



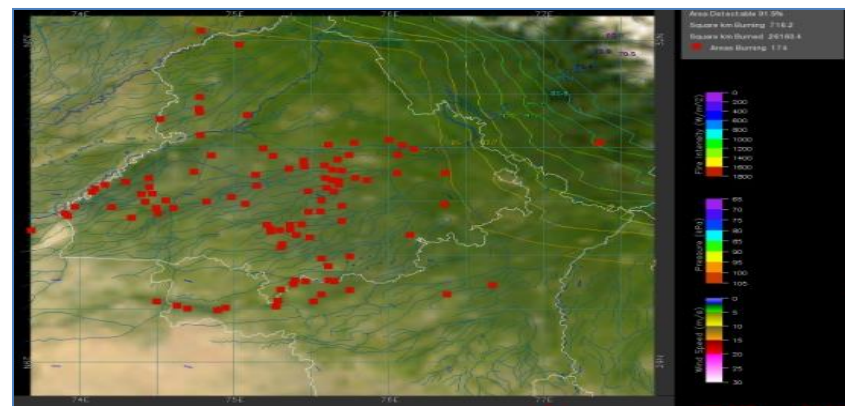
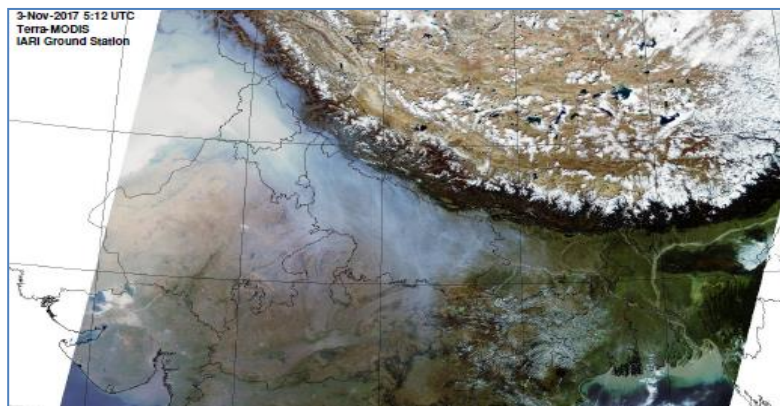
**Bulletin
No. 25**

**Events Date:
09-Oct-2023**

**Issued on:
09-Oct-2023**



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



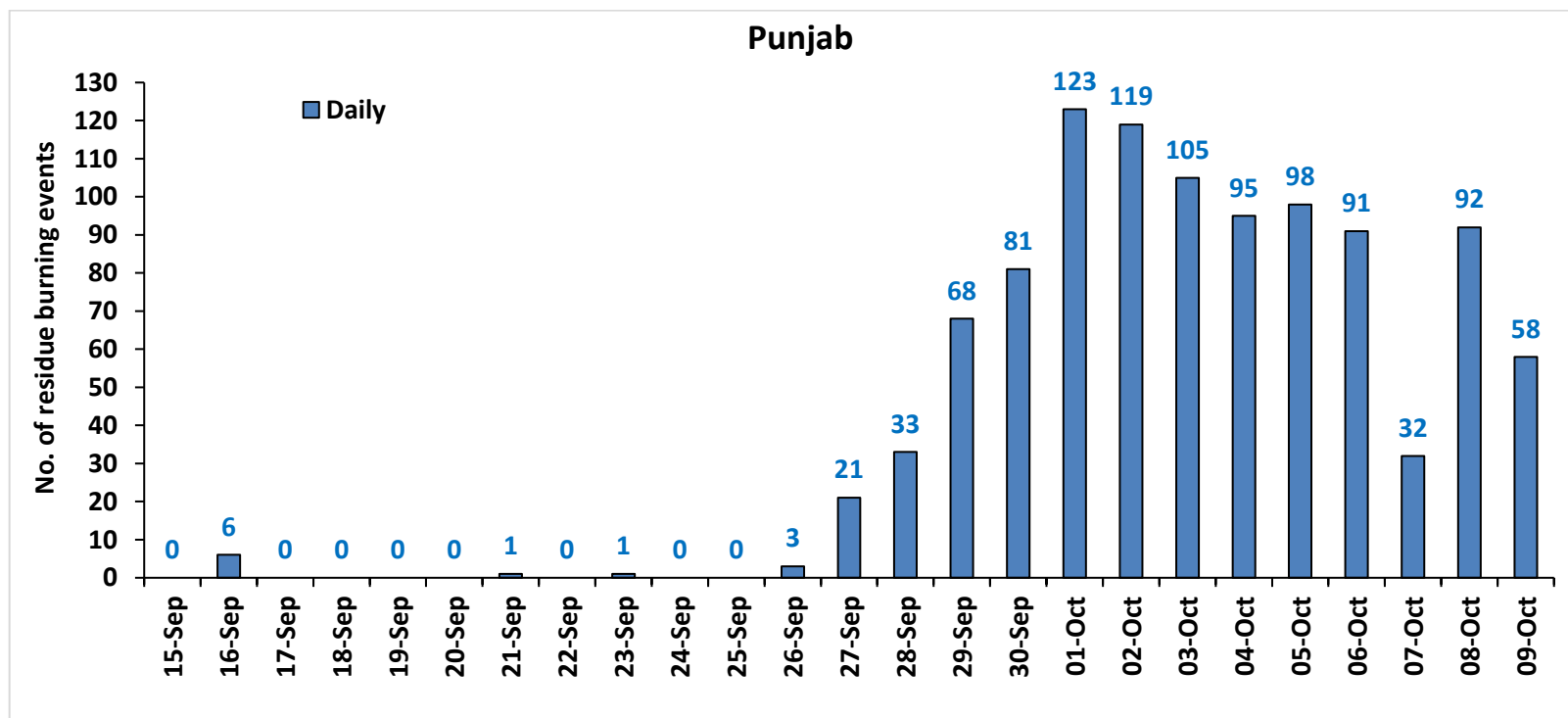
**Consortium for Research on Agroecosystem Monitoring and Modeling from Space (CREAMS) Laboratory,
Division of Agricultural Physics, ICAR – Indian Agricultural Research Institute, New Delhi – 110012**

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

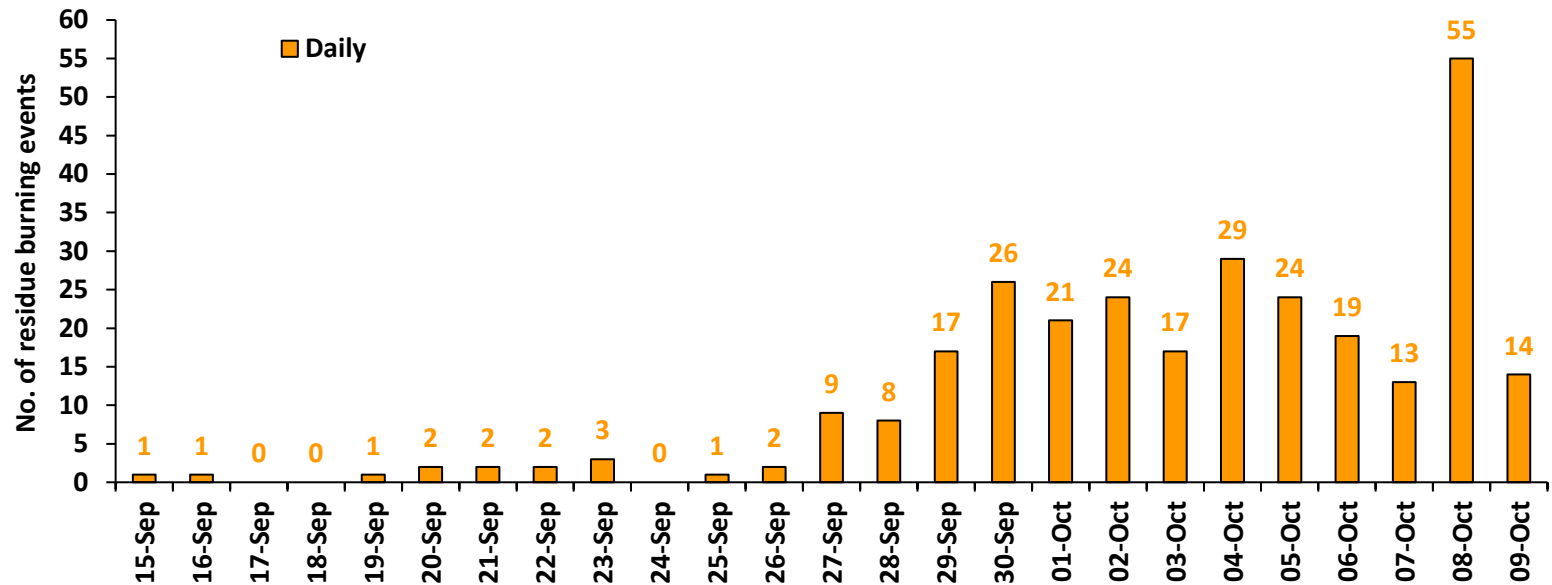
Highlights for 09-Oct-2023

- 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 **126** residue burning events in the six study States on 09-Oct-2023.
- The state wise events detected on 09-Oct-2023 were **58** in Punjab, **14** in Haryana, **13** in UP, **00** in Delhi, **17** in Rajasthan and **24** in MP.
- Total **1691** burning events were detected in the six states between 15-Sept-2023 and 09-Oct-2023, which are distributed as **1027**, **291**, **151**, **01**, **98** and **123** in Punjab, Haryana, UP, Delhi, Rajasthan and MP, respectively.

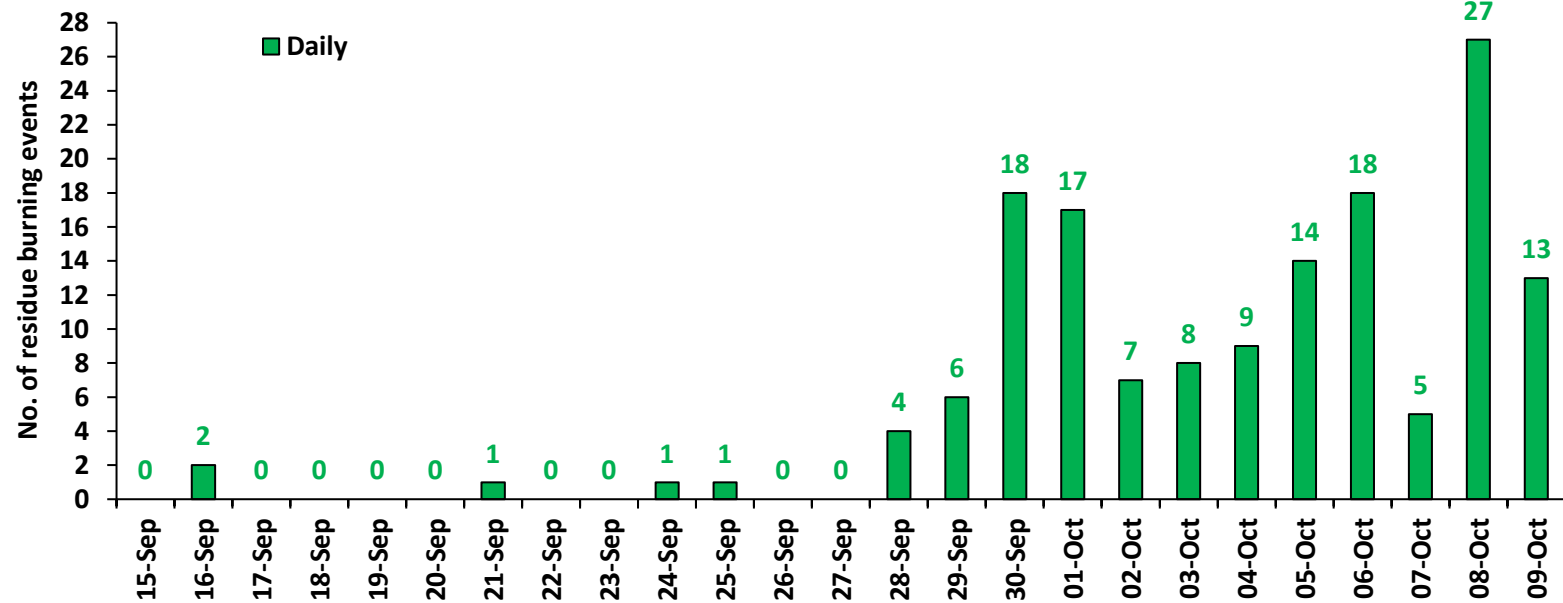
Temporal distribution of rice residue burning events for the study States in 2023

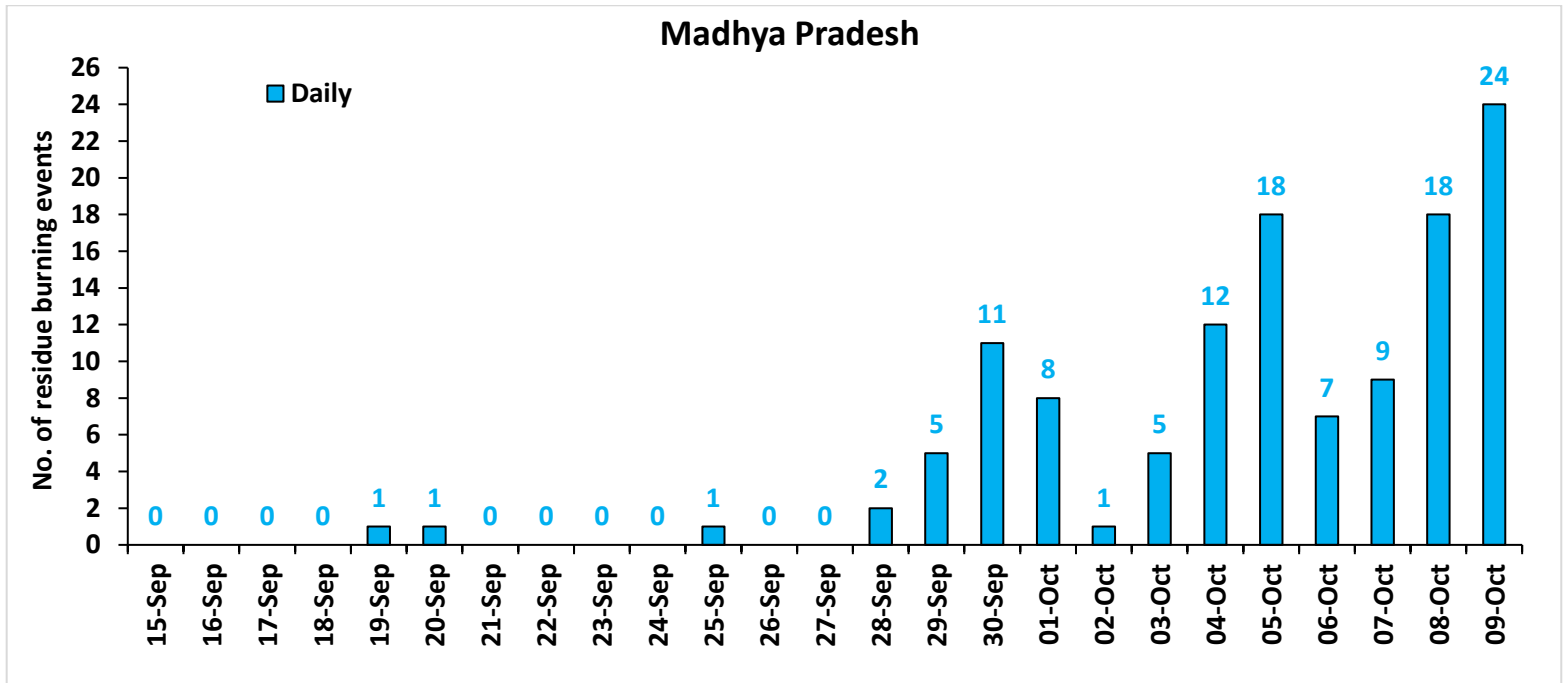
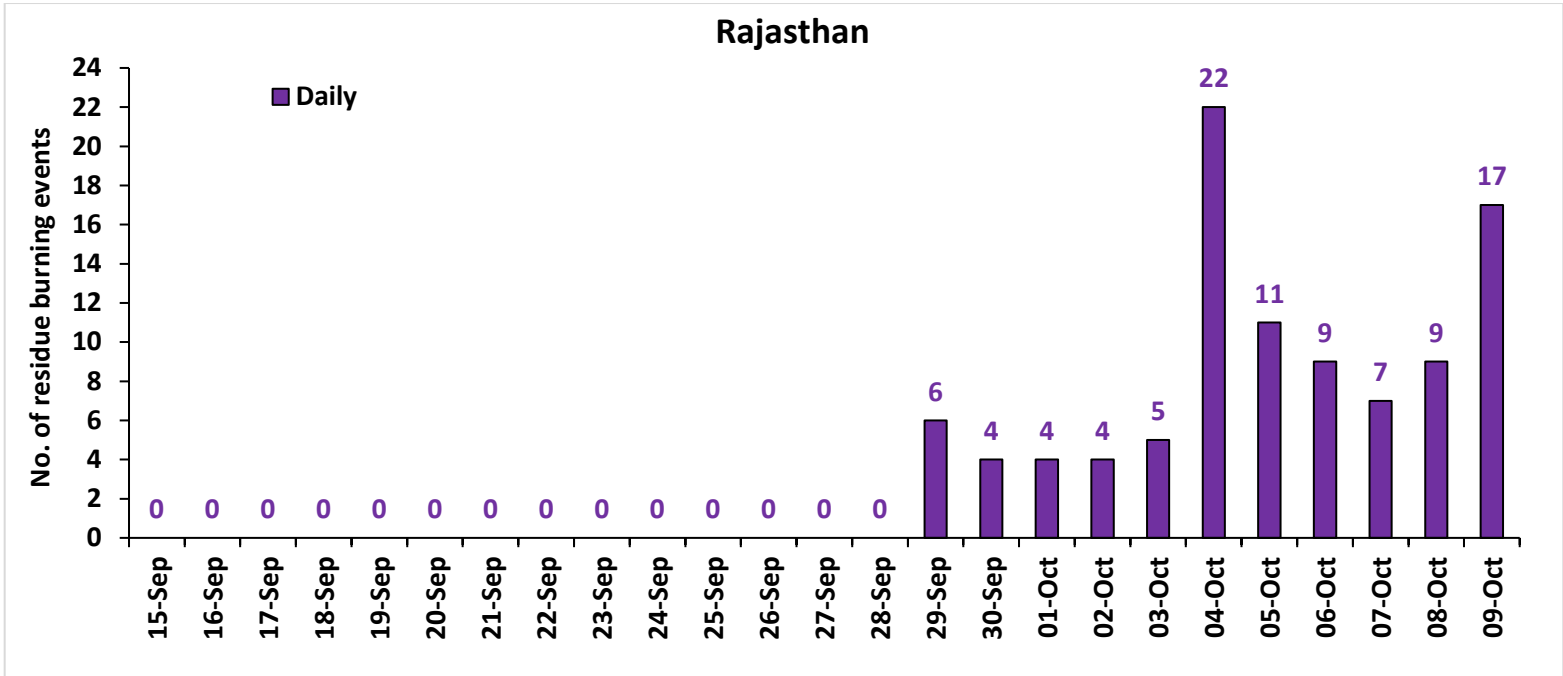


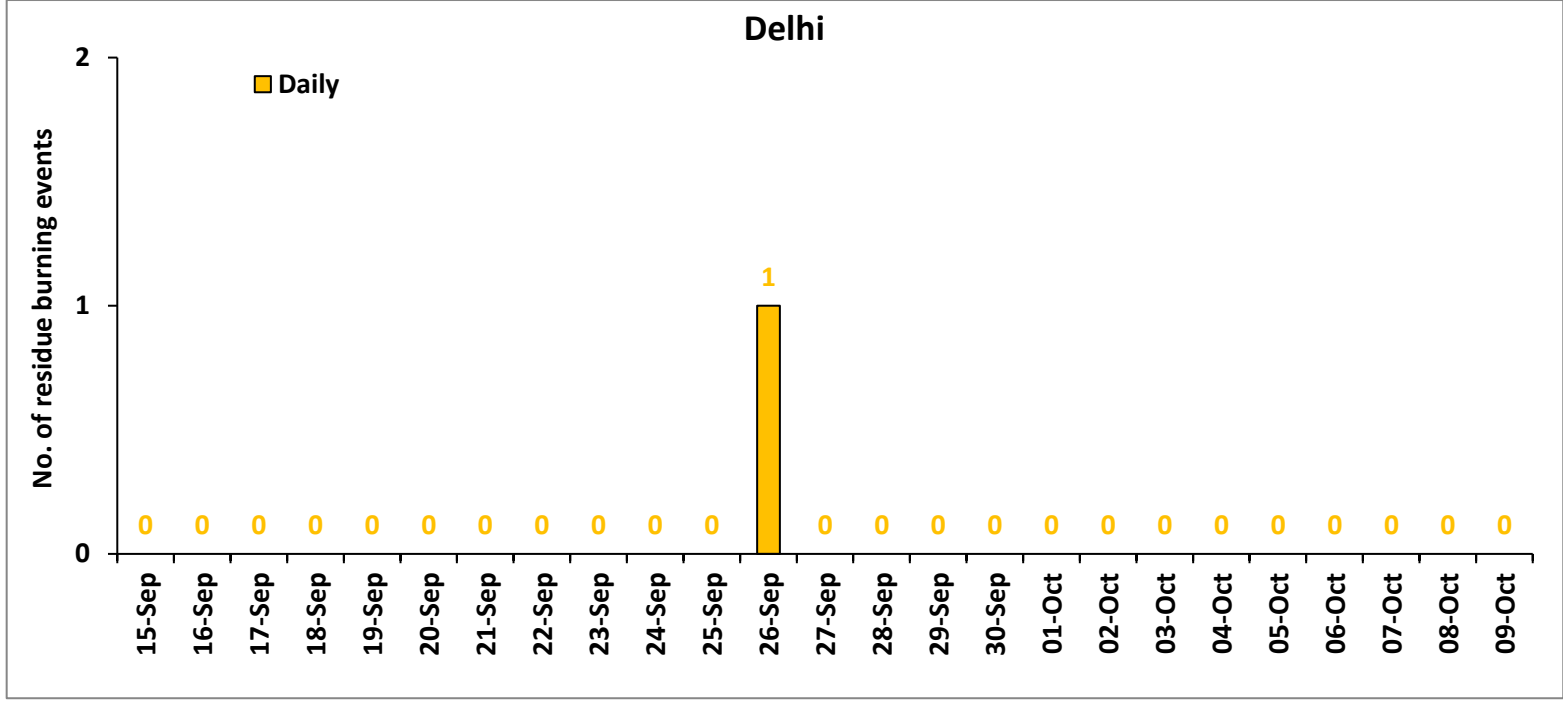
Haryana



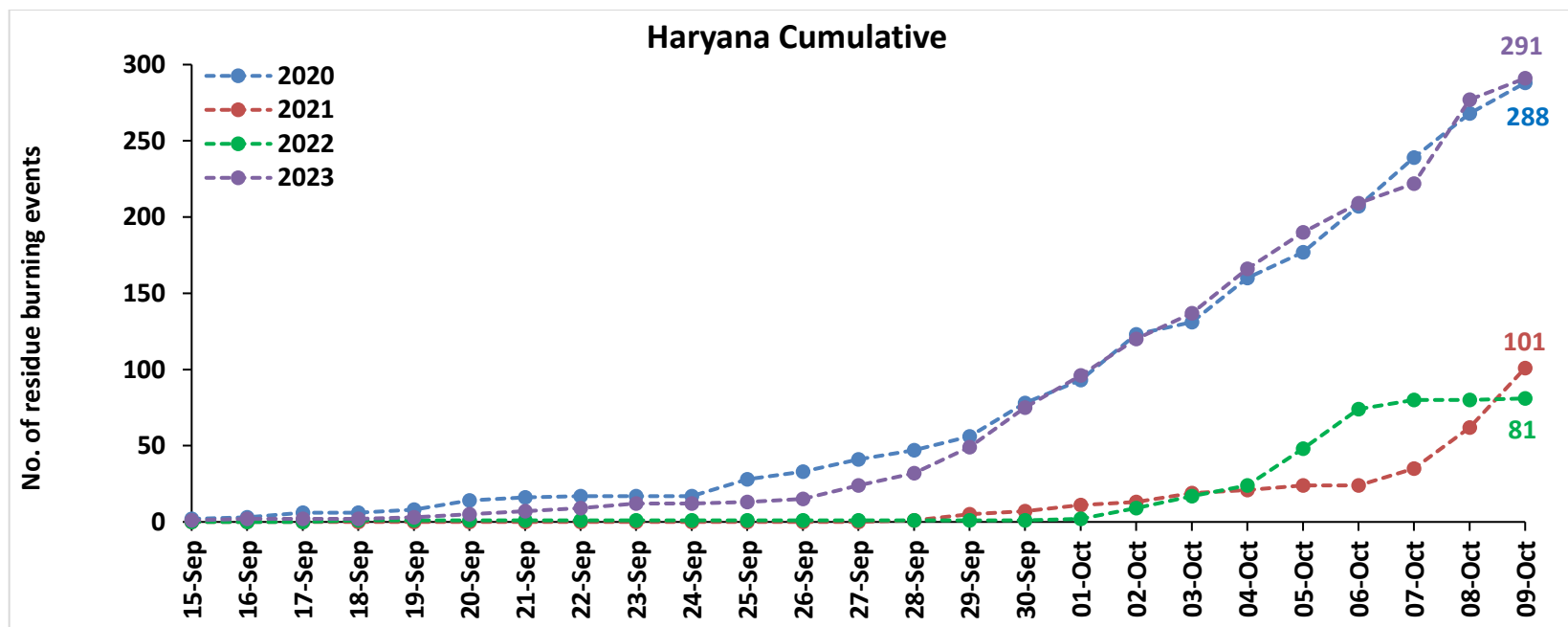
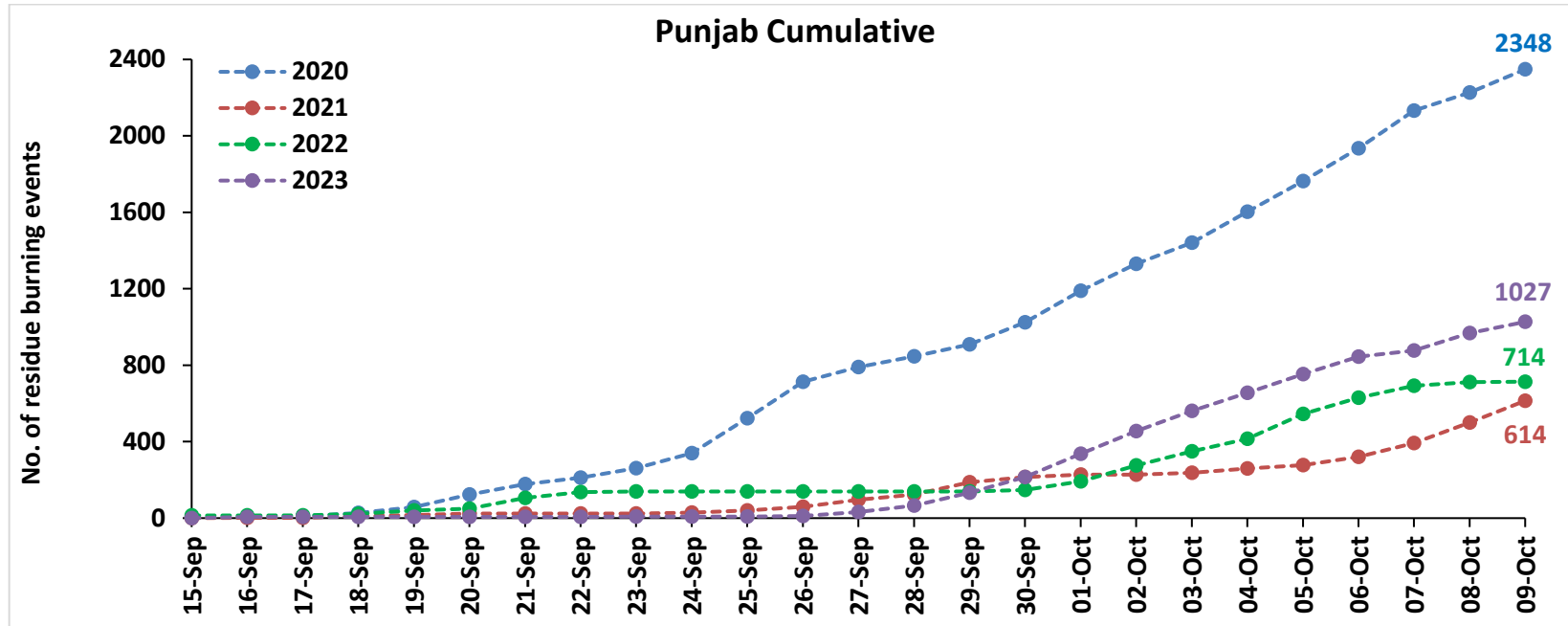
Uttar Pradesh

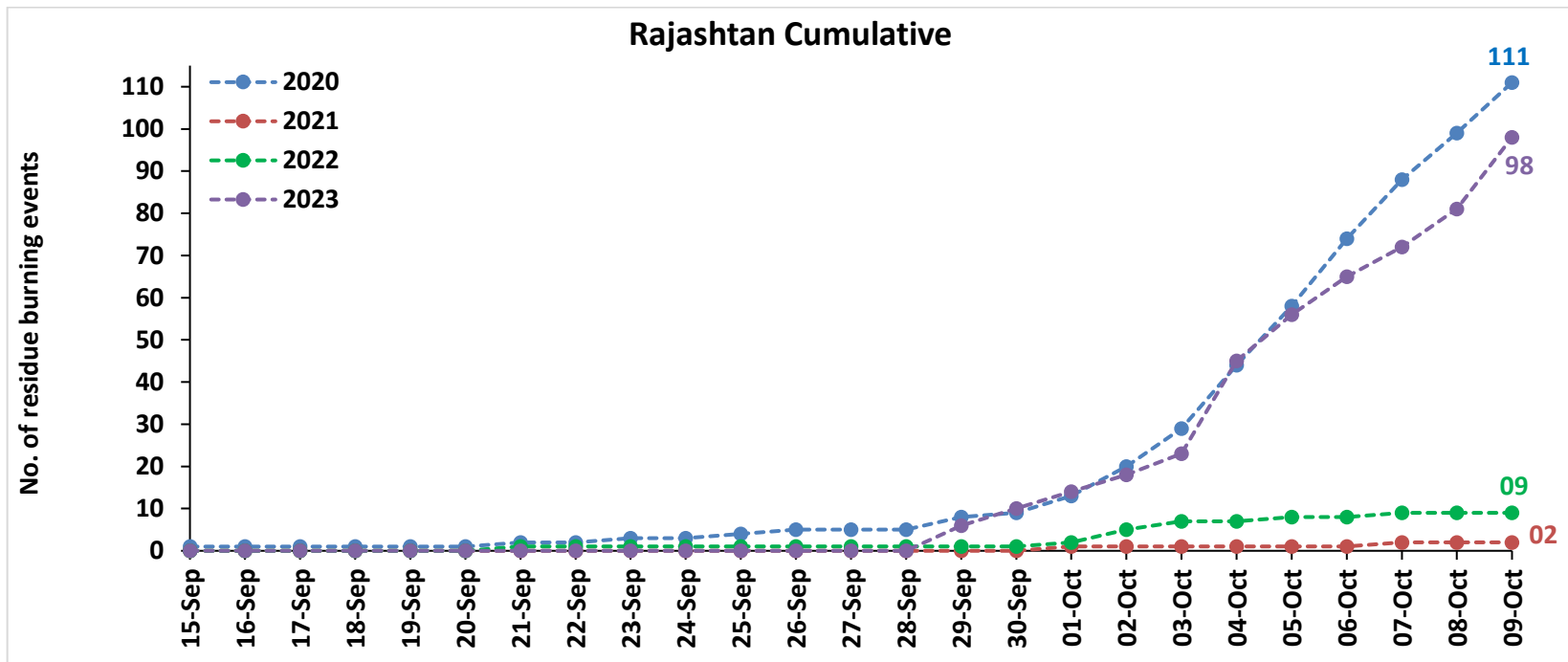
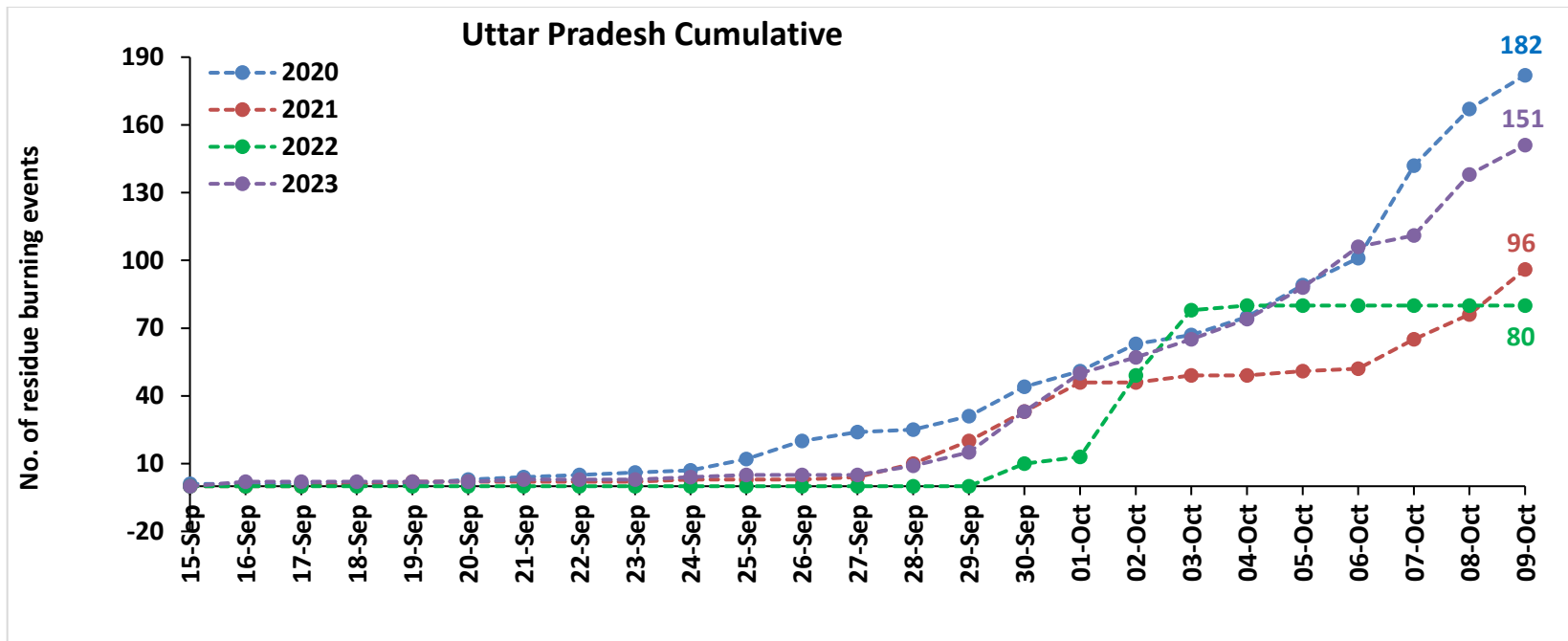


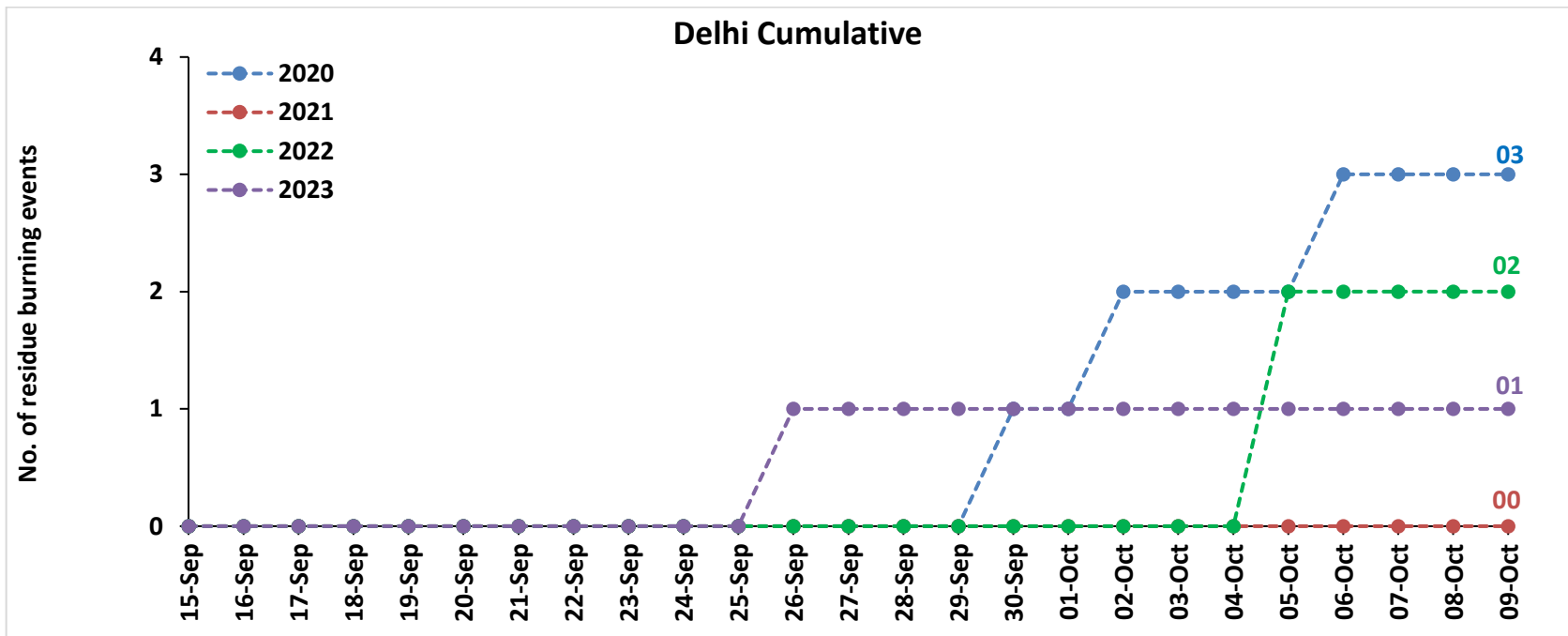
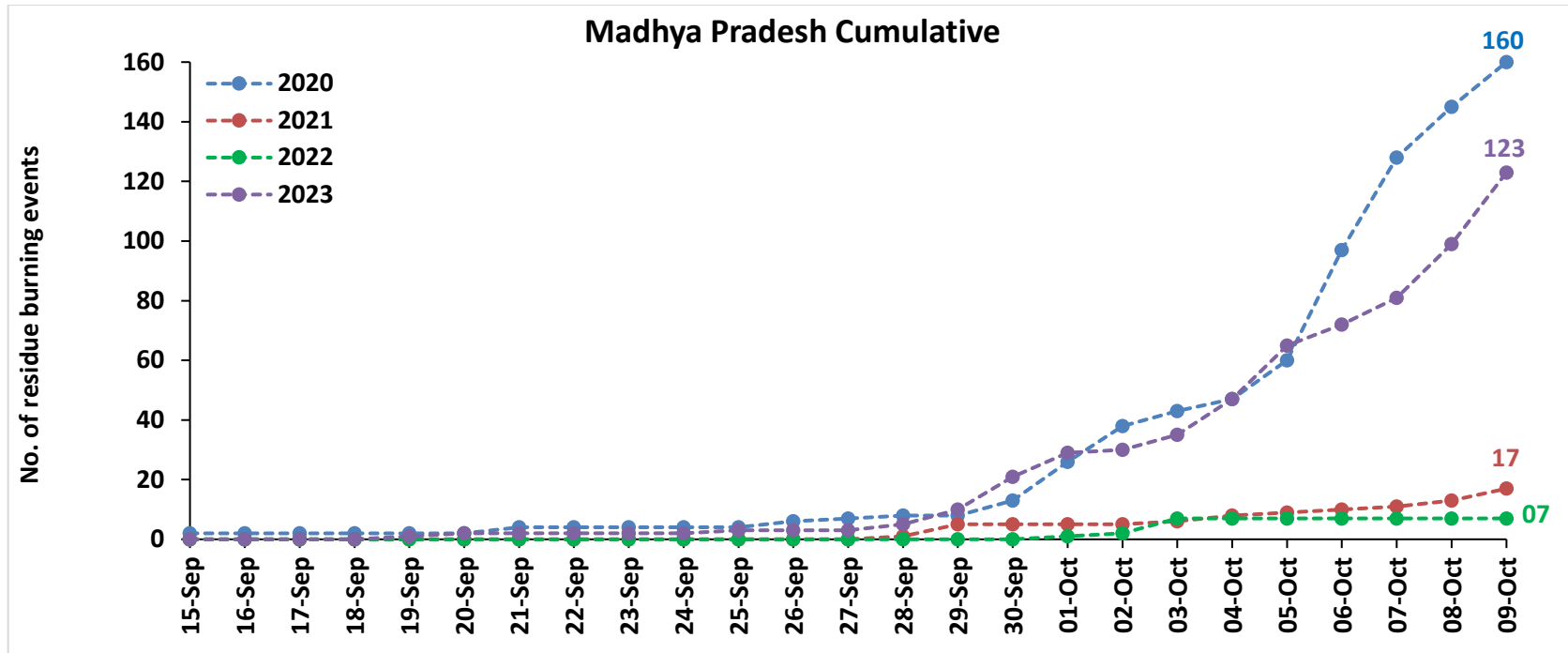




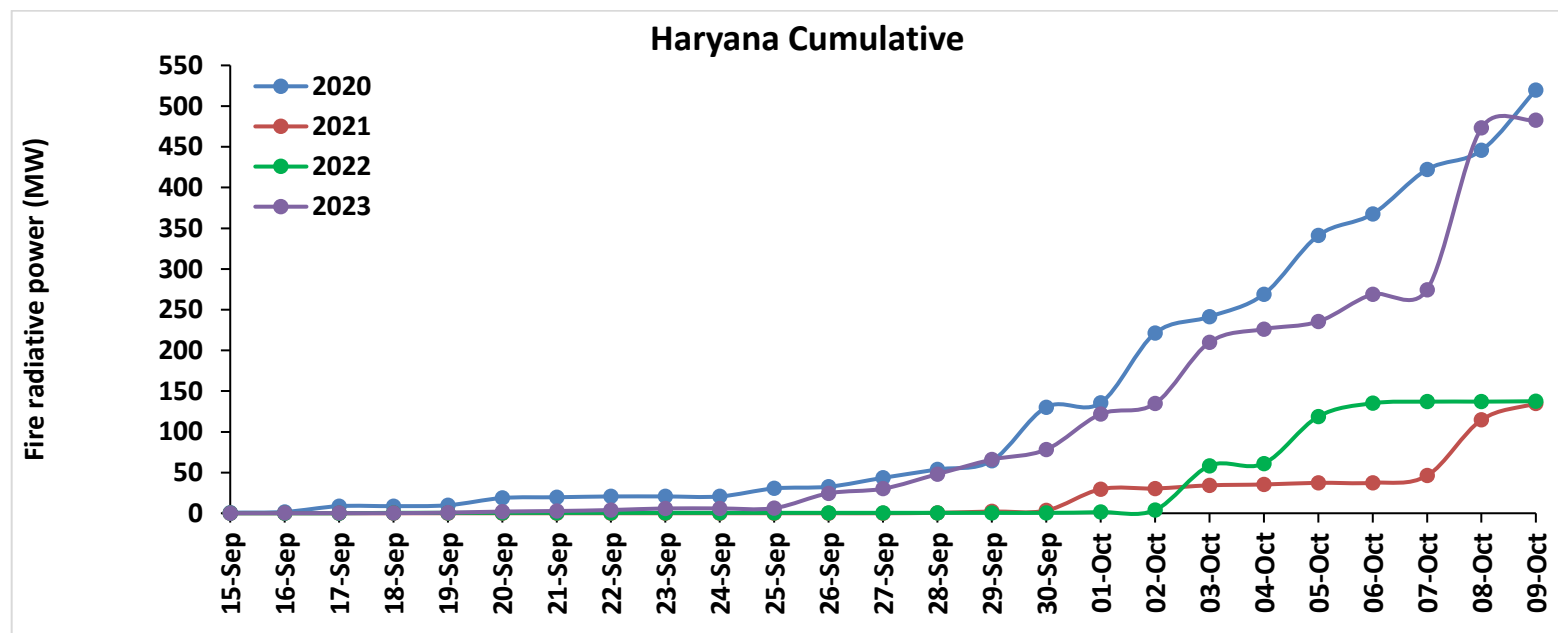
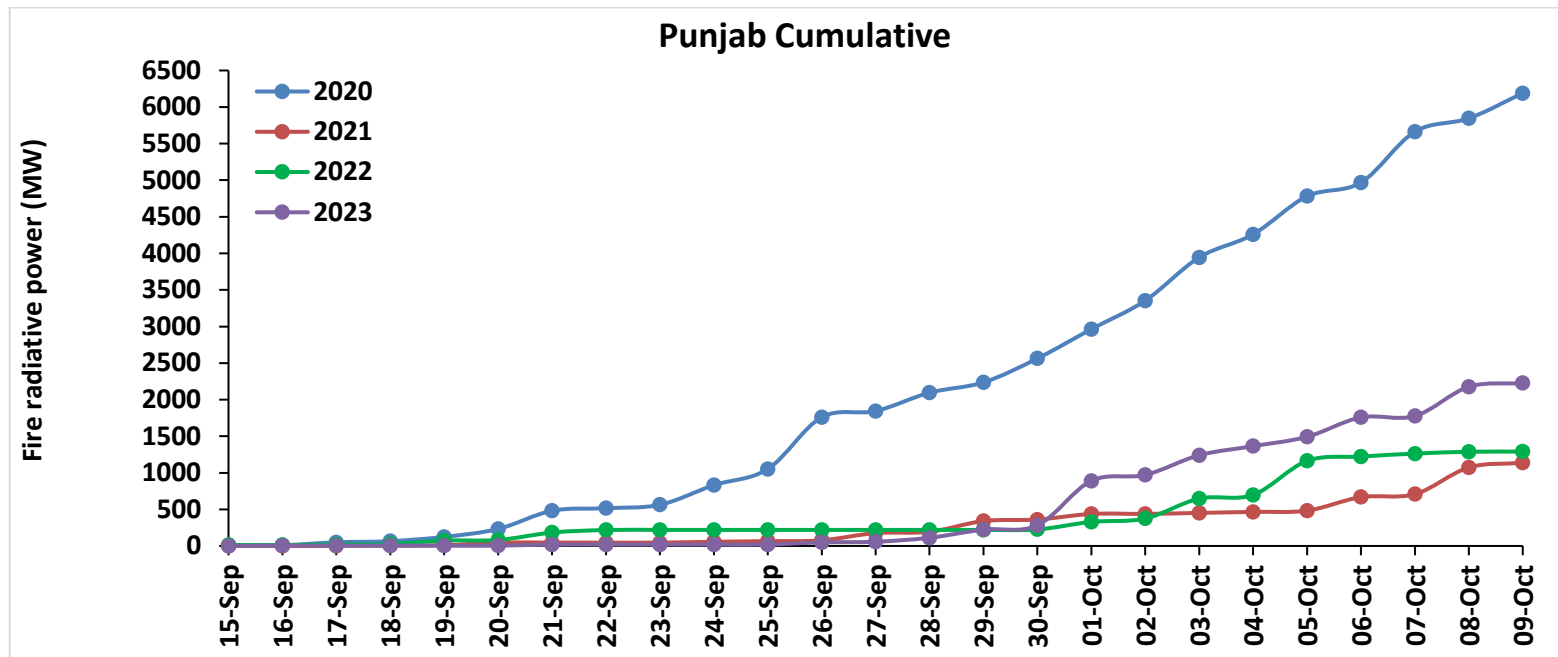
Comparison of residue burning events in current year (2023) with previous years (2020, 2021 and 2022) for the study State

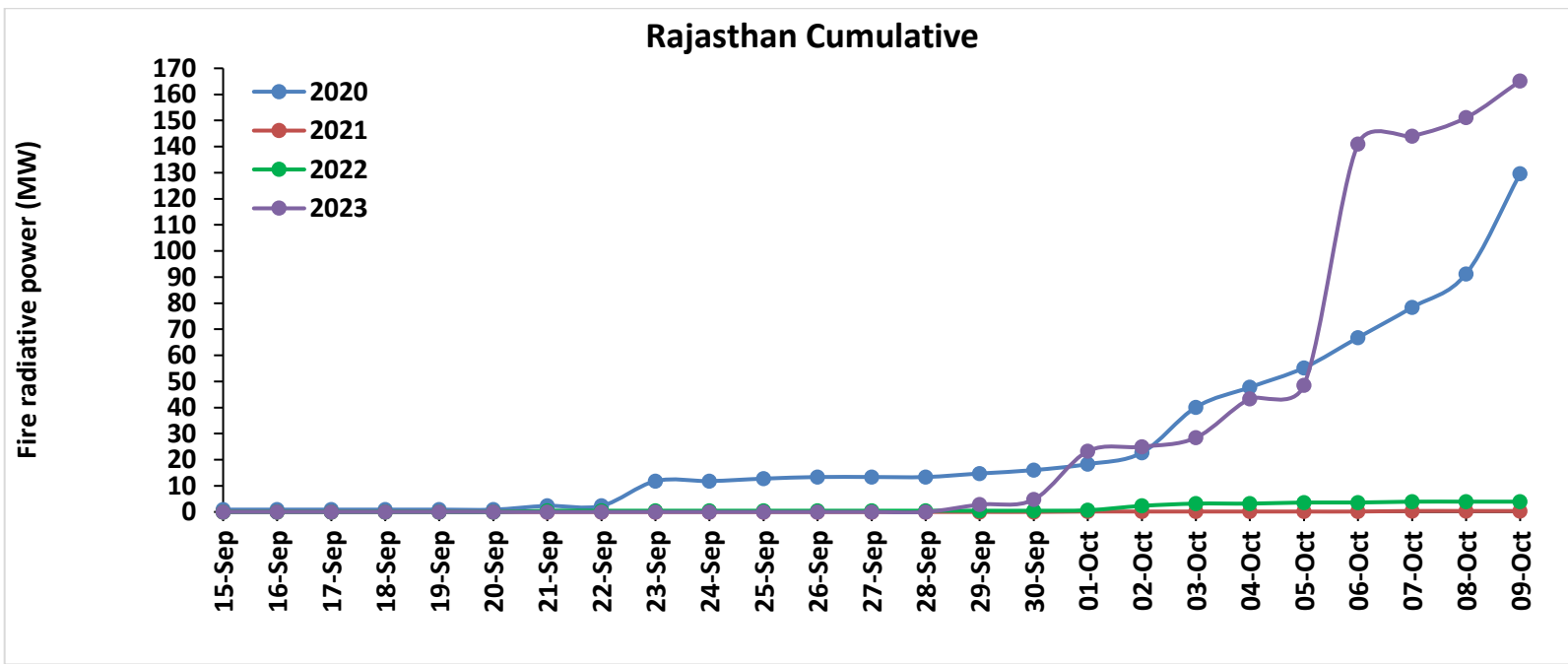
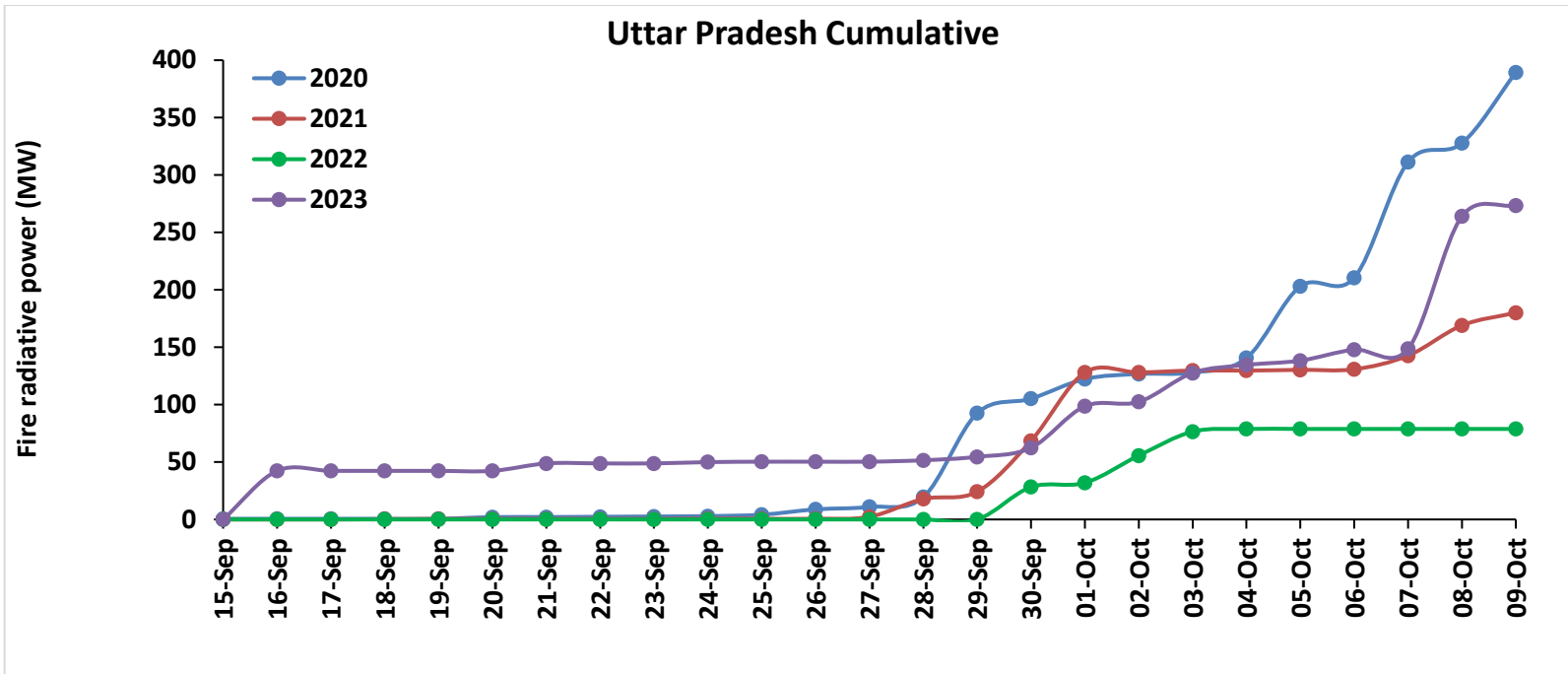


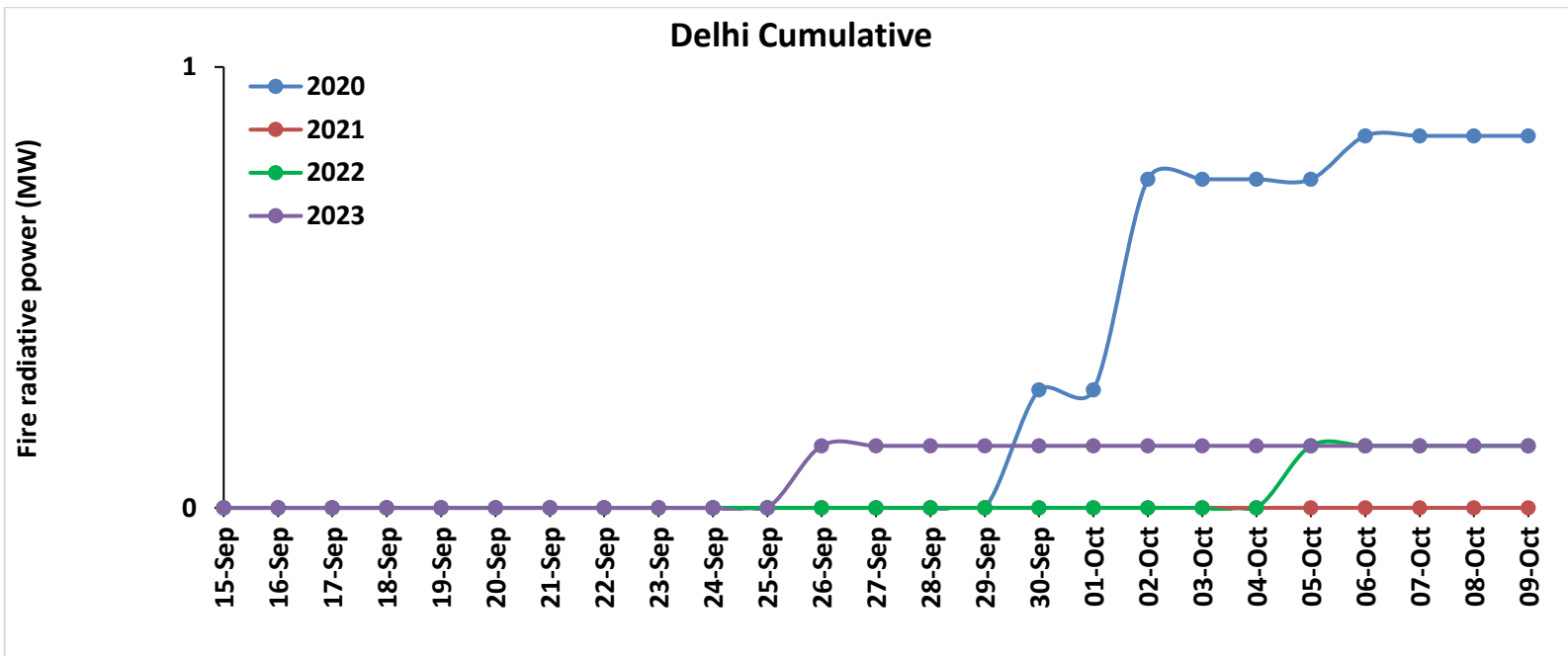
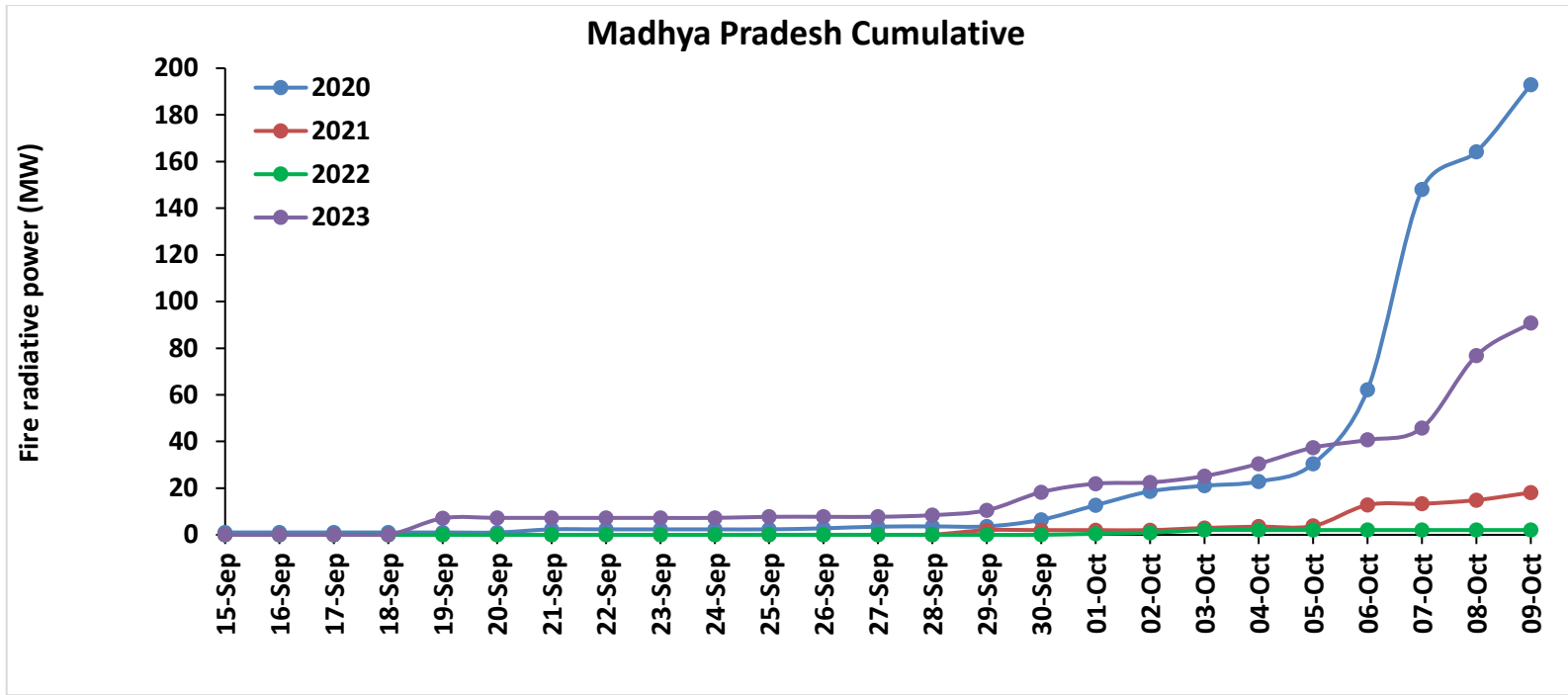




Comparison of residue burning fire power in current year (2023) with previous years (2020, 2021 and 2022) for the study States

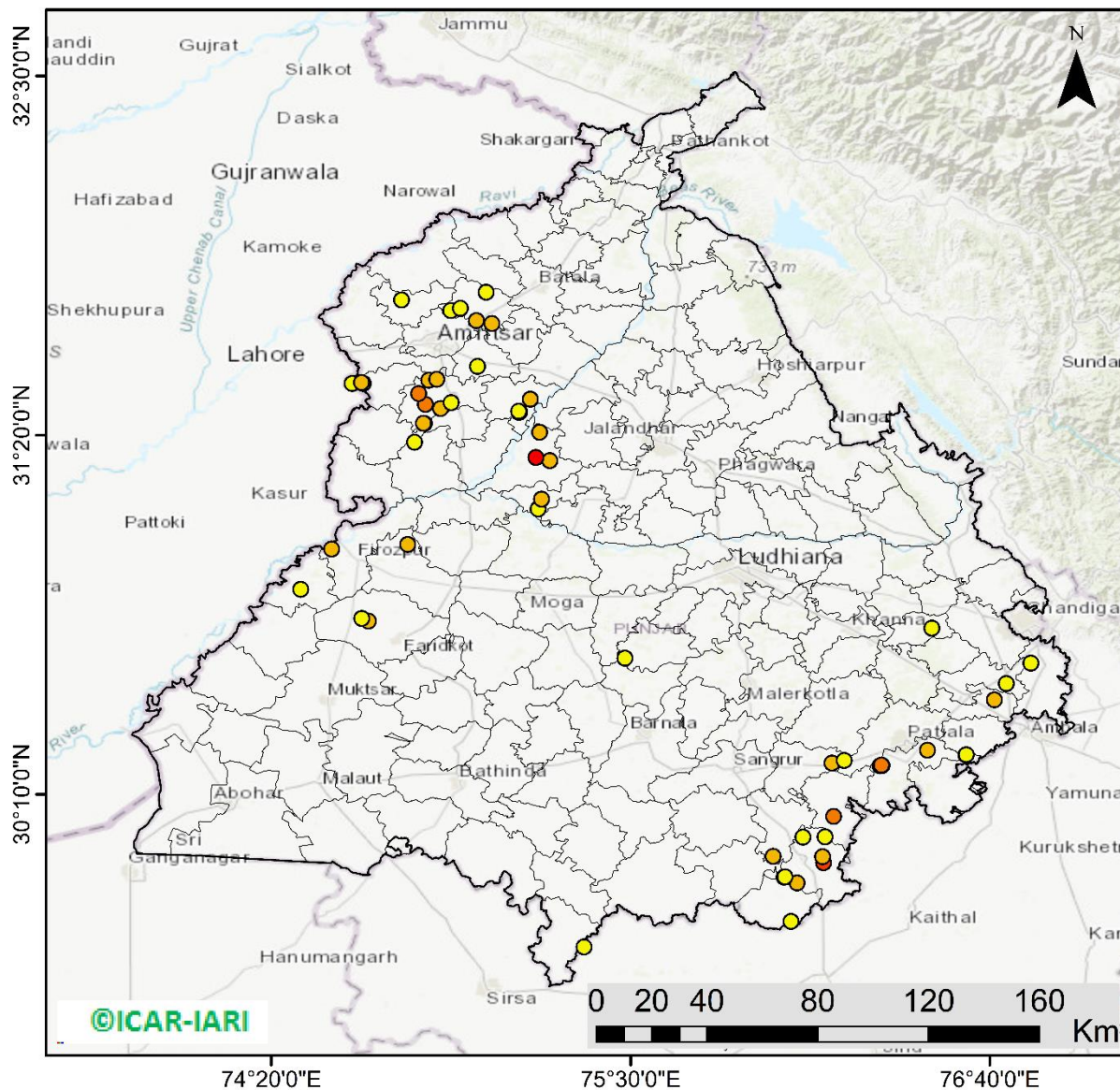






Punjab

RICE RESIDUE BURNING IN PUNJAB



58 burning events
detected in Punjab during
(09th Oct 2023)

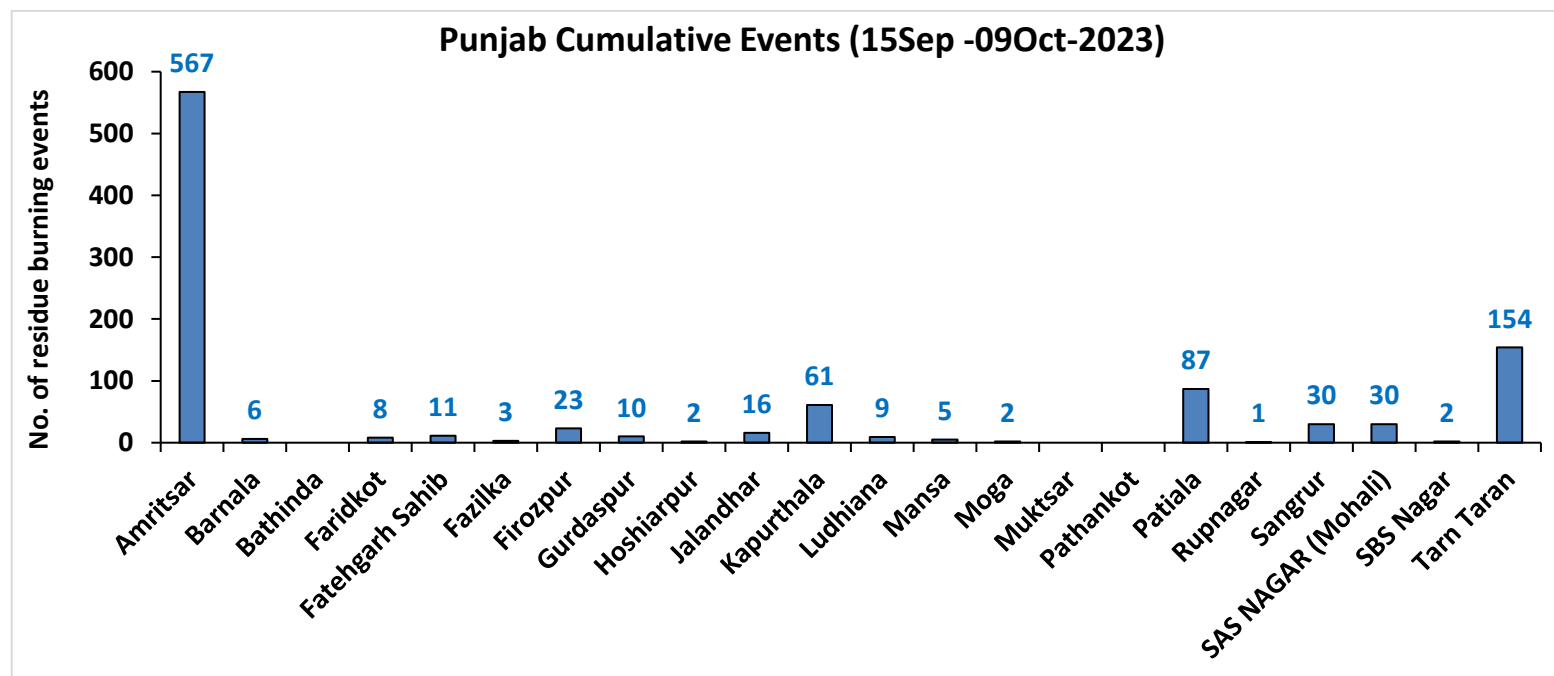
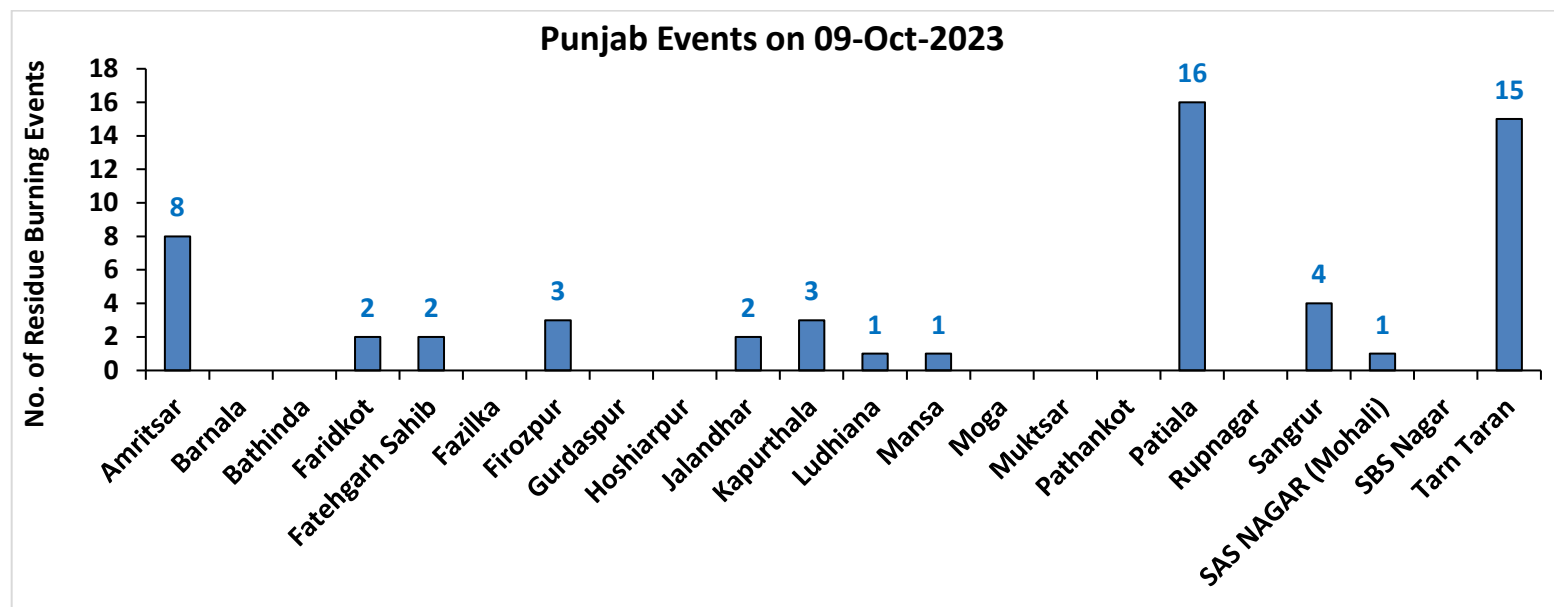
Fire Intensity (W/m²)

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



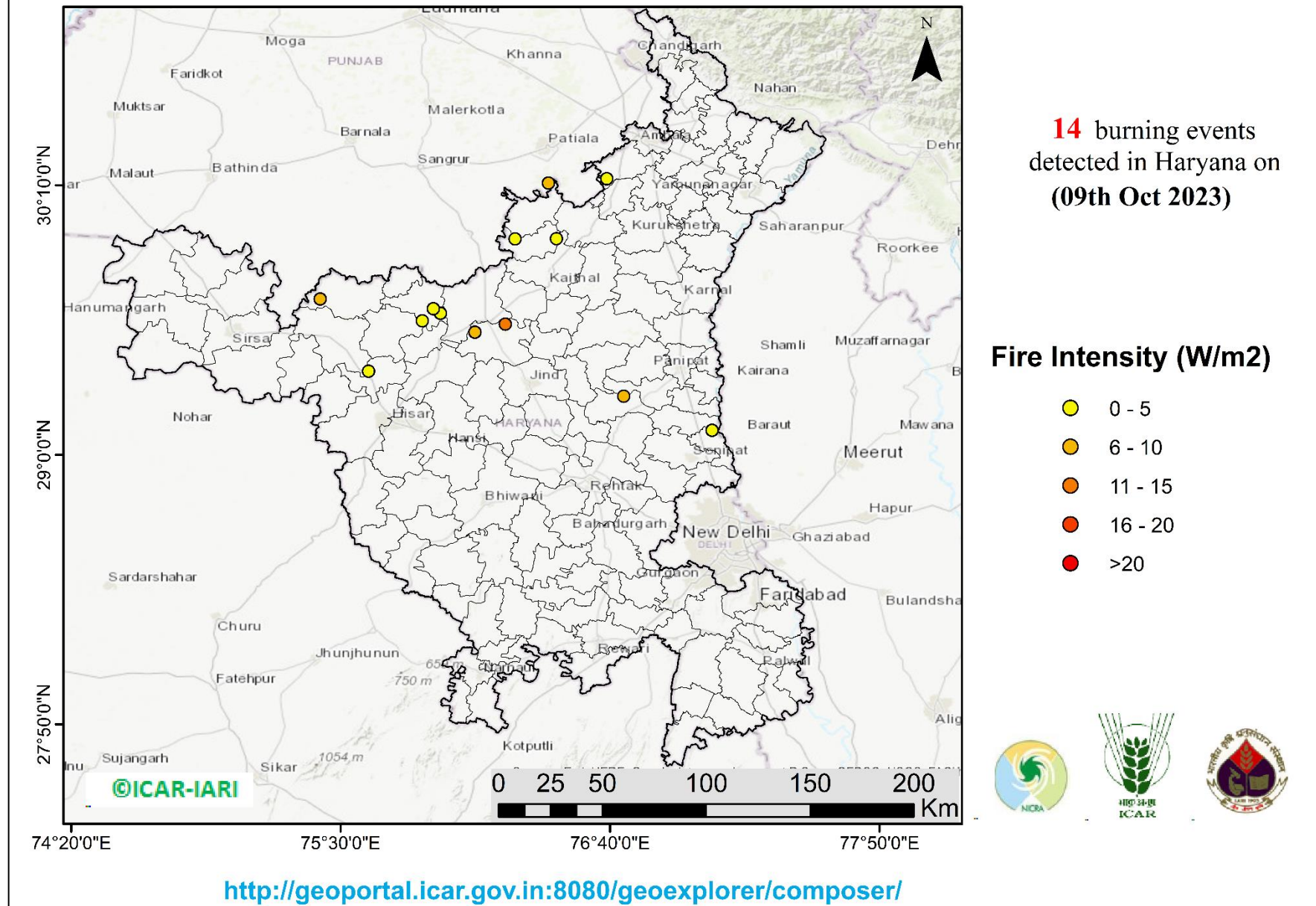
<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

District-wise cumulative number of residues burning events in Punjab (15Sep- 09Oct-2023)

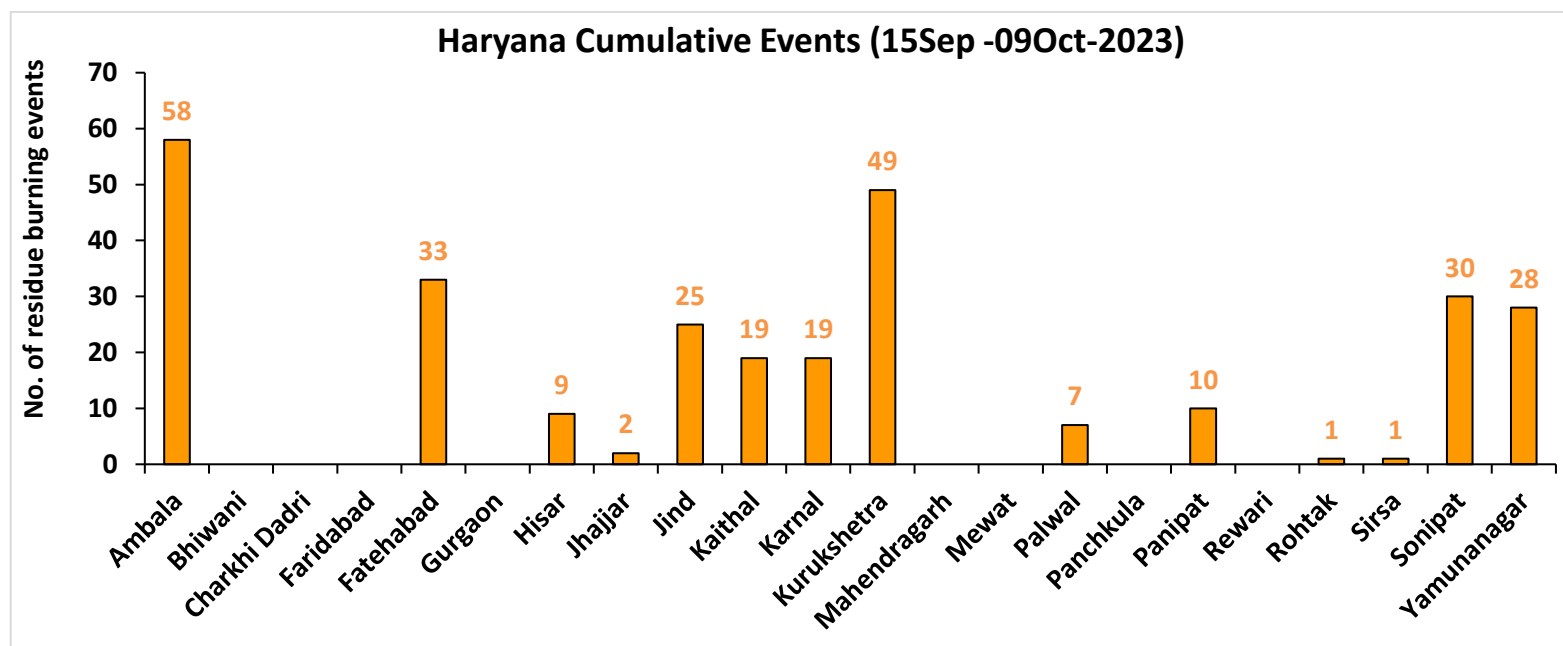
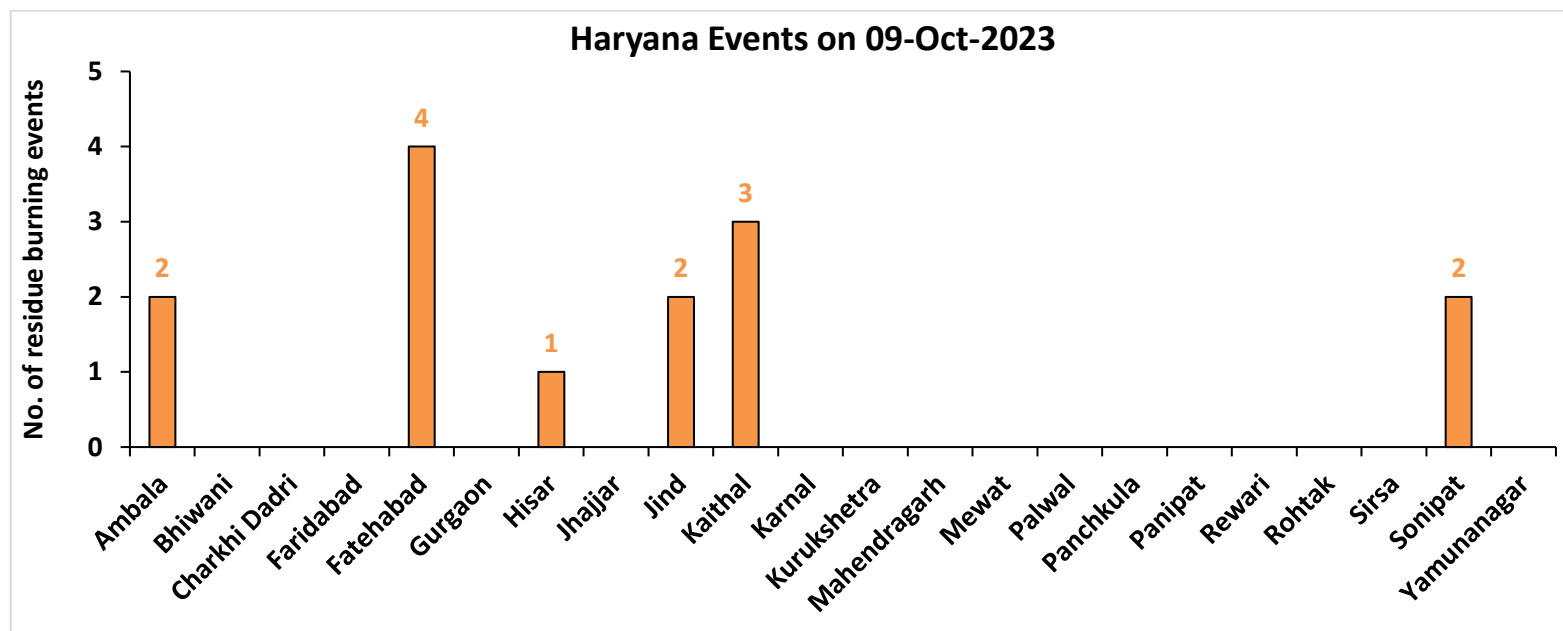


Haryana

RICE RESIDUE BURNING IN HARYANA

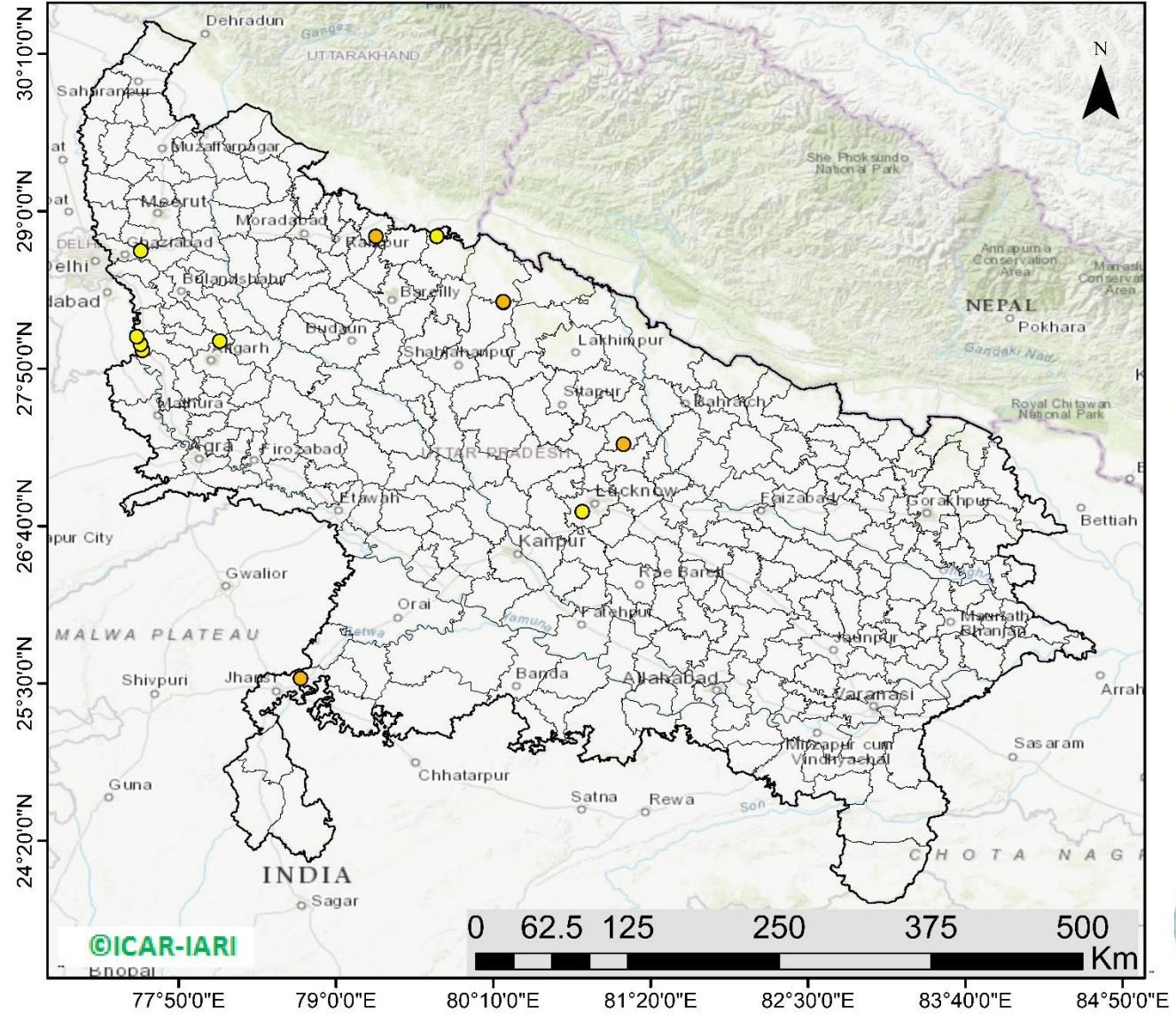


District-wise cumulative number of residues burning events in Haryana (15Sep-09Oct -2023)



Uttar Pradesh

RICE RESIDUE BURNING IN UTTAR PRADESH



13 burning events detected in Uttar Pradesh on (09th Oct 2023)

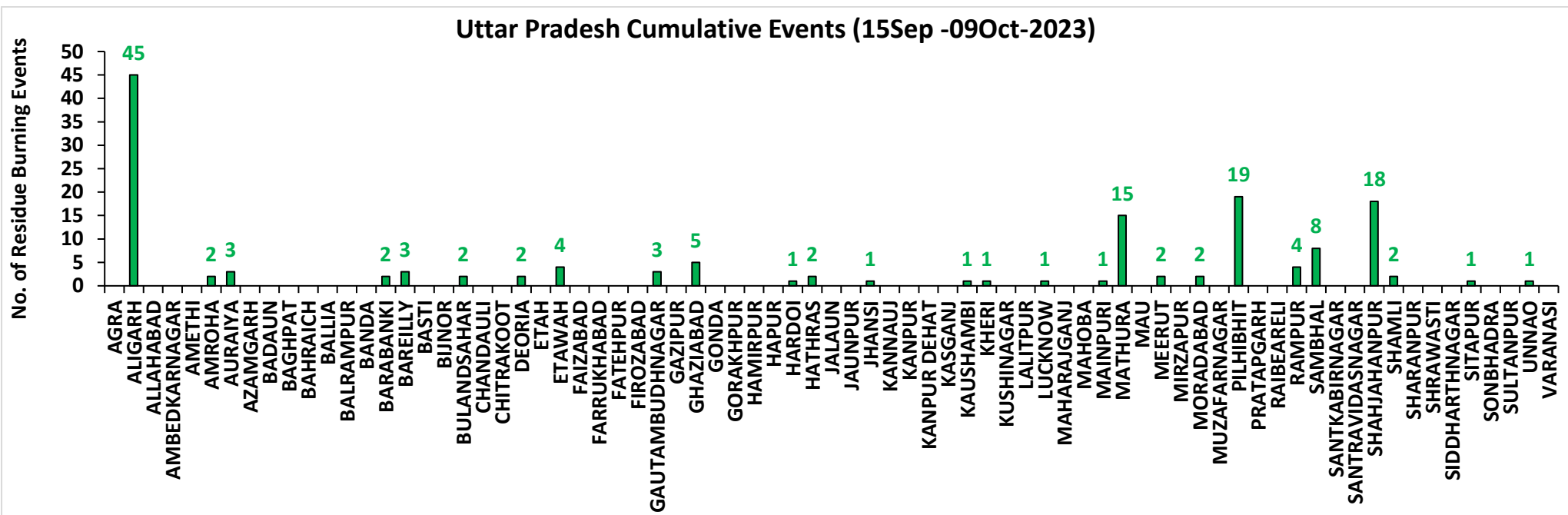
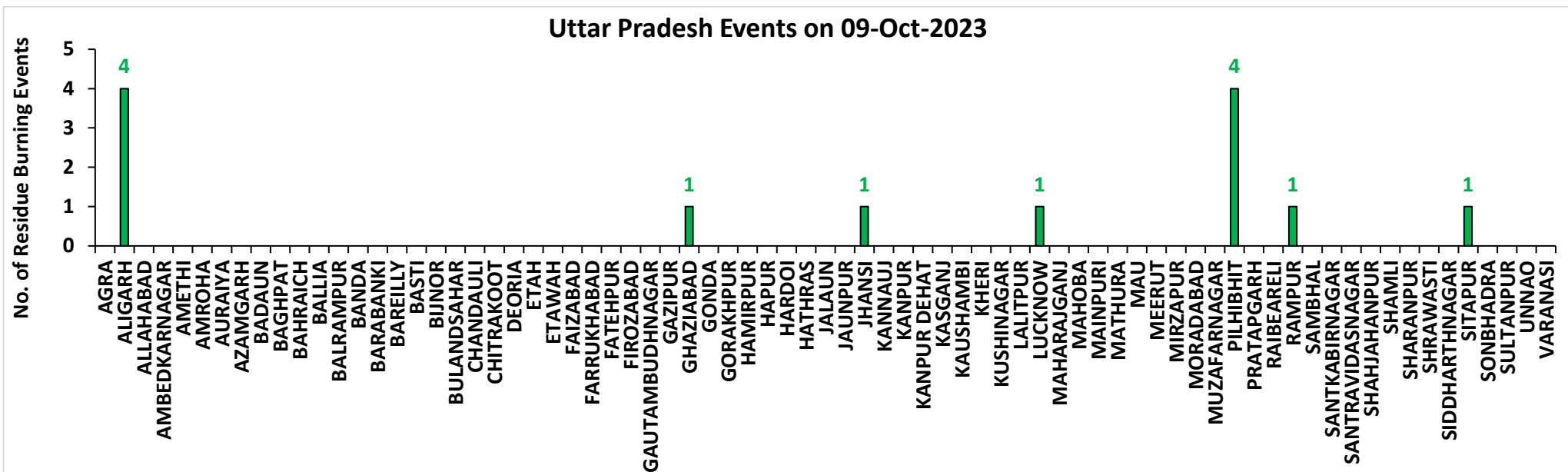
Fire Intensity (W/m2)

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



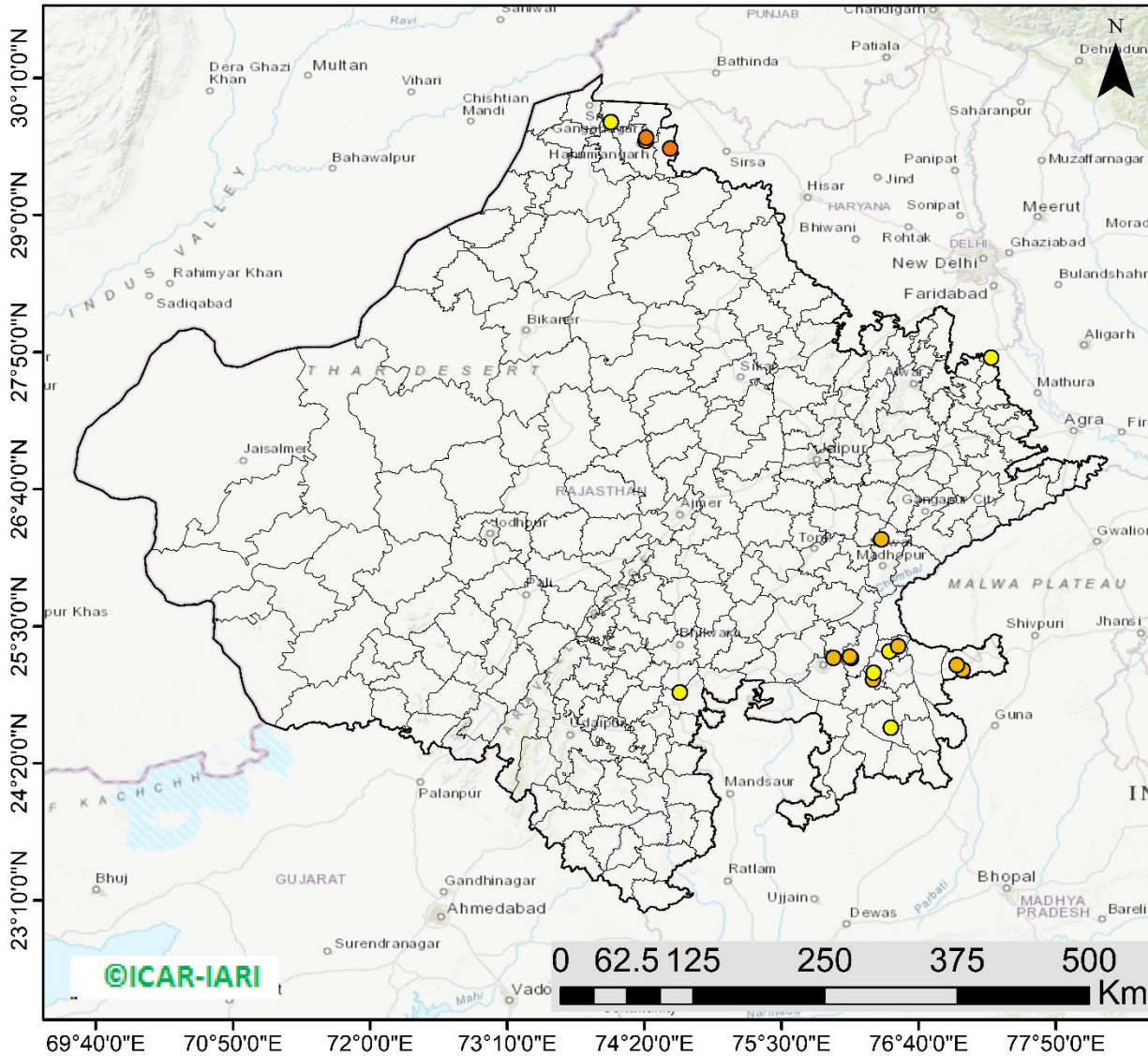
<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

District-wise cumulative number of residues burning events in Uttar Pradesh (15Sep-09Oct -2023)



Rajasthan

RICE RESIDUE BURNING IN RAJASTHAN



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

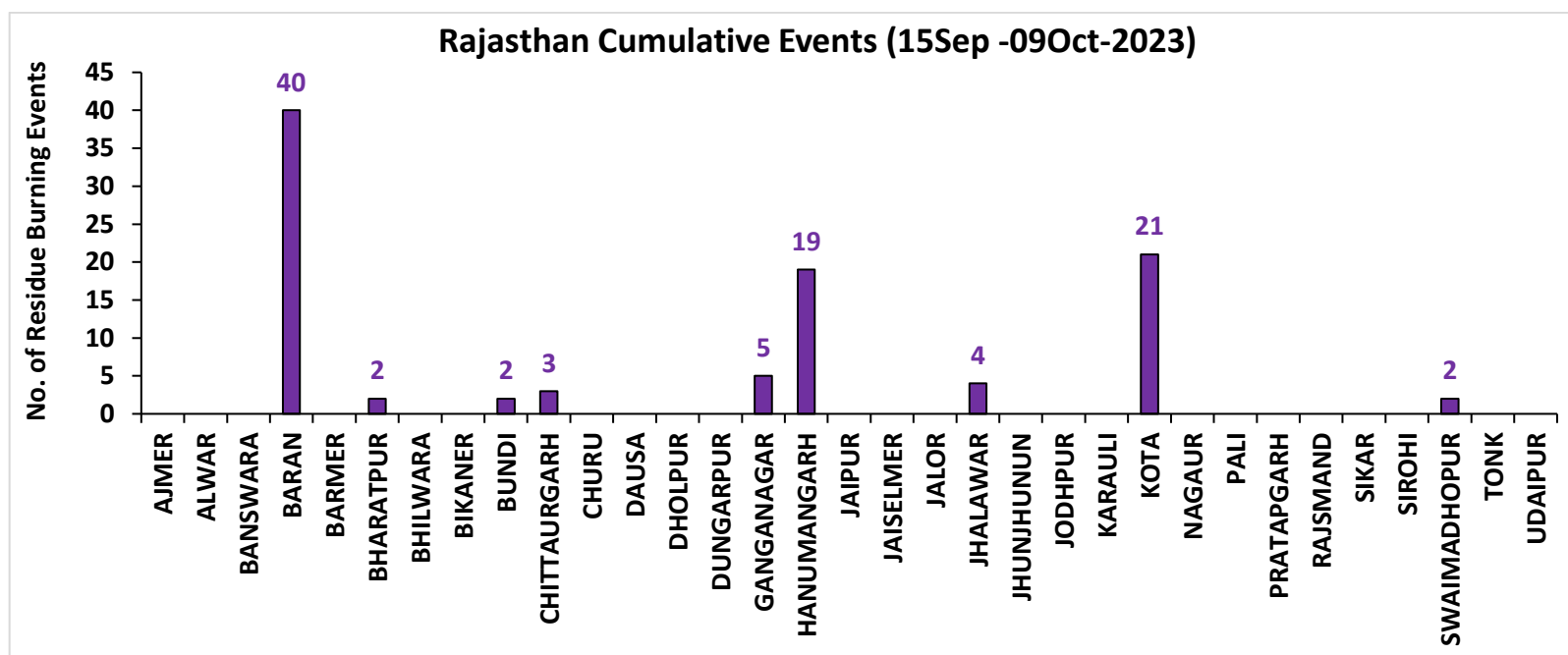
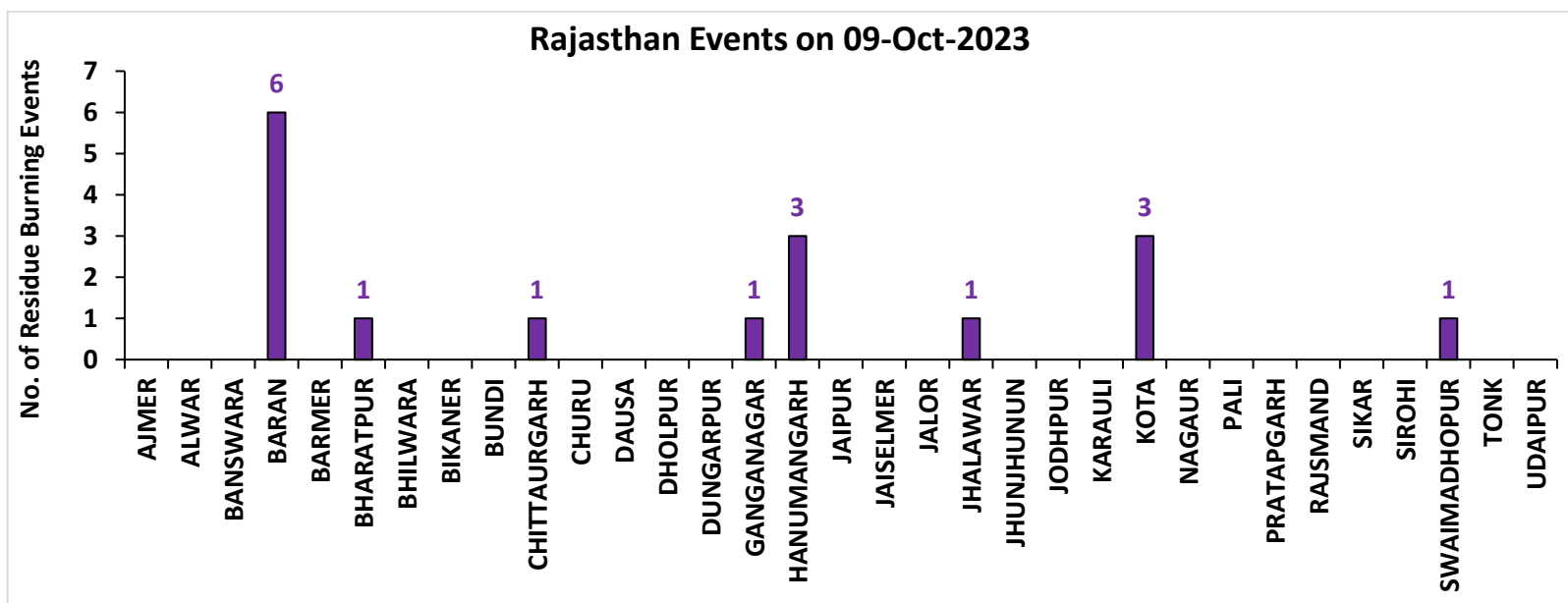
Fire Intensity (W/m²)

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



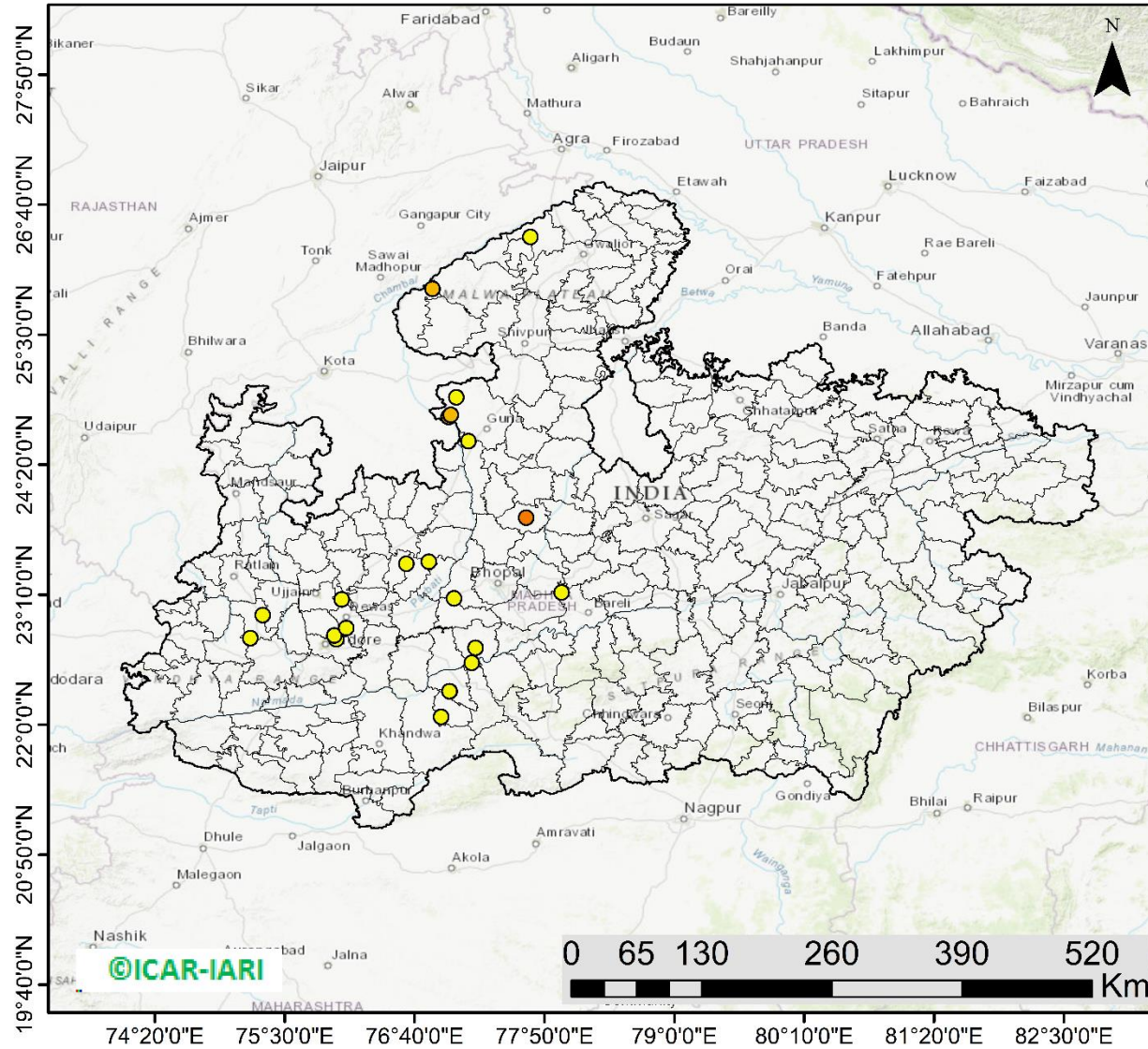
<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

District-wise cumulative number of residues burning events in Rajasthan (15Sep-09Oct -2023)



Madhya Pradesh

RICE RESIDUE BURNING IN MADHYA PRADESH



24 burning events detected in MP on (09th Oct 2023)

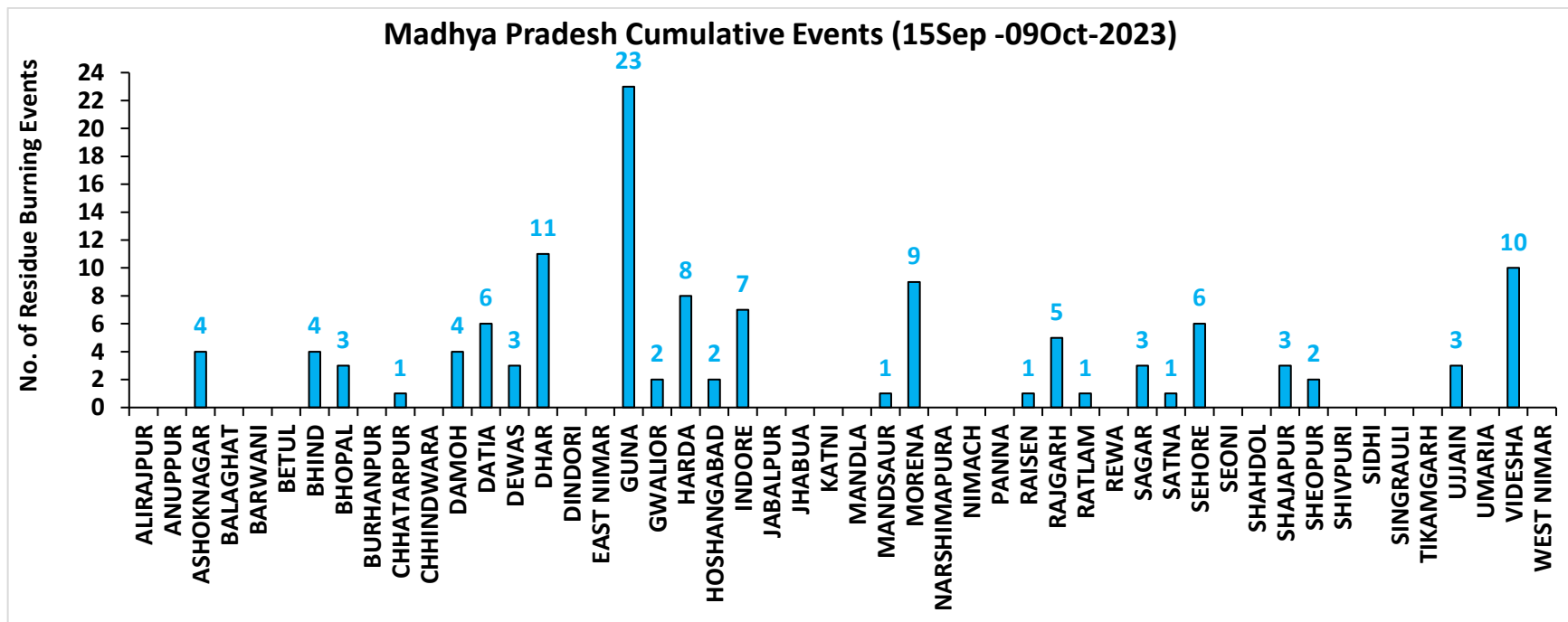
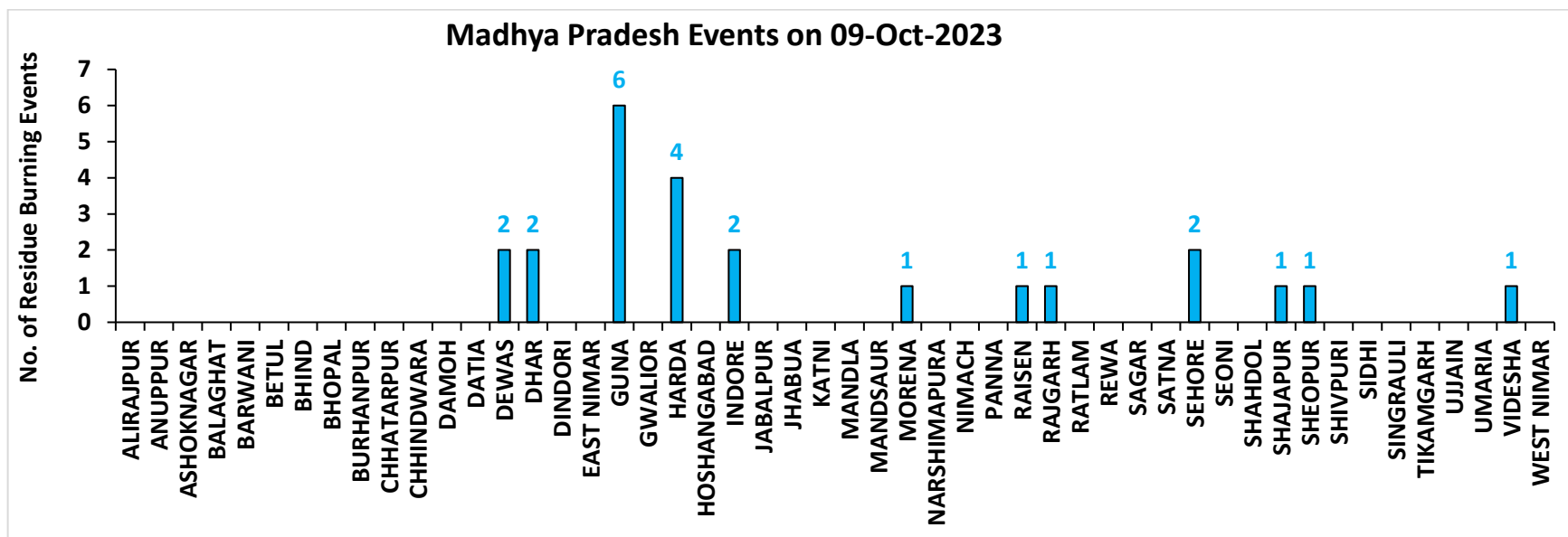
Fire Intensity (W/m²)

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



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

District-wise cumulative number of residues burning events in Madhya Pradesh (15Sep-09Oct -2023)



District-wise cumulative number of residues burning events detected in 2020, 2021, 2022 and 2023
(Period: 15 September-09 October)

(a) Punjab

District	15 Sep-09 Oct			
	2020	2021	2022	2023
Amritsar	1278	279	454	567
Barnala	5	2	3	6
Bathinda	1	0	0	0
Faridkot	17	16	3	8
Fatehgarh Sahib	30	17	4	11
Fazilka	1	3	0	3
Firozpur	69	18	16	23
Gurdaspur	103	12	9	10
Hoshiarpur	5	0	0	2
Jalandhar	24	11	13	16
Kapurthala	39	17	22	61
Ludhiana	63	42	11	9
Mansa	4	1	1	5
Moga	15	3	2	2
Muktsar	1	1	1	0
Pathankot	0	0	0	0
Patiala	142	46	26	87
Rupnagar	7	2	0	1
Sangrur	52	9	12	30
SAS NAGAR (Mohali)	12	11	4	30
SBS Nagar	5	1	2	2
Tarn Taran	475	123	131	154
Total	2348	614	714	1027

(b) Haryana

District	15 Sep-09 Oct			
	2020	2021	2022	2023
AMBALA	41	5	10	58
BHIWANI	0	0	0	0
CHARKHI DADRI	0	0	0	0
FARIDABAD	0	0	0	0
FATEHABAD	20	4	3	33
GURGAON	0	0	0	0
HISAR	3	0	0	9
JHAJJAR	1	0	0	2
JIND	3	2	8	25
KAITHAL	42	18	9	19
KARNAL	77	35	20	19
KURUKSHETRA	63	27	27	49
MAHENDRAGARH	0	0	0	0
MEWAT	0	0	0	0
PALWAL	5	3	0	7
PANCHKULA	0	0	0	0
PANIPAT	6	2	1	10
REWARI	0	0	0	0
ROHTAK	0	0	0	1
SIRSA	2	0	0	1
SONIPAT	6	1	2	30
YAMUNANAGAR	19	4	1	28
Total	288	101	81	291

(c) Uttar Pradesh

District	15 Sep-09 Oct													
	2020	2021	2022	2023	GAUTAMBUDHNAGAR	1	1	0	3	MUZAFARNAGAR	2	0	0	0
AGRA	0	0	0	0	GAZIPUR	0	0	0	0	PILHIBHIT	4	2	2	19
ALIGARH	15	0	1	45	GHAZIABAD	1	1	1	5	PRATAPGARH	0	0	0	0
ALLAHABAD	0	0	0	0	GONDA	0	0	0	0	RAIBEARELI	1	0	0	0
AMBEDKARNAGAR	0	0	0	0	GORAKHPUR	0	0	0	0	RAMPUR	5	9	0	4
AMETHI	0	0	0	0	HAMIRPUR	0	0	0	0	SAMBHAL	6	1	4	8
AMROHA	1	0	0	2	HAPUR	2	0	0	0	SANTKABIRNAGAR	0	0	0	0
AURAIYA	12	0	4	3	HARDOI	0	0	0	1	SANTRAVIDASNAGAR	0	0	0	0
AZAMGARH	0	0	0	0	HATHRAS	0	0	0	2	SHAHJAHANPUR	11	66	53	18
BADAUN	0	0	0	0	JALAUN	0	0	0	0	SHAMLI	17	3	2	2
BAGHPAT	1	0	0	0	JAUNPUR	0	0	0	0	SHARANPUR	13	0	0	0
BAHRAICH	2	0	0	0	JHANSI	5	0	0	1	SHRAWASTI	0	0	0	0
BALLIA	0	0	0	0	KANNAUJ	2	0	0	0	SIDDHARTHANAGAR	0	0	0	0
BALRAMPUR	0	0	0	0	KANPUR	0	1	0	0	SITAPUR	4	1	0	1
BANDA	0	0	0	0	KANPUR DEHAT	1	0	0	0	SONBHADRA	0	0	0	0
BARABANKI	7	0	0	2	KASGANJ	1	0	0	0	SULTANPUR	0	0	0	0
BAREILLY	5	1	0	3	KAUSHAMBI	6	0	0	1	UNNAO	2	0	0	1
BASTI	2	0	0	0	KHERI	14	5	8	1	VARANASI	0	0	0	0
BIJNOR	3	0	1	0	KUSHINAGAR	0	0	0	0	Total	182	96	80	151
BULANDSAHAR	2	0	2	2	LALITPUR	0	1	2	0					
CHANDAULI	0	0	0	0	LUCKNOW	2	0	0	1					
CHITRAKOOT	0	0	0	0	MAHARAJGANJ	0	0	0	0					
DEORIA	0	0	0	2	MAHOBA	0	0	0	0					
ETAH	4	0	0	0	MAINPURI	0	1	0	1					
ETAWAH	1	0	0	4	MATHURA	4	3	0	15					
FAIZABAD	0	0	0	0	MAU	0	0	0	0					
FARRUKHABAD	0	0	0	0	MEERUT	9	0	0	2					
FATEHPUR	7	0	0	0	MIRZAPUR	5	0	0	0					
FIROZABAD	1	0	0	0	MORADABAD	1	0	0	2					

(d) Delhi

District	15 Sep-09 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-09 Oct			
	2020	2021	2022	2023
AJMER	0	0	0	0
ALWAR	1	0	0	0
BANSWARA	0	0	0	0
BARAN	53	0	3	40
BARMER	2	0	0	0
BHARATPUR	0	0	0	2
BHILWARA	2	0	0	0
BIKANER	0	0	0	0
BUNDI	1	0	3	2
CHITTAURGARH	0	1	0	3
CHURU	0	0	0	0
DAUSA	0	0	0	0
DHOLPUR	0	0	0	0
DUNGARPUR	0	0	0	0
GANGANAGAR	2	0	0	5
HANUMANGARH	27	1	2	19
JAIPUR	0	0	0	0
JAISELMER	2	0	0	0
JALOR	0	0	0	0
JHALAWAR	0	0	0	4
JHUNJHUNUN	1	0	0	0
JODHPUR	1	0	0	0
KARAULI	1	0	0	0
KOTA	15	0	1	21
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	1	0	0	2
TONK	1	0	0	0
UDAIPUR	0	0	0	0
Total	111	2	9	98

(f) Madhya Pradesh

District	15 Sep-09 Oct								
	2020	2021	2022	2023					
					PANNA	1	0	0	0
ALIRAJPUR	0	0	0	0	RAISEN	2	0	0	1
ANUPPUR	0	0	0	0	RAJGARH	6	0	2	5
ASHOKNAGAR	7	0	0	4	RATLAM	0	0	0	1
BALAGHAT	0	0	0	0	REWA	2	0	0	0
BARWANI	0	0	0	0	SAGAR	8	2	1	3
BETUL	0	0	0	0	SATNA	3	0	0	1
BHIND	0	0	0	4	SEHORE	4	0	1	6
BHOPAL	2	1	0	3	SEONI	2	0	0	0
BURHANPUR	0	0	0	0	SHAHDOL	0	0	0	0
CHHATARPUR	2	0	0	1	SHAJAPUR	4	0	0	3
CHHINDWARA	0	0	0	0	SHEOPUR	3	0	0	2
DAMOH	6	0	0	4	SHIVPURI	3	0	0	0
DATIA	5	0	0	6	SIDHI	0	0	0	0
DEWAS	3	0	0	3	SINGRAULI	0	0	0	0
DHAR	13	0	0	11	TIKAMGARH	1	0	0	0
DINDORI	0	0	0	0	UJJAIN	5	0	0	3
EAST NIMAR	0	1	0	0	UMARIA	0	0	0	0
GUNA	8	1	1	23	VIDESHA	28	4	1	10
GWALIOR	16	0	1	2	WEST NIMAR	1	0	0	0
HARDA	8	7	0	8	Total	160	17	7	123
HOSHANGABAD	3	0	0	2					
INDORE	2	0	0	7					
JABALPUR	6	0	0	0					
JHABUA	0	0	0	0					
KATNI	0	0	0	0					
MANDLA	0	0	0	0					
MANDSAUR	0	0	0	1					
MORENA	5	1	0	9					
NARSHIMAPURA	1	0	0	0					
NIMACH	0	0	0	0					

State-wise and date-wise number of paddy residue burning events detected in 2020, 2021, 2022 and 2023
(Period: 15 September-09 October)

Number of Paddy Residue Burning Events Detected

Date	Punjab				Haryana				Uttar Pradesh			
	2020	2021	2022	2023	2020	2021	2022	2023	2020	2021	2022	2023
15-Sep	5	0	14	0	2	0	0	1	1	0	0	0
16-Sep	0	2	0	6	1	0	0	1	0	0	0	2
17-Sep	5	0	1	0	3	0	0	0	0	0	0	0
18-Sep	17	9	7	0	0	0	1	0	0	1	0	0
19-Sep	30	5	18	0	2	0	0	1	0	1	0	0
20-Sep	67	8	10	0	6	0	0	2	2	0	0	0
21-Sep	54	0	56	1	2	0	0	2	1	0	0	1
22-Sep	34	0	30	0	1	0	0	2	1	0	0	0
23-Sep	49	0	3	1	0	0	0	3	1	0	0	0
24-Sep	78	5	0	0	0	0	0	0	1	1	0	1
25-Sep	184	11	0	0	11	0	0	1	5	0	0	1
26-Sep	190	19	0	3	5	0	0	2	8	0	0	0
27-Sep	78	37	0	21	8	0	0	9	4	1	0	0
28-Sep	55	28	0	33	6	1	0	8	1	6	0	4
29-Sep	63	64	0	68	9	4	0	17	6	10	0	6
30-Sep	116	27	8	81	22	2	0	26	13	13	10	18
01-Oct	165	13	45	123	15	4	1	21	7	13	3	17
02-Oct	141	0	83	119	30	2	7	24	12	0	36	7
03-Oct	110	9	75	105	8	6	8	17	4	3	29	8
04-Oct	162	23	65	95	29	2	7	29	8	0	2	9
05-Oct	161	18	130	98	17	3	24	24	14	2	0	14
06-Oct	171	42	85	91	30	0	26	19	12	1	0	18
07-Oct	197	72	62	32	32	11	6	13	41	13	0	5
08-Oct	95	108	19	92	29	27	0	55	25	11	0	27
09-Oct	121	114	3	58	20	39	1	14	15	20	0	13
Total	2348	614	714	1027	288	101	81	291	182	96	80	151

Number of Paddy Residue Burning Events Detected

Date	Delhi				Rajasthan				Madhya Pradesh			
	2020	2021	2022	2023	2020	2021	2022	2023	2020	2021	2022	2023
15-Sep	0	0	0	0	1	0	0	0	2	0	0	0
16-Sep	0	0	0	0	0	0	0	0	0	0	0	0
17-Sep	0	0	0	0	0	0	0	0	0	0	0	0
18-Sep	0	0	0	0	0	0	0	0	0	0	0	0
19-Sep	0	0	0	0	0	0	0	0	0	0	0	1
20-Sep	0	0	0	0	0	0	0	0	0	0	0	1
21-Sep	0	0	0	0	1	0	1	0	2	0	0	0
22-Sep	0	0	0	0	0	0	0	0	0	0	0	0
23-Sep	0	0	0	0	1	0	0	0	0	0	0	0
24-Sep	0	0	0	0	0	0	0	0	0	0	0	0
25-Sep	0	0	0	0	1	0	0	0	0	0	0	1
26-Sep	0	0	0	1	1	0	0	0	2	0	0	0
27-Sep	0	0	0	0	0	0	0	0	1	0	0	0
28-Sep	0	0	0	0	0	0	0	0	1	1	0	2
29-Sep	0	0	0	0	3	0	0	6	0	4	0	5
30-Sep	1	0	0	0	1	0	0	4	5	0	0	11
01-Oct	0	0	0	0	4	1	1	4	13	0	1	8
02-Oct	1	0	0	0	7	0	3	4	12	0	1	1
03-Oct	0	0	0	0	9	0	2	5	5	1	5	5
04-Oct	0	0	0	0	15	0	0	22	4	2	0	12
05-Oct	0	0	2	0	14	0	1	11	13	1	0	18
06-Oct	1	0	0	0	16	0	0	9	37	1	0	7
07-Oct	0	0	0	0	14	1	1	7	31	1	0	9
08-Oct	0	0	0	0	11	0	0	9	17	2	0	18
09-Oct	0	0	0	0	12	0	0	17	15	4	0	24
Total	3	0	2	1	111	2	9	98	160	17	7	123

Details of residue burning events in Punjab on 09-Oct-2023

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m2)
1	AMRITSAR	ATTARI	S-NPP	31.50046	74.59585	13:47:33	D	4.80
2	AMRITSAR	HARSHA CHHINA	S-NPP	31.77208	74.75607	13:47:33	D	3.70
3	AMRITSAR	JANDIALA GURU	S-NPP	31.55639	75.00307	13:47:33	D	3.00
4	AMRITSAR	MAJITHA	S-NPP	31.69571	75.04955	13:47:33	D	8.00
5	AMRITSAR	MAJITHA	S-NPP	31.70511	74.99922	13:47:33	D	8.40
6	AMRITSAR	MAJITHA	S-NPP	31.73770	74.91617	13:47:33	D	2.50
7	AMRITSAR	MAJITHA	S-NPP	31.74513	74.94727	13:47:33	D	2.70
8	AMRITSAR	MAJITHA	S-NPP	31.79714	75.03113	13:47:33	D	3.60
9	FARIDKOT	FARIDKOT	S-NPP	30.72892	74.64848	13:47:33	D	8.10
10	FARIDKOT	FARIDKOT	S-NPP	30.73751	74.62691	13:47:33	D	3.30
11	FATEHGARH SAHIB	BASSI PATHANAN	S-NPP	30.70567	76.47866	13:47:33	D	3.20
12	FATEHGARH SAHIB	BASSI PATHANAN	S-NPP	30.70587	76.47861	13:47:33	D	3.20
13	FIROZPUR	FIROZPUR	S-NPP	30.96274	74.52904	13:47:33	D	7.00
14	FIROZPUR	GHALL KHURD	S-NPP	30.97770	74.77608	13:47:33	D	6.60
15	FIROZPUR	MAMDOT	S-NPP	30.83206	74.42869	13:47:33	D	3.60
16	JALANDHAR	LOHIAN	S-NPP	31.09286	75.19985	13:47:33	D	3.70
17	JALANDHAR	LOHIAN	S-NPP	31.12493	75.21108	13:47:33	D	5.90
18	KAPURTHALA	SULTANPUR LODHI	S-NPP	31.25040	75.23775	13:47:33	D	6.00
19	KAPURTHALA	SULTANPUR LODHI	S-NPP	31.26057	75.19251	13:47:33	D	22.50
20	KAPURTHALA	SULTANPUR LODHI	S-NPP	31.34239	75.20462	13:47:33	D	9.80
21	LUDHIANA	RAIKOT	S-NPP	30.60839	75.48181	13:47:33	D	4.50
22	MANSA	SARDULGARH	S-NPP	29.67040	75.34915	13:47:33	D	3.50
23	PATIALA	BHUNARHERI	S-NPP	30.29437	76.58924	13:47:33	D	3.90
24	PATIALA	GHANAUR	S-NPP	30.29456	76.59016	13:47:33	D	2.80
25	PATIALA	PATRAN	S-NPP	29.87825	76.04085	13:47:33	D	6.50
26	PATIALA	PATRAN	S-NPP	29.89703	75.99828	13:47:33	D	5.20
27	PATIALA	PATRAN	S-NPP	29.89808	76.00165	13:47:33	D	4.40
28	PATIALA	PATRAN	S-NPP	29.94370	76.12646	13:47:33	D	17.30
29	PATIALA	PATRAN	S-NPP	29.96327	76.12357	13:47:33	D	5.50
30	PATIALA	PATRAN	S-NPP	30.02721	76.05989	13:47:33	D	2.10

31	PATIALA	PATRAN	S-NPP	30.02789	76.13136	13:47:33	D	3.80
32	PATIALA	RAJPURA	S-NPP	30.52597	76.72061	13:47:33	D	3.60
33	PATIALA	SAMANA	S-NPP	30.09416	76.15978	13:47:33	D	11.20
34	PATIALA	SANAUR	S-NPP	30.25872	76.31041	13:47:33	D	6.30
35	PATIALA	SANAUR	S-NPP	30.25939	76.31628	13:47:33	D	8.40
36	PATIALA	SANAUR	S-NPP	30.26102	76.31470	13:47:33	D	11.30
37	PATIALA	SANAUR	S-NPP	30.30964	76.46433	13:47:33	D	6.90
38	PATIALA	SHAMBU KALAN	S-NPP	30.47308	76.68159	13:47:33	D	5.40
39	SANGRUR	ANDANA	S-NPP	29.75328	76.02126	13:47:33	D	3.70
40	SANGRUR	BHAWANIGARH	S-NPP	30.26757	76.15409	13:47:33	D	6.90
41	SANGRUR	BHAWANIGARH	S-NPP	30.27599	76.19397	13:47:33	D	3.10
42	SANGRUR	DIRBA	S-NPP	29.96482	75.96333	13:47:33	D	6.00
43	SAS NAGAR (MOHALI)	DERABASSI	S-NPP	30.59252	76.80038	13:47:33	D	3.60
44	TARN TARAN	GANDI WIND TATLA	S-NPP	31.50103	74.63191	13:47:33	D	3.30
45	TARN TARAN	GANDI WIND TATLA	S-NPP	31.50411	74.62624	13:47:33	D	6.70
46	TARN TARAN	KHADUR SAHIB	S-NPP	31.40694	75.13730	13:47:33	D	5.00
47	TARN TARAN	KHADUR SAHIB	S-NPP	31.40800	75.13978	13:47:33	D	13.20
48	TARN TARAN	KHADUR SAHIB	S-NPP	31.41072	75.13669	13:47:33	D	5.00
49	TARN TARAN	KHADUR SAHIB	S-NPP	31.44968	75.17419	13:47:33	D	5.30
50	TARN TARAN	PATTI	S-NPP	31.31007	74.79826	13:47:33	D	3.20
51	TARN TARAN	TARN TARAN	S-NPP	31.37074	74.83046	13:47:33	D	7.80
52	TARN TARAN	TARN TARAN	S-NPP	31.37135	74.82755	13:47:33	D	5.10
53	TARN TARAN	TARN TARAN	S-NPP	31.41959	74.88311	13:47:33	D	5.60
54	TARN TARAN	TARN TARAN	S-NPP	31.43270	74.83347	13:47:33	D	10.40
55	TARN TARAN	TARN TARAN	S-NPP	31.43884	74.91717	13:47:33	D	2.80
56	TARN TARAN	TARN TARAN	S-NPP	31.46806	74.81200	13:47:33	D	11.00
57	TARN TARAN	TARN TARAN	S-NPP	31.51114	74.84480	13:47:33	D	9.10
58	TARN TARAN	TARN TARAN	S-NPP	31.51418	74.87081	13:47:33	D	6.50

Details of residue burning events in Haryana on 09-Oct-2023

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m2)
1	AMBALA	AMBALA-II	S-NPP	30.19429	76.65265	13:47:33	D	3.60
2	AMBALA	AMBALA-II	S-NPP	30.19464	76.65298	13:47:33	D	3.70
3	FATEHABAD	BHUNA	S-NPP	29.57965	75.85411	13:47:33	D	3.50
4	FATEHABAD	RATIA	S-NPP	29.67405	75.41157	13:47:33	D	7.30
5	FATEHABAD	TOHANA	S-NPP	29.61210	75.93239	13:47:33	D	2.50
6	FATEHABAD	TOHANA	S-NPP	29.63206	75.90157	13:47:33	D	4.70
7	HISAR	AGROHA	S-NPP	29.36156	75.62115	13:47:33	D	4.10
8	JIND	UCHANA	S-NPP	29.53020	76.08174	13:47:33	D	6.60
9	JIND	UCHANA	S-NPP	29.56508	76.21333	13:47:33	D	10.60
10	KAITHAL	GUHLA	S-NPP	30.17574	76.40027	13:47:33	D	7.60
11	KAITHAL	SIWAN	S-NPP	29.93404	76.25574	13:47:33	D	3.50
12	KAITHAL	SIWAN	S-NPP	29.93533	76.43495	13:47:33	D	2.90
13	SONIPAT	MUNDLANA	S-NPP	29.25290	76.72602	13:47:33	D	5.40
14	SONIPAT	MURTHAL	S-NPP	29.10537	77.10877	13:47:33	D	1.90

Details of residue burning events in Uttar Pradesh on 09-Oct-2023

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m ²)
1	ALIGARH	GABHANA	S-NPP	28.03638	78.14021	13:47:33	D	2.50
2	ALIGARH	KHAIR	S-NPP	27.96747	77.56658	13:47:33	D	2.70
3	ALIGARH	KHAIR	S-NPP	28.01222	77.55196	13:47:33	D	2.90
4	ALIGARH	KHAIR	S-NPP	28.06948	77.52427	13:47:33	D	3.50
5	GHAZIABAD	GHAZIABAD	S-NPP	28.70448	77.55365	02:38:16	N	0.40
6	JHANSI	JHANSI	S-NPP	25.53561	78.73862	13:47:33	D	8.80
7	LUCKNOW	LUCKNOW	S-NPP	26.77122	80.82691	13:47:33	D	2.40
8	PILHIBHIT	PILHIBHIT	S-NPP	28.81284	79.74945	02:38:16	N	1.10
9	PILHIBHIT	PURANPUR	S-NPP	28.32291	80.24197	13:47:33	D	6.60
10	PILHIBHIT	PURANPUR	S-NPP	28.32671	80.24224	13:47:33	D	16.10
11	PILHIBHIT	PURANPUR	S-NPP	28.32784	80.24144	13:47:33	D	5.70
12	RAMPUR	BILASPUR	S-NPP	28.81152	79.29690	13:47:33	D	9.30
13	SITAPUR	MAHMUDABAD	S-NPP	27.27178	81.13282	13:47:33	D	5.50

Details of residue burning events in Rajasthan on 09-Oct-2023

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m ²)
1	BARAN	ANTA	S-NPP	25.04539	76.27864	13:47:33	D	5.60
2	BARAN	ANTA	S-NPP	25.10306	76.28500	13:47:33	D	2.70
3	BARAN	MANGROL	S-NPP	25.28512	76.41828	13:47:33	D	4.00
4	BARAN	MANGROL	S-NPP	25.32894	76.49328	13:47:33	D	9.90
5	BARAN	SHAHBAD	S-NPP	25.12665	77.04202	13:47:33	D	5.40
6	BARAN	SHAHBAD	S-NPP	25.16808	76.99299	13:47:33	D	6.30
7	BHARATPUR	KAMAN	S-NPP	27.78528	77.28524	13:47:33	D	1.60
8	CHITTAURGARH	GANGRAR	S-NPP	24.93455	74.63607	02:38:16	N	1.10
9	GANGANAGAR	SADULSHAR	S-NPP	29.79107	74.04922	13:47:33	D	4.80
10	HANUMANGARH	HANUMANGARH	S-NPP	29.63155	74.34488	13:47:33	D	8.50
11	HANUMANGARH	HANUMANGARH	S-NPP	29.65771	74.35002	13:47:33	D	12.20
12	HANUMANGARH	TIBI	S-NPP	29.56524	74.55410	13:47:33	D	10.70
13	JHALAWAR	KHANPUR	S-NPP	24.63487	76.43089	13:47:33	D	3.00
14	KOTA	DIGOD	S-NPP	25.22958	76.09340	13:47:33	D	5.20
15	KOTA	DIGOD	S-NPP	25.23946	76.08217	13:47:33	D	5.20
16	KOTA	LADPURA	S-NPP	25.22943	75.94338	13:47:33	D	6.60
17	SWAIMADHOPUR	MALARNA DOONAGAR	S-NPP	26.23875	76.35028	13:47:33	D	7.10

Details of residue burning events in Madhya Pradesh on 09-Oct-2023

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m2)
1	DEWAS	DEWAS	S-NPP	22.86649	76.05396	13:47:33	D	2.80
2	DEWAS	DEWAS	S-NPP	23.12388	76.01241	13:47:33	D	3.10
3	DHAR	BADNAWAR	S-NPP	22.77574	75.19192	13:47:33	D	3.10
4	DHAR	BADNAWAR	S-NPP	22.98178	75.30343	13:47:33	D	2.40
5	GUNA	GUNA	S-NPP	24.75995	76.97141	13:47:33	D	4.20
6	GUNA	GUNA	S-NPP	24.76151	76.97369	13:47:33	D	6.40
7	GUNA	GUNA	S-NPP	24.77795	76.99005	13:47:33	D	4.60
8	GUNA	GUNA	S-NPP	24.77939	76.99235	13:47:33	D	6.70
9	GUNA	GUNA	S-NPP	24.93596	77.04206	13:47:33	D	3.90
10	GUNA	RAGHOGARH	S-NPP	24.54395	77.15068	13:47:33	D	4.40
11	HARDA	HARDA	S-NPP	22.29805	76.98250	13:47:33	D	2.80
12	HARDA	HARDA	S-NPP	22.29886	76.98024	13:47:33	D	2.40
13	HARDA	KHIRKIYAN	S-NPP	22.06914	76.90569	13:47:33	D	4.60
14	HARDA	TIMURNI	S-NPP	22.55376	77.18106	13:47:33	D	3.00
15	INDORE	INDORE	S-NPP	22.76514	75.96494	13:47:33	D	3.00
16	INDORE	INDORE	S-NPP	22.79908	75.94638	13:47:33	D	2.40
17	MORENA	JORA	S-NPP	26.37597	77.70699	13:47:33	D	4.90
18	RAISEN	BARELI	S-NPP	23.18532	77.98804	13:47:33	D	3.10
19	RAJGARH	NARSINGHGAR	S-NPP	23.46049	76.79566	13:47:33	D	4.00
20	SEHORE	NASRULLAHGANJ	S-NPP	22.68821	77.21444	13:47:33	D	3.30
21	SEHORE	SEHORE	S-NPP	23.13216	77.02174	13:47:33	D	2.70
22	SHAJAPUR	GULNA	S-NPP	23.44326	76.59337	13:47:33	D	3.00
23	SHEOPUR	SHEOPUR	S-NPP	25.91043	76.82757	13:47:33	D	8.40
24	VIDESHA	NATERAN	S-NPP	23.85633	77.67033	13:47:33	D	10.60

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)
