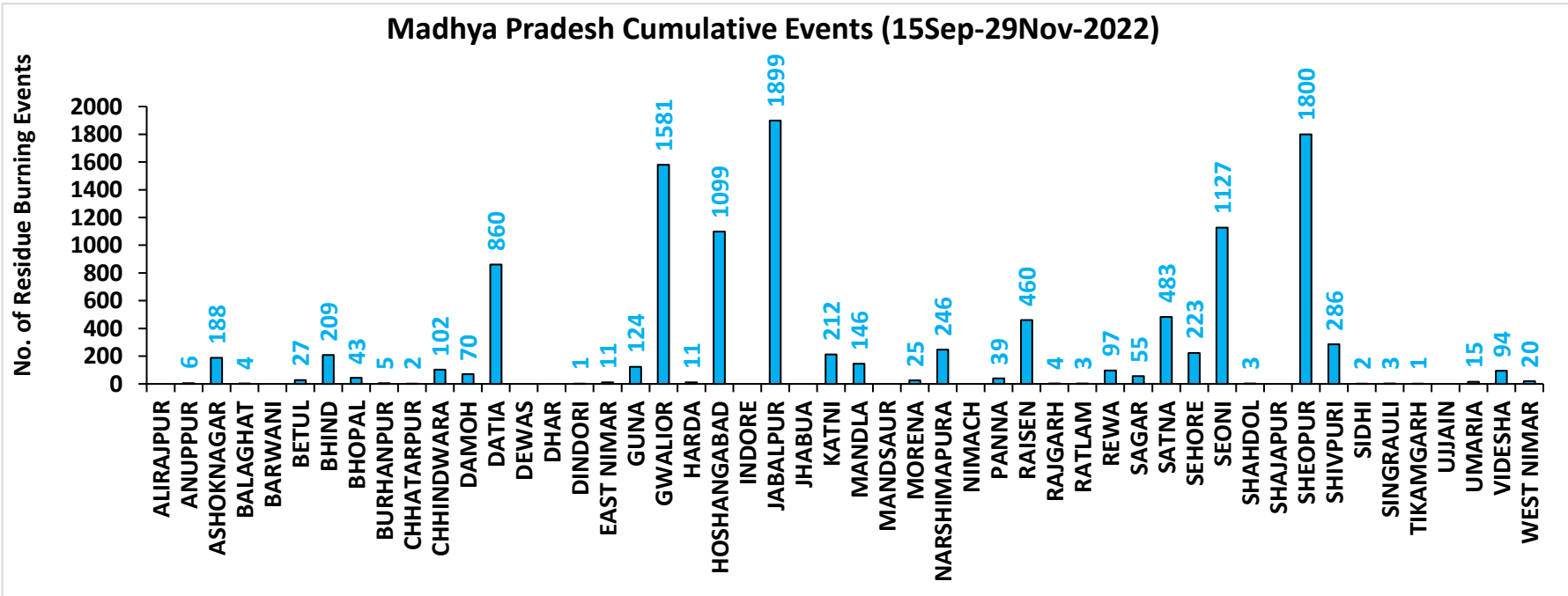
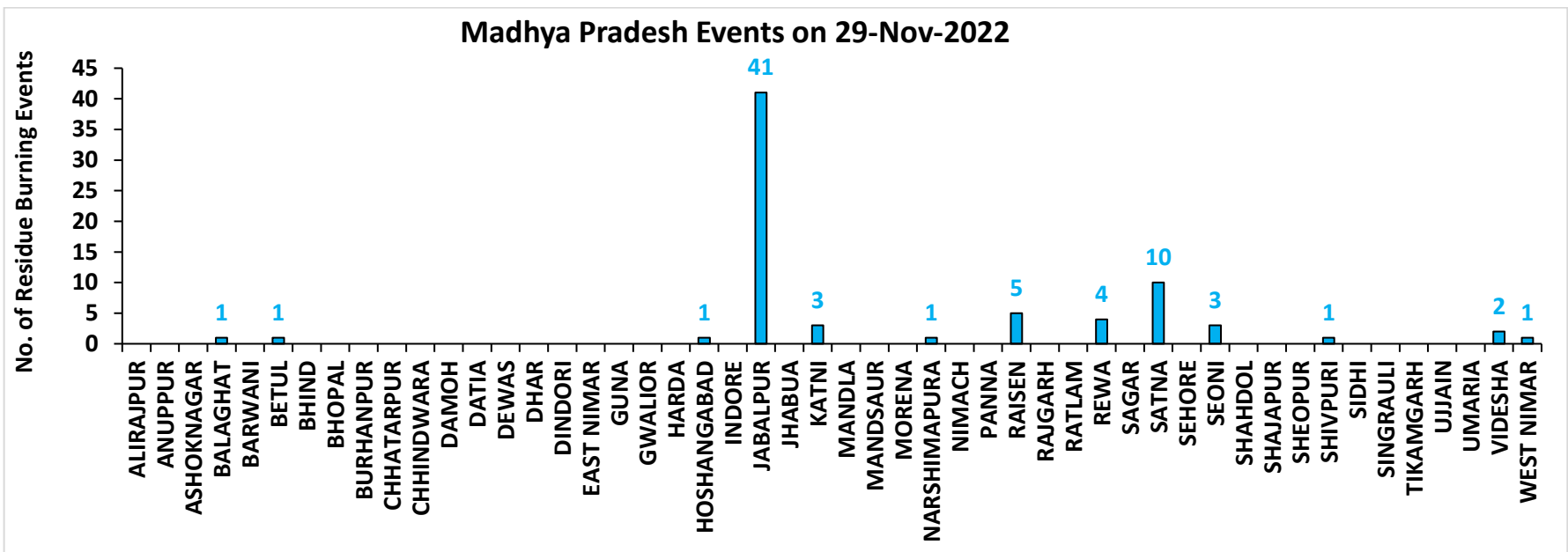
Fire Intensity (W/m²)

- 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- 29Nov-2022)



District-wise cumulative number of residues burning events detected in 2020 ,2021 and 2022
(Period: 15 September-29 November)

(a) Punjab

District	15 Sep-29 Nov 2022		
	2020	2021	2022
Amritsar	3066	2174	1542
Barnala	5342	4326	2910
Bathinda	5238	4481	4592
Faridkot	4734	3953	2693
Fatehgarh Sahib	1536	1723	1149
Fazilka	2612	2389	2593
Firozpur	8525	6289	4558
Gurdaspur	2130	1395	847
Hoshiarpur	387	331	258
Jalandhar	1949	2548	1387
Kapurthala	1885	1797	1279
Ludhiana	5062	5815	2681
Mansa	3786	3217	2815
Moga	7418	6515	3609
Muktsar	5071	4598	3879
Pathankot	13	6	1
Patiala	6433	5426	3395
Rupnagar	205	307	246
Sangrur	11726	9389	5916
SAS NAGAR (Mohali)	127	148	103
SBS Nagar	131	355	270
Tarn Taran	5605	4117	3184
Total	82981	71299	49907

(b) Haryana

District	15 Sep-29 Nov 2022		
	2020	2021	2022
AMBALA	346	307	224
BHIWANI	5	12	9
CHARKHI DADRI	0	0	1
FARIDABAD	1	3	1
FATEHABAD	878	1477	766
GURGAON	0	0	0
HISAR	56	241	115
JHAJJAR	6	7	8
JIND	346	915	531
KAITHAL	840	1155	641
KARNAL	591	955	300
KURUKSHETRA	406	538	301
MAHENDRAGARH	0	0	0
MEWAT	0	0	0
PALWAL	46	115	51
PANCHKULA	0	0	0
PANIPAT	53	252	83
REWARI	0	0	0
ROHTAK	50	78	66
SIRSA	347	549	305
SONIPAT	71	218	91
YAMUNANAGAR	143	147	154
Total	4185	6969	3647

(c) Uttar Pradesh

District	15 Sep-29 Nov 2022										
	2020	2021	2022	GAUTAMBUDHNAGAR	16	19	11	MUZAFARNAGAR	60	40	27
AGRA	7	0	0	GAZIPUR	31	30	30	PILHIBHIT	31	223	150
ALIGARH	113	40	44	GHAZIABAD	28	17	11	PRATAPGARH	44	43	32
ALLAHABAD	44	46	18	GONDA	12	13	1	RAIBEARELI	46	104	54
AMBEDKARNAGAR	46	40	46	GORAKHPUR	46	38	44	RAMPUR	165	193	106
AMETHI	11	33	23	HAMIRPUR	6	0	0	SAMBHAL	21	21	14
AMROHA	21	10	8	HAPUR	42	21	14	SANTKABIRNAGAR	32	24	16
AURAIYA	103	81	66	HARDOI	111	119	81	SANTRAVIDASNAGAR	4	6	5
AZAMGARH	65	43	29	HATHRAS	0	0	2	SHAHJAHANPUR	154	423	322
BADAUN	15	19	9	JALAUN	50	0	0	SHAMLI	50	48	22
BAGHPAT	24	23	15	JAUNPUR	52	44	35	SAHARANPUR	106	88	28
BAHRAICH	110	60	23	JHANSI	378	173	122	SHRAWASTI	48	45	18
BALLIA	161	85	57	KANNAUJ	33	6	8	SIDDHARTHANAGAR	76	140	44
BALRAMPUR	69	21	13	KANPUR	40	39	30	SITAPUR	79	56	39
BANDA	47	15	22	KANPUR DEHAT	98	53	63	SONBHADRA	0	2	0
BARABANKI	36	73	59	KASGANJ	3	2	3	SULTANPUR	14	40	31
BAREILLY	91	69	70	KAUSHAMBI	101	92	51	UNNAO	50	34	38
BASTI	58	53	21	KHERI	198	184	156	VARANASI	2	5	0
BIJNOR	53	53	18	KUSHINAGAR	87	61	55	Total	4425	4216	2837
BULANDSAHAR	69	15	25	LALITPUR	3	6	3				
CHANDAULI	39	24	11	LUCKNOW	35	34	16				
CHITRAKOOT	19	9	15	MAHARAJGANJ	58	209	183				
DEORIA	87	41	44	MAHOBA	27	0	0				
ETAH	17	10	8	MAINPURI	68	52	43				
ETAWAH	90	108	67	MATHURA	161	240	30				
FAIZABAD	16	13	8	MAU	42	23	13				
FARRUKHABAD	7	4	1	MEERUT	95	60	37				
FATEHPUR	132	108	102	MIRZAPUR	12	18	7				
FIROZABAD	27	17	10	MORADABAD	33	15	10				

(d) Delhi

District	15 Sep-29 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-29 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	5	13	8
CHURU	0	0	0
DAUSA	1	0	0
DHOLPUR	0	0	0
DUNGARPUR	0	0	2
GANGANAGAR	225	142	104
HANUMANGARH	948	990	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	12	0	0
PRATAPGARH	8	0	0
RAJSMAND	1	0	0
SIKAR	1	0	0
SIROHI	3	0	0
SWAIMADHOPUR	65	34	55
TONK	5	0	0
UDAIPUR	2	1	3
Total	1750	1341	1267

(f) Madhya Pradesh

District	15 Sep-29 Nov 2022						
	2020	2021	2022	PANNA	50	23	39
ALIRAJPUR	0	0	0	RAISEN	615	361	460
ANUPPUR	3	2	6	RAJGARH	12	3	5
ASHOKNAGAR	156	90	188	RATLAM	10	7	3
BALAGHAT	9	6	4	REWA	138	120	97
BARWANI	6	0	0	SAGAR	28	31	55
BETUL	37	16	27	SATNA	576	526	483
BHIND	268	159	209	SEHORE	164	153	223
BHOPAL	52	40	43	SEONI	1233	894	1127
BURHANPUR	16	3	5	SHAHDOL	3	1	3
CHHATARPUR	9	0	2	SHAJAPUR	22	0	0
CHHINDWARA	136	59	102	SHEOPUR	1861	1011	1800
DAMOH	75	53	70	SHIVPURI	393	112	286
DATIA	1188	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	18	0	0
EAST NIMAR	23	7	11	UMARIA	9	11	15
GUNA	70	12	124	VIDESHA	145	123	94
GWALIOR	2057	848	1581	WEST NIMAR	68	12	20
HARDA	14	21	11	Total	14107	8146	11586
HOSHANGABAD	1060	1067	1099				
INDORE	4	0	0				
JABALPUR	2656	1419	1898				
JHABUA	0	0	0				
KATNI	326	119	212				
MANDLA	152	118	146				
MANDSAUR	14	0	0				
MORENA	62	37	25				
NARSHIMAPURA	304	171	246				
NIMACH	2	0	0				

State-wise and date-wise number of paddy residue burning events detected in 2020, 2021 and 2022
(Period: 15 September - 29 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
29-Nov	55	8	8	65	14	5	247	101	101	0	0	0	44	7	0	83	95	74
Total	82981	71299	49907	4185	6969	3647	4425	4216	2837	9	4	10	1750	1341	1267	14107	8146	11586

Details of residue burning events in Punjab on 29-Nov-2022

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m2)
1	FATEHGARH SAHIB	KHERA	S-NPP	30.68518	76.55032	13:32:00	D	34.00
2	FAZILKA	ABOHAR	S-NPP	30.05636	74.13356	13:32:00	D	37.00
3	FAZILKA	ARNIWALA SHEIKH SUBANPUR	S-NPP	30.32585	74.28886	13:32:00	D	15.00
4	FIROZPUR	GURUHAR SAHAI	S-NPP	30.71213	74.31797	13:32:00	D	50.00
5	FIROZPUR	ZIRA	S-NPP	31.01756	75.07503	13:32:00	D	19.00
6	JALANDHAR	PHILLAUR	AQUA	31.05800	75.91300	13:24:11	D	11.00
7	KAPURTHALA	KAPURTHALA	S-NPP	31.30502	75.34194	13:32:00	D	47.50
8	MANSA	JHUNIR	S-NPP	29.87670	75.30797	13:32:00	D	23.00

Details of residue burning events in Haryana on 29-Nov-2022

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m2)
1	FATEHABAD	BHATTU KALAN	S-NPP	29.51737	75.33709	13:32:00	D	31.00
2	KURUKSHETRA	LADWA	S-NPP	29.95755	77.01620	13:32:00	D	19.00
3	PANIPAT	BAPPAULI	S-NPP	29.22991	77.08414	13:32:00	D	29.00
4	ROHTAK	MEHAM	S-NPP	28.91550	76.45326	13:32:00	D	23.00
5	SIRSA	ODHAN	S-NPP	29.90504	74.94714	02:25:21	N	5.50

Details of residue burning events in Uttar Pradesh on 29-Nov-2022

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m ²)
1	AMBEDKARNAGAR	AKBARPUR	AQUA	26.41200	82.40100	13:24:11	D	4.40
2	AMBEDKARNAGAR	AKBARPUR	S-NPP	26.34246	82.59798	02:25:21	N	0.20
3	AMBEDKARNAGAR	AKBARPUR	S-NPP	26.46310	82.65529	13:32:00	D	15.00
4	AMBEDKARNAGAR	JALALPUR	AQUA	26.39500	82.72800	13:24:11	D	6.40
5	AMBEDKARNAGAR	JALALPUR	AQUA	26.39600	82.73800	13:24:11	D	18.90
6	AMBEDKARNAGAR	JALALPUR	S-NPP	26.29242	82.82029	13:32:00	D	19.00
7	AMBEDKARNAGAR	JALALPUR	S-NPP	26.33734	82.77176	13:32:00	D	22.00
8	AMBEDKARNAGAR	TANDA	S-NPP	26.50801	82.75721	13:32:00	D	28.00
9	AMETHI	GAURIGANJ	AQUA	26.18800	81.63400	13:24:11	D	7.60
10	AMETHI	GAURIGANJ	S-NPP	26.27445	81.59736	13:32:00	D	21.00
11	AURAIYA	AURAIYA	S-NPP	26.56191	79.54942	13:32:00	D	18.00
12	AURAIYA	BIDHUNA	AQUA	26.74600	79.60800	13:24:11	D	5.90
13	AURAIYA	BIDHUNA	S-NPP	26.70564	79.67560	13:32:00	D	15.00
14	AURAIYA	BIDHUNA	S-NPP	26.75056	79.60766	13:32:00	D	36.00
15	BADAUN	BADAUN	AQUA	27.87500	79.03600	13:24:11	D	22.20
16	BADAUN	BADAUN	S-NPP	28.02617	79.08354	13:32:00	D	32.00
17	BALLIA	BELTHARA ROAD	S-NPP	26.03191	83.69382	13:32:00	D	26.00
18	BALLIA	RASRA	AQUA	25.85200	83.79500	13:24:11	D	5.10
19	BALLIA	RASRA	S-NPP	25.85224	83.80058	13:32:00	D	27.00
20	BALLIA	SIKANDARPUR	AQUA	25.94500	84.01500	13:24:11	D	5.40
21	BALRAMPUR	UTRAULA	S-NPP	27.11887	82.40294	13:32:00	D	19.00
22	BARABANKI	SIRAULI GAUSPUR	S-NPP	27.01107	81.51000	13:32:00	D	54.00
23	BAREILLY	AONLA	AQUA	28.35300	79.30300	13:24:11	D	5.90
24	BAREILLY	BAHERI	AQUA	28.79800	79.52400	13:24:11	D	9.40
25	BAREILLY	MIRGANJ	S-NPP	28.43939	79.26795	13:32:00	D	16.00
26	BASTI	BASTI	S-NPP	26.67869	82.68441	13:32:00	D	21.00
27	BIJNOR	NAGINA	S-NPP	29.51737	78.45266	13:32:00	D	19.00
28	BULANDSAHAR	ANUP SHAHR	AQUA	28.37900	78.18800	13:24:11	D	11.10
29	CHANDAULI	SHAKALDIHA	AQUA	25.38300	83.45600	13:24:11	D	8.00

30	CHANDAULI	SHAKALDIHA	S-NPP	25.38512	83.46088	13:32:00	D	45.00
31	CHITRAKOOT	KARWI	AQUA	25.50000	81.06100	13:24:11	D	17.30
32	CHITRAKOOT	KARWI	AQUA	25.50200	81.07100	13:24:11	D	4.90
33	CHITRAKOOT	KARWI	S-NPP	25.50190	81.06354	13:32:00	D	32.00
34	DEORIA	DEORIA	S-NPP	26.42717	83.77147	13:32:00	D	20.00
35	DEORIA	DEORIA	S-NPP	26.68768	83.81029	13:32:00	D	16.00
36	ETAWAH	BHARTHNA	AQUA	26.63800	79.21100	13:24:11	D	8.90
37	ETAWAH	BHARTHNA	S-NPP	26.61581	79.21942	13:32:00	D	22.00
38	FAIZABAD	FAIZSBAD	AQUA	26.57300	82.43100	13:24:11	D	4.70
39	FATEHPUR	BINKI	S-NPP	26.01394	80.73354	13:32:00	D	48.00
40	FATEHPUR	FATEHPUR	AQUA	25.98700	80.79700	13:24:11	D	6.30
41	FATEHPUR	FATEHPUR	AQUA	25.99500	80.80000	13:24:11	D	5.10
42	FATEHPUR	FATEHPUR	S-NPP	25.74445	80.89854	13:32:00	D	16.00
43	FATEHPUR	FATEHPUR	S-NPP	25.97801	80.82089	13:32:00	D	15.00
44	GAZIPUR	JAKHANIA	S-NPP	25.70851	83.44147	13:32:00	D	18.00
45	GAZIPUR	ZAMANIA	AQUA	25.47000	83.82100	13:24:11	D	9.80
46	GHAZIABAD	MODINAGAR	AQUA	28.79000	77.48100	13:24:11	D	10.70
47	GHAZIABAD	MODINAGAR	S-NPP	28.75380	77.64708	13:32:00	D	53.00
48	GORAKHPUR	GORAKHPUR	AQUA	26.79600	83.50500	13:24:11	D	4.70
49	GORAKHPUR	GORAKHPUR	AQUA	26.80500	83.50300	13:24:11	D	7.30
50	GORAKHPUR	GORAKHPUR	S-NPP	26.79997	83.51426	13:32:00	D	21.00
51	GORAKHPUR	GORAKHPUR	S-NPP	26.83141	83.48029	13:32:00	D	27.00
52	HAPUR	GARHMUKTESAR	S-NPP	28.85262	78.04502	13:32:00	D	33.00
53	HARDOI	HARDOI	AQUA	27.54600	80.19100	13:24:11	D	5.00
54	JAUNPUR	SHHGANJ	AQUA	26.00500	82.64000	13:24:11	D	5.20
55	JAUNPUR	SHHGANJ	S-NPP	26.08581	82.64559	13:32:00	D	29.00
56	JHANSI	MOTH	S-NPP	25.69953	78.95737	13:32:00	D	18.00
57	JHANSI	MOTH	S-NPP	25.77033	78.81777	02:25:21	N	0.30
58	KANNAUJ	CHHIBRAMAU	S-NPP	26.95717	79.51060	13:32:00	D	21.00
59	KANPUR DEHAT	AKBARPUR	S-NPP	26.30589	79.97648	13:32:00	D	34.50
60	KANPUR DEHAT	AKBARPUR	S-NPP	26.49005	79.91825	13:32:00	D	23.00
61	KANPUR DEHAT	RASULABAD	S-NPP	26.63378	79.96677	13:32:00	D	19.00
62	KAUSHAMBI	MANJHANPUR	AQUA	25.50900	81.28700	13:24:11	D	5.20
63	KAUSHAMBI	MANJHANPUR	S-NPP	25.48394	81.27706	13:32:00	D	16.00

64	KHERI	GOLA	AQUA	28.14700	80.37900	13:24:11	D	6.30
65	KHERI	MOHMADI	AQUA	27.92400	80.17900	13:24:11	D	4.60
66	KHERI	MOHMADI	S-NPP	27.84650	80.27736	13:32:00	D	47.00
67	KHERI	NIGHASAN	S-NPP	28.32261	80.76265	13:32:00	D	37.00
68	KUSHINAGAR	HATA	AQUA	26.80200	83.62000	13:24:11	D	8.80
69	KUSHINAGAR	HATA	AQUA	26.81100	83.61800	13:24:11	D	22.20
70	KUSHINAGAR	HATA	AQUA	26.81300	83.62800	13:24:11	D	13.90
71	KUSHINAGAR	HATA	S-NPP	26.77751	83.77147	13:32:00	D	20.00
72	KUSHINAGAR	KASAYA	S-NPP	26.67869	84.05294	13:32:00	D	40.00
73	KUSHINAGAR	TAMKUHI RAJ	AQUA	26.71200	84.04200	13:24:11	D	6.00
74	LUCKNOW	LUCKNOW	S-NPP	26.70564	80.86942	13:32:00	D	26.00
75	MAHARAJGANJ	MAHARAJGANJ	AQUA	26.99000	83.65000	13:24:11	D	5.50
76	MAHARAJGANJ	MAHARAJGANJ	AQUA	27.01300	83.54000	13:24:11	D	8.50
77	MAHARAJGANJ	MAHARAJGANJ	AQUA	27.03100	83.46700	13:24:11	D	4.60
78	MAHARAJGANJ	MAHARAJGANJ	AQUA	27.13600	83.62900	13:24:11	D	4.50
79	MAHARAJGANJ	MAHARAJGANJ	AQUA	27.17200	83.56400	13:24:11	D	7.90
80	MAHARAJGANJ	MAHARAJGANJ	AQUA	27.19500	83.52800	13:24:11	D	9.00
81	MAHARAJGANJ	MAHARAJGANJ	S-NPP	26.98412	83.40264	13:32:00	D	32.00
82	MAHARAJGANJ	MAHARAJGANJ	S-NPP	27.01107	83.54823	13:32:00	D	27.00
83	MAHARAJGANJ	NICHLAUL	S-NPP	27.30752	83.66470	13:32:00	D	30.00
84	MAINPURI	BHOGAON	S-NPP	27.10989	79.19031	13:32:00	D	18.00
85	MAINPURI	KARHAL	S-NPP	27.06497	79.04472	13:32:00	D	17.00
86	MAINPURI	KARHAL	S-NPP	27.09192	79.01560	13:32:00	D	15.00
87	MEERUT	MAWANA	S-NPP	29.04126	77.86061	13:32:00	D	31.00
88	MEERUT	SARDHANA	S-NPP	29.12211	77.60340	13:32:00	D	45.00
89	MORADABAD	KANTH	S-NPP	29.08618	78.70502	13:32:00	D	37.00
90	MUZAFARNAGAR	KHATOLI	S-NPP	29.33771	77.66649	13:32:00	D	34.00
91	PRATAPGARH	KUNDA	S-NPP	25.81631	81.64589	13:32:00	D	18.00
92	PRATAPGARH	LALGANJ	S-NPP	25.94208	81.62647	13:32:00	D	23.00
93	RAIBEARELI	TILOI	S-NPP	26.32835	81.43236	13:32:00	D	18.00
94	SANTKABIRNAGAR	GHANGHATA	AQUA	26.64400	83.06000	13:24:11	D	6.00
95	SANTRAVIDASNAGAR	AURAI	S-NPP	25.29999	82.66048	00:45:04	N	1.10
96	SHAHJAHANPUR	PUWANYA	AQUA	28.27200	80.00000	13:24:11	D	6.20
97	SHAMLI	KAIRANA	AQUA	29.38100	77.24700	13:24:11	D	7.90

98	SHAMLI	KAIRANA	S-NPP	29.35567	77.23943	13:32:00	D	16.00
99	SHAMLI	SHAMLI	AQUA	29.50700	77.39600	13:24:11	D	7.30
100	SITAPUR	MISRIK	AQUA	27.46900	80.41200	13:24:11	D	4.40
101	SULTANPUR	JAISINGHPUR	AQUA	26.31100	82.40600	13:24:11	D	15.60

Details of residue burning events in Madhya Pradesh on 29-Nov-2022

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m2)
1	BALAGHAT	LANJI	AQUA	21.49700	80.44500	13:24:11	D	7.00
2	BETUL	AMLAL	S-NPP	22.02093	78.34590	13:32:00	D	20.00
3	HOSHANGABAD	BABAI	S-NPP	22.68119	77.91884	13:32:00	D	18.00
4	JABALPUR	JABALPUR	S-NPP	23.08543	80.01530	13:32:00	D	15.00
5	JABALPUR	JABALPUR	S-NPP	23.16628	79.80178	13:32:00	D	32.00
6	JABALPUR	JABALPUR	S-NPP	23.17077	79.83089	13:32:00	D	26.00
7	JABALPUR	JABALPUR	S-NPP	23.25611	79.86972	13:32:00	D	19.00
8	JABALPUR	JABALPUR	S-NPP	23.26210	79.93766	13:32:00	D	31.67
9	JABALPUR	JABALPUR	S-NPP	23.31900	79.95222	13:32:00	D	42.00
10	JABALPUR	JABALPUR	S-NPP	23.31900	79.98619	13:32:00	D	28.00
11	JABALPUR	JABALPUR	S-NPP	23.33696	79.95707	13:32:00	D	17.00
12	JABALPUR	JABALPUR	S-NPP	23.33696	80.06383	13:32:00	D	21.00
13	JABALPUR	JABALPUR	S-NPP	23.36391	79.92795	13:32:00	D	35.00
14	JABALPUR	JABALPUR	AQUA	23.26200	79.93300	13:24:11	D	9.60
15	JABALPUR	JABALPUR	AQUA	23.28700	79.95900	13:24:11	D	22.30
16	JABALPUR	JABALPUR	AQUA	23.28900	79.84700	13:24:11	D	6.40
17	JABALPUR	JABALPUR	AQUA	23.30300	79.93100	13:24:11	D	10.20
18	JABALPUR	MAJHOULI	S-NPP	23.45374	80.01530	13:32:00	D	52.00
19	JABALPUR	MAJHOULI	S-NPP	23.47171	80.05413	13:32:00	D	16.00
20	JABALPUR	MAJHOULI	AQUA	23.35200	79.98300	13:24:11	D	12.10
21	JABALPUR	MAJHOULI	AQUA	23.45500	80.04200	13:24:11	D	22.30
22	JABALPUR	MAJHOULI	AQUA	23.45700	80.05400	13:24:11	D	18.60
23	JABALPUR	MAJHOULI	AQUA	23.49000	80.06600	13:24:11	D	7.20
24	JABALPUR	MAJHOULI	AQUA	23.54500	79.97000	13:24:11	D	6.00
25	JABALPUR	MAJHOULI	AQUA	23.54600	79.96300	13:24:11	D	9.50
26	JABALPUR	PATAN	S-NPP	23.22018	79.83089	13:32:00	D	30.00
27	JABALPUR	PATAN	S-NPP	23.23815	79.73383	13:32:00	D	18.00
28	JABALPUR	PATAN	S-NPP	23.23815	79.79207	13:32:00	D	54.00
29	JABALPUR	PATAN	S-NPP	23.23815	79.82604	13:32:00	D	28.50

30	JABALPUR	PATAN	S-NPP	23.24713	79.75325	13:32:00	D	30.00
31	JABALPUR	PATAN	S-NPP	23.25611	79.81148	13:32:00	D	24.00
32	JABALPUR	PATAN	S-NPP	23.26510	79.78236	13:32:00	D	31.00
33	JABALPUR	PATAN	S-NPP	23.31001	79.80178	13:32:00	D	20.00
34	JABALPUR	PATAN	S-NPP	23.32798	79.80178	13:32:00	D	38.00
35	JABALPUR	PATAN	AQUA	23.21200	79.69100	13:24:11	D	10.00
36	JABALPUR	PATAN	AQUA	23.23300	79.81400	13:24:11	D	9.40
37	JABALPUR	PATAN	AQUA	23.24500	79.76800	13:24:11	D	12.90
38	JABALPUR	PATAN	AQUA	23.26100	79.73900	13:24:11	D	22.40
39	JABALPUR	PATAN	AQUA	23.26300	79.75200	13:24:11	D	34.00
40	JABALPUR	SAHPURA	AQUA	23.09800	79.80900	13:24:11	D	10.80
41	JABALPUR	SAHPURA	AQUA	23.18900	79.79700	13:24:11	D	5.00
42	JABALPUR	SIHORA	S-NPP	23.38188	80.01530	13:32:00	D	24.00
43	JABALPUR	SIHORA	S-NPP	23.39984	80.17060	13:32:00	D	18.00
44	JABALPUR	SIHORA	S-NPP	23.46273	80.07354	13:32:00	D	28.00
45	KATNI	BAHURIBAND	S-NPP	23.62891	80.04442	13:32:00	D	13.50
46	KATNI	BAHURIBAND	AQUA	23.59900	79.97700	13:24:11	D	10.20
47	KATNI	DHIMERKHEDA	S-NPP	23.49866	80.24339	13:32:00	D	27.00
48	NARSHIMAPURA	NARSIMHAPUR	S-NPP	23.06747	79.29707	13:32:00	D	34.00
49	RAISEN	BARELI	S-NPP	22.93921	78.12547	02:25:21	N	0.40
50	RAISEN	BARELI	S-NPP	23.04950	78.29737	13:32:00	D	20.00
51	RAISEN	GOHARGANJ	S-NPP	23.04950	77.48208	13:32:00	D	14.00
52	RAISEN	RAISEN	S-NPP	23.30103	77.79267	13:32:00	D	14.00
53	RAISEN	RAISEN	S-NPP	23.34595	77.90914	13:32:00	D	14.00
54	REWA	TEONTHAR	S-NPP	24.97190	81.53912	13:32:00	D	24.00
55	REWA	TEONTHAR	AQUA	24.97300	81.52800	13:24:11	D	5.10
56	REWA	TEONTHAR	AQUA	24.97900	81.50600	13:24:11	D	6.30
57	REWA	TEONTHAR	AQUA	24.98300	81.53700	13:24:11	D	4.70
58	SATNA	AMARPATAN	S-NPP	24.45087	81.12177	13:32:00	D	16.00
59	SATNA	AMARPATAN	AQUA	24.37500	81.18400	13:24:11	D	5.30
60	SATNA	NAGOD	S-NPP	24.45986	80.51030	13:32:00	D	30.00
61	SATNA	NAGOD	S-NPP	24.49579	80.56854	13:32:00	D	31.00
62	SATNA	NAGOD	S-NPP	24.63952	80.59765	13:32:00	D	22.00
63	SATNA	RAGURAJNAGAR	S-NPP	24.64850	80.71412	13:32:00	D	29.00

64	SATNA	RAMPURBAGHLEAN	S-NPP	24.51376	80.96648	13:32:00	D	22.00
65	SATNA	RAMPURBAGHLEAN	S-NPP	24.53621	81.02956	13:32:00	D	52.00
66	SATNA	RAMPURBAGHLEAN	S-NPP	24.68443	81.05383	13:32:00	D	18.00
67	SATNA	RAMPURBAGHLEAN	AQUA	24.67900	81.00500	13:24:11	D	5.80
68	SEONI	GHANSAUR	S-NPP	22.39373	79.78236	13:32:00	D	14.00
69	SEONI	LAKHNADOU	S-NPP	22.35780	79.53972	13:32:00	D	15.00
70	SEONI	SEONI	S-NPP	22.12424	79.38442	13:32:00	D	19.00
71	SHIVPURI	NARWAR	S-NPP	25.64563	78.11296	13:32:00	D	18.00
72	VIDESHA	NATERAN	S-NPP	24.02866	77.78296	13:32:00	D	28.00
73	VIDESHA	VIDESHA	S-NPP	23.39086	78.04016	13:32:00	D	19.00
74	WEST NIMAR	BARWAH	S-NPP	22.29492	75.94856	13:32:00	D	12.00

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>)
