

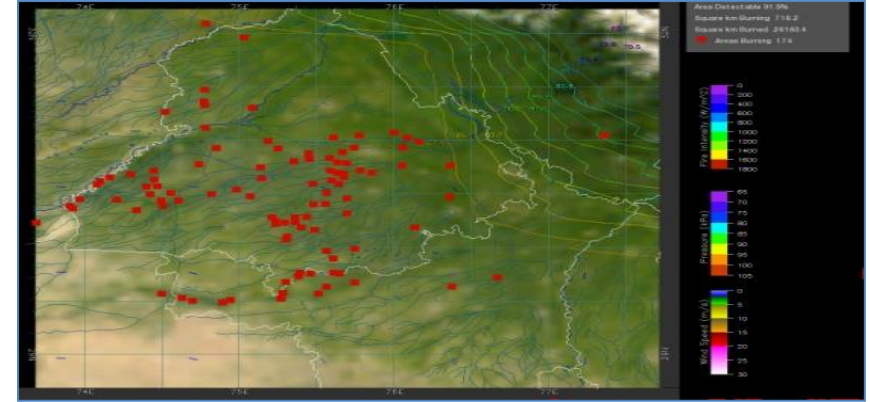
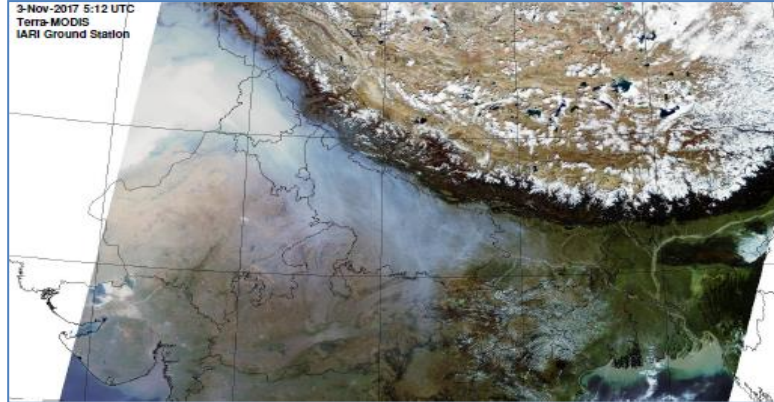


MONITORING PADDY RESIDUE BURNING IN INDIA USING SATELLITE REMOTE SENSING DURING 2024

Bulletin
No. 12

Events Date:
26-Sep-2024

Issued on:
26-Sep-2024



Consortium for Research on Agroecosystem Monitoring and Modeling from Space (CREAMS)
Laboratory,

Division of Agricultural Physics, ICAR – Indian Agricultural Research Institute, New Delhi – 110012

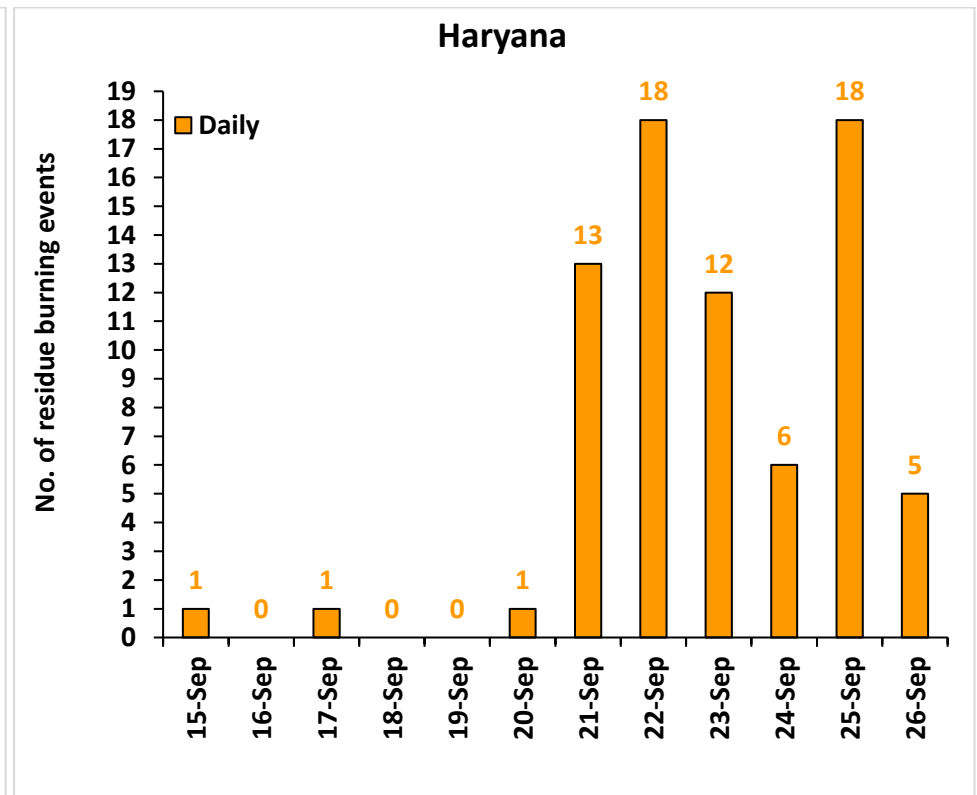
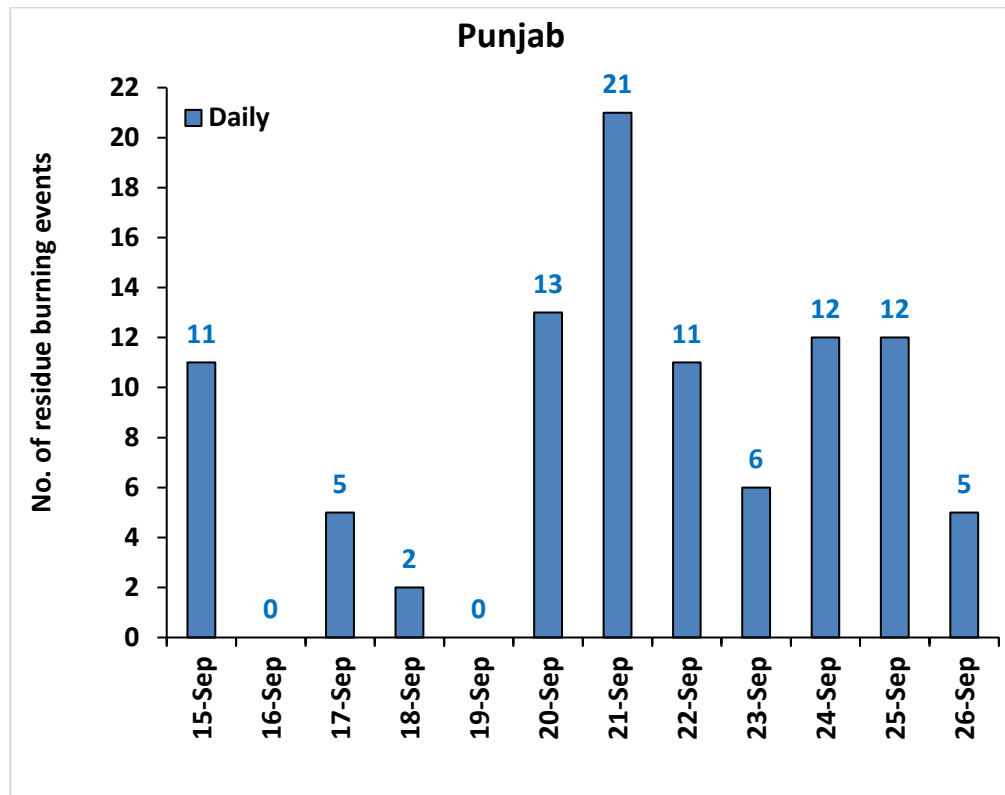
<https://creams.iari.res.in>



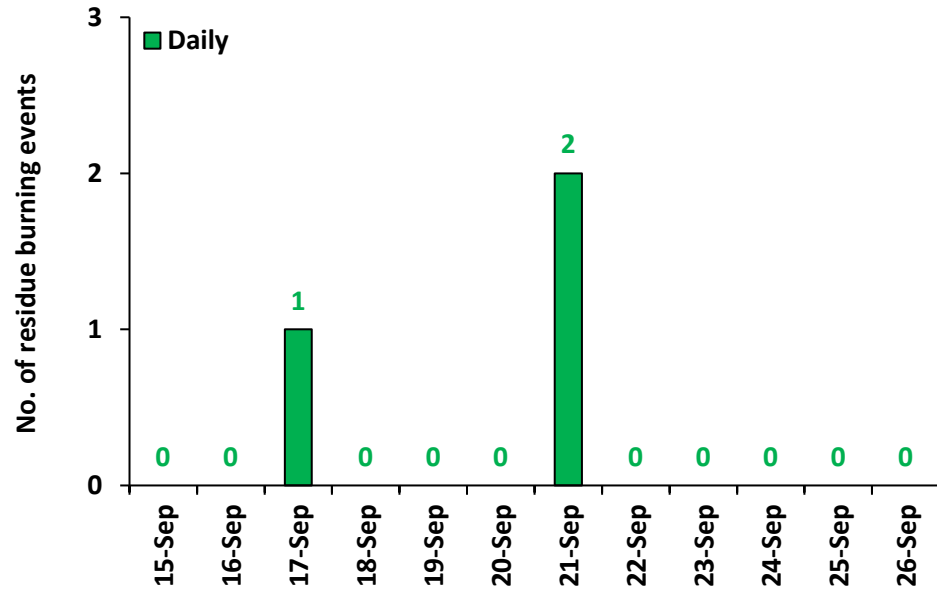
Highlights for 26-Sep-2024

- 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 **12** residue burning events in the six study States on **26-Sep-2024**.
- The state wise events detected on **26-Sep-2024** were **05** in Punjab, **05** in Haryana, **00** in UP, **00** in Delhi, **00** in Rajasthan and **02** in MP.
- Detection of residue burning events was hampered by the presence of clouds over Uttar Pradesh, southern Rajasthan, Madhya Pradesh state.

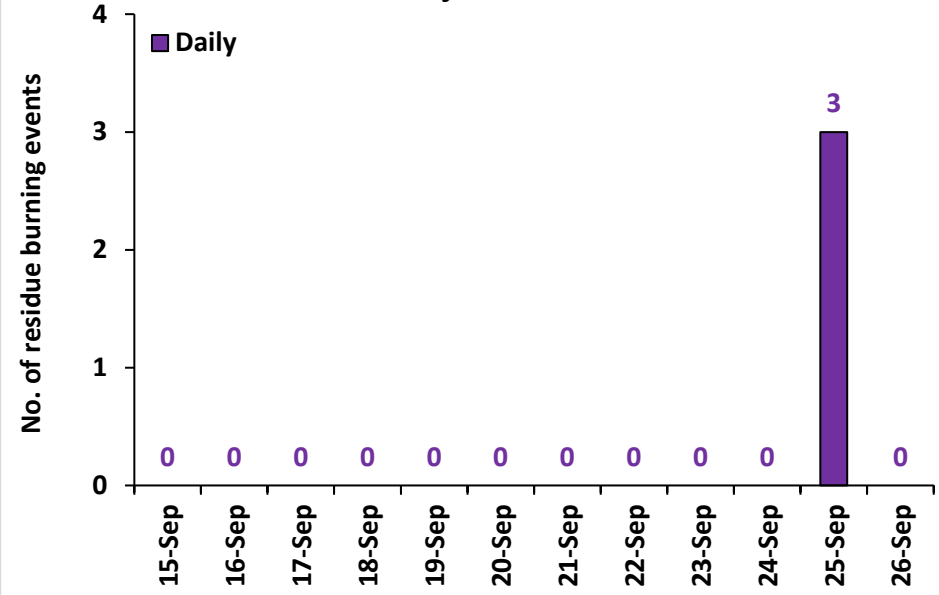
Temporal distribution of rice residue burning events for the study States in 2024



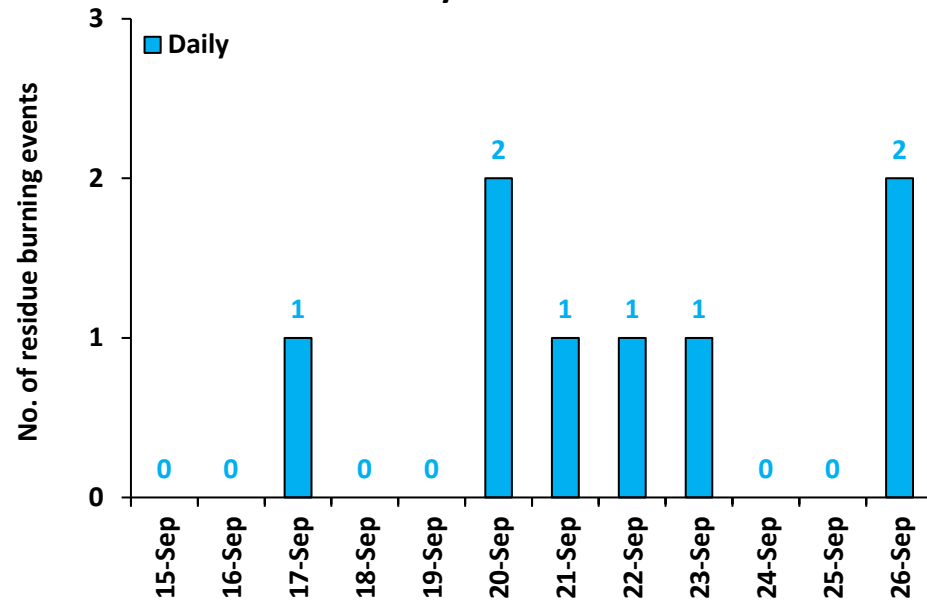
Uttar Pradesh



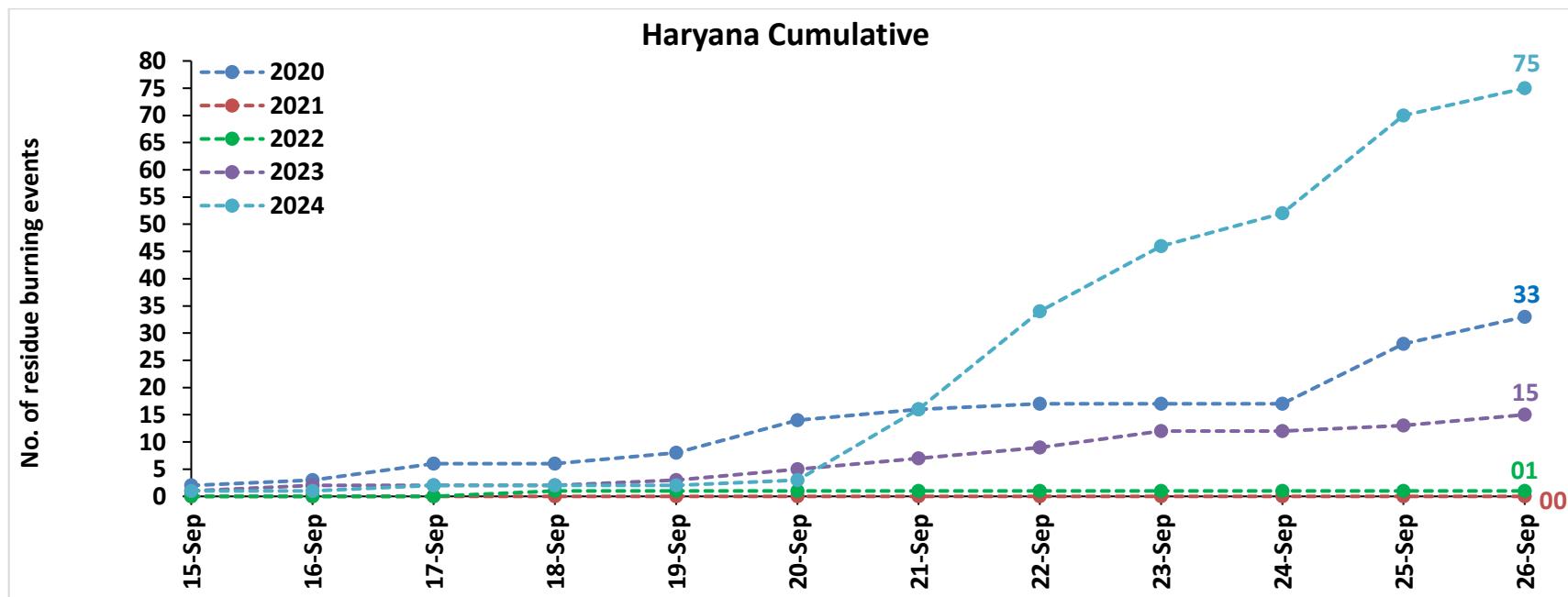
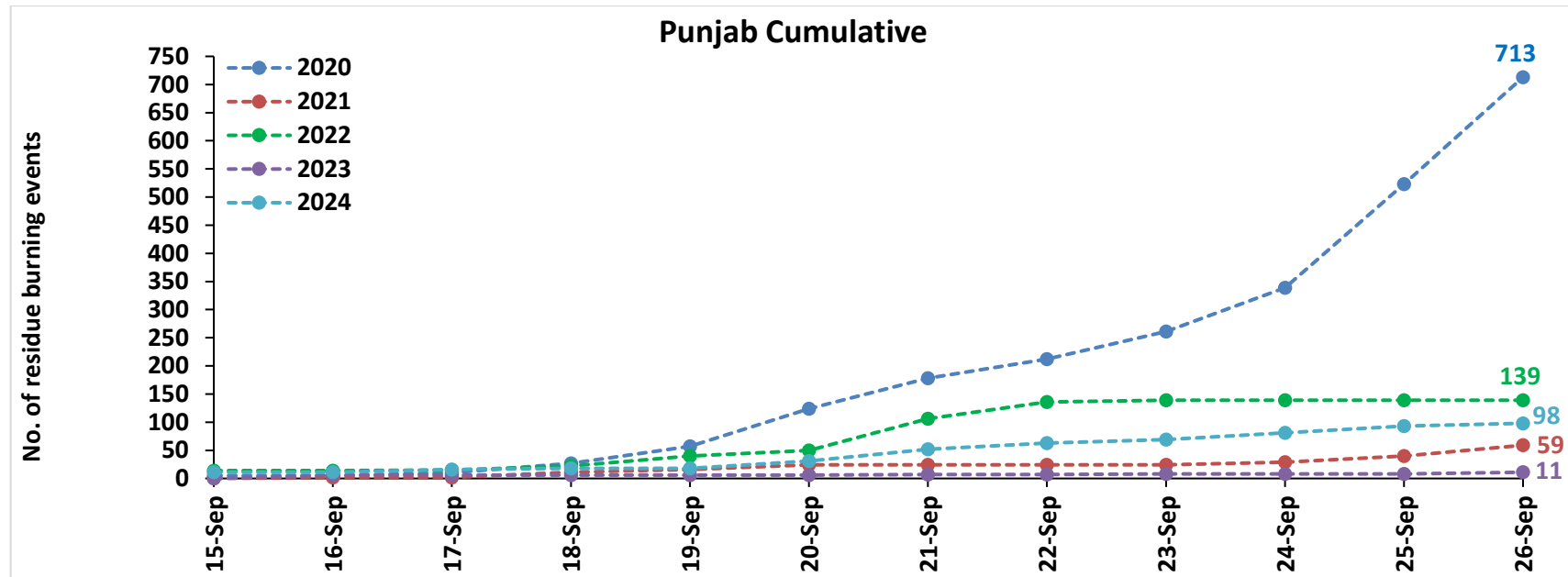
Rajasthan

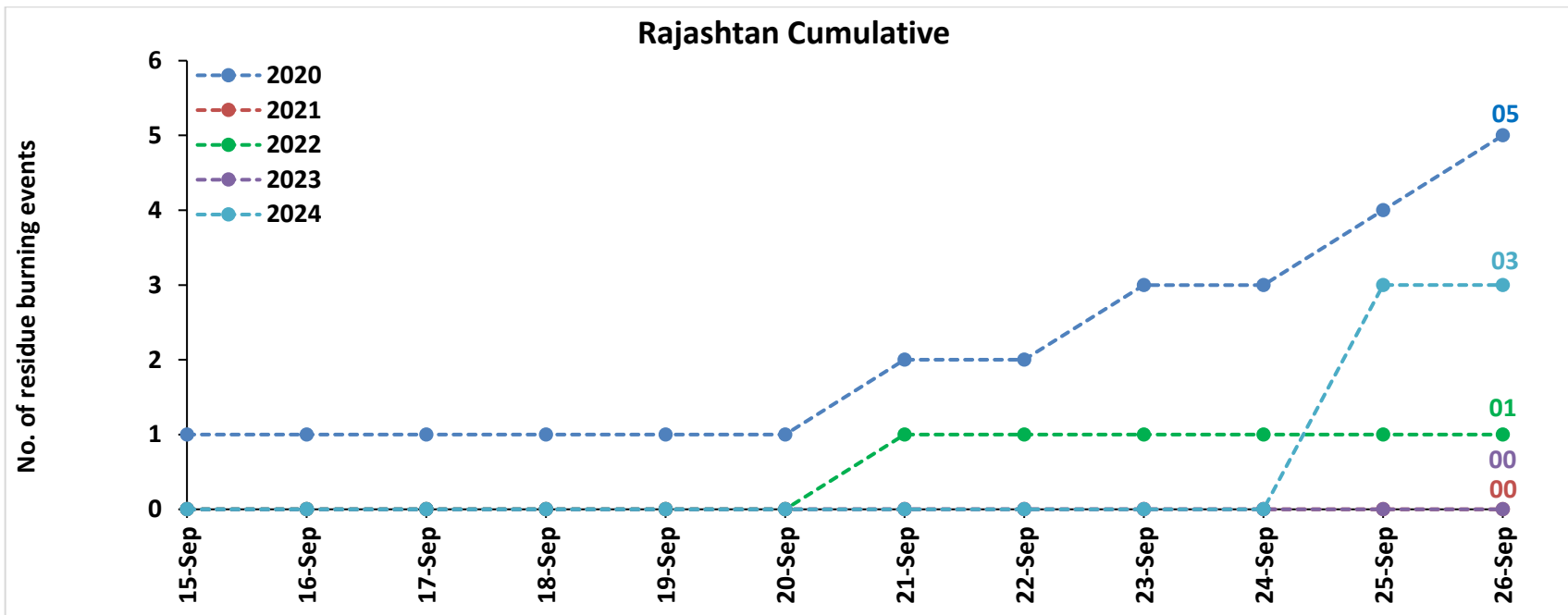
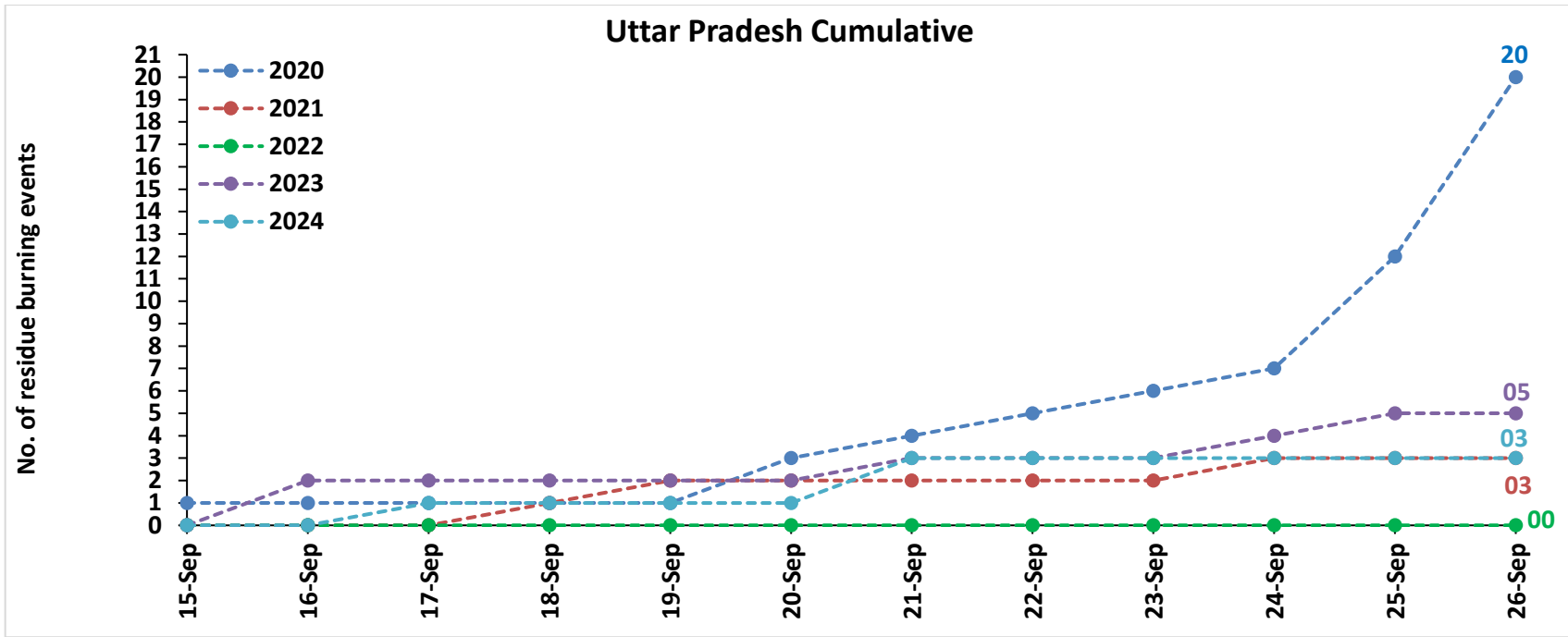


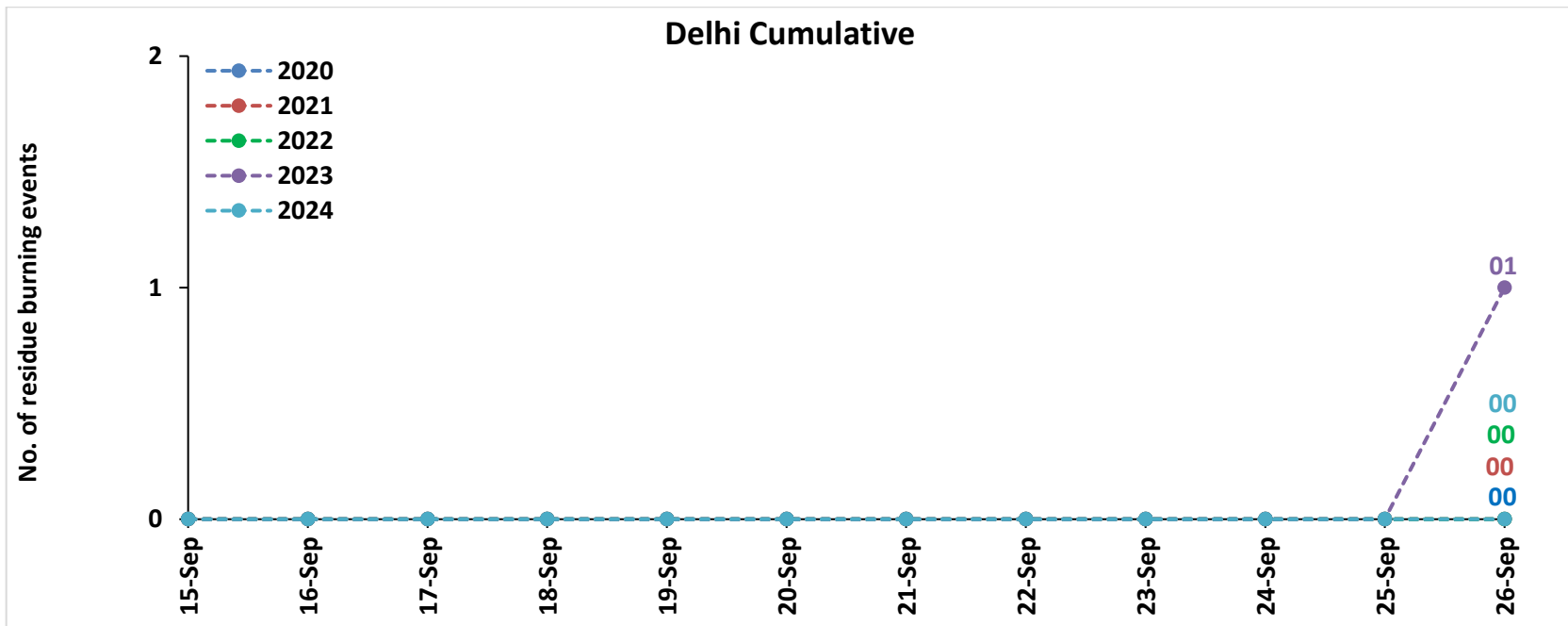
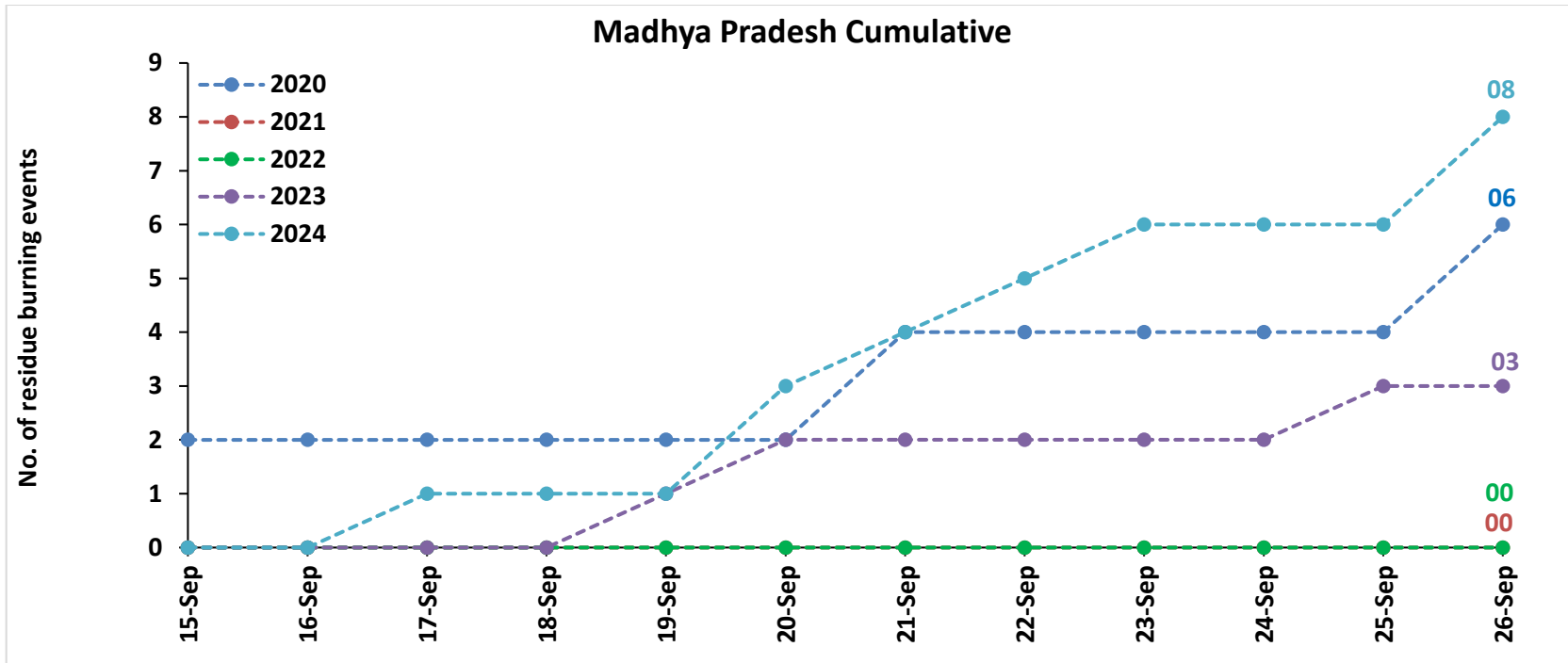
Madhya Pradesh



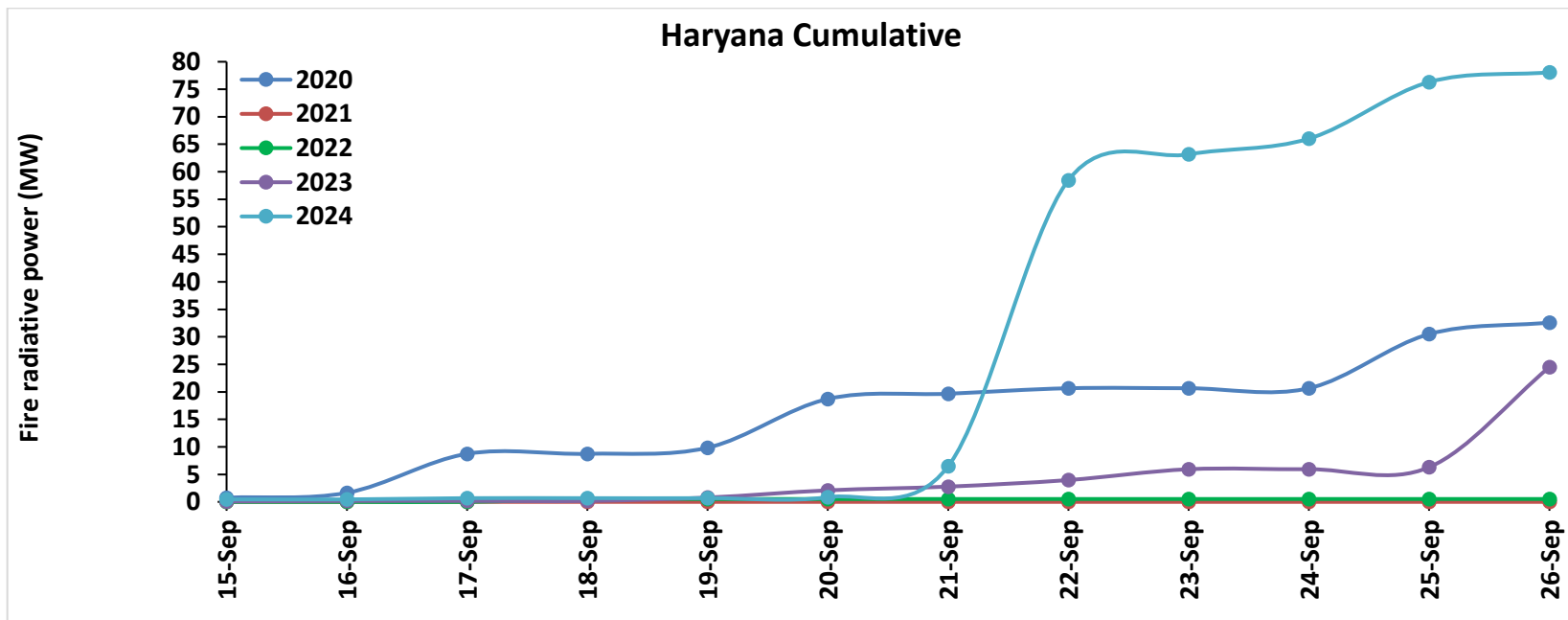
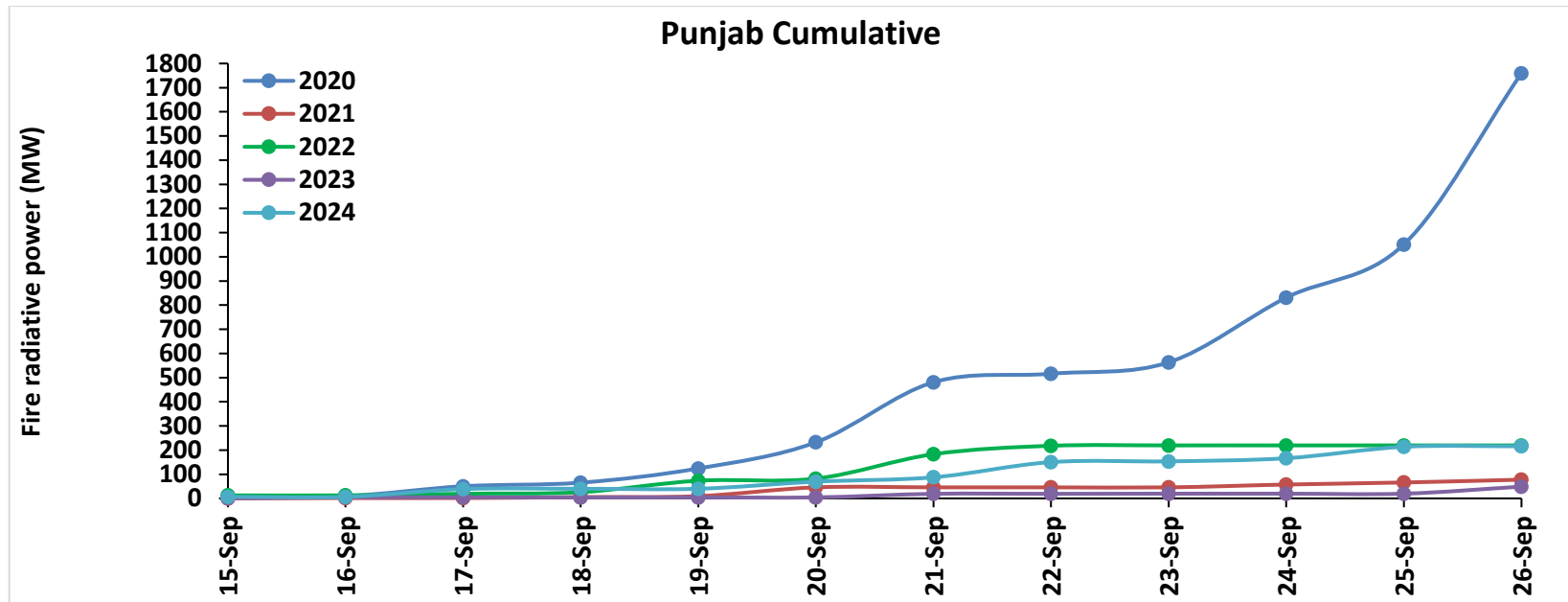
Comparison of residue burning events in current year (2024) with previous years (2020, 2021, 2022 and 2023) for the study States

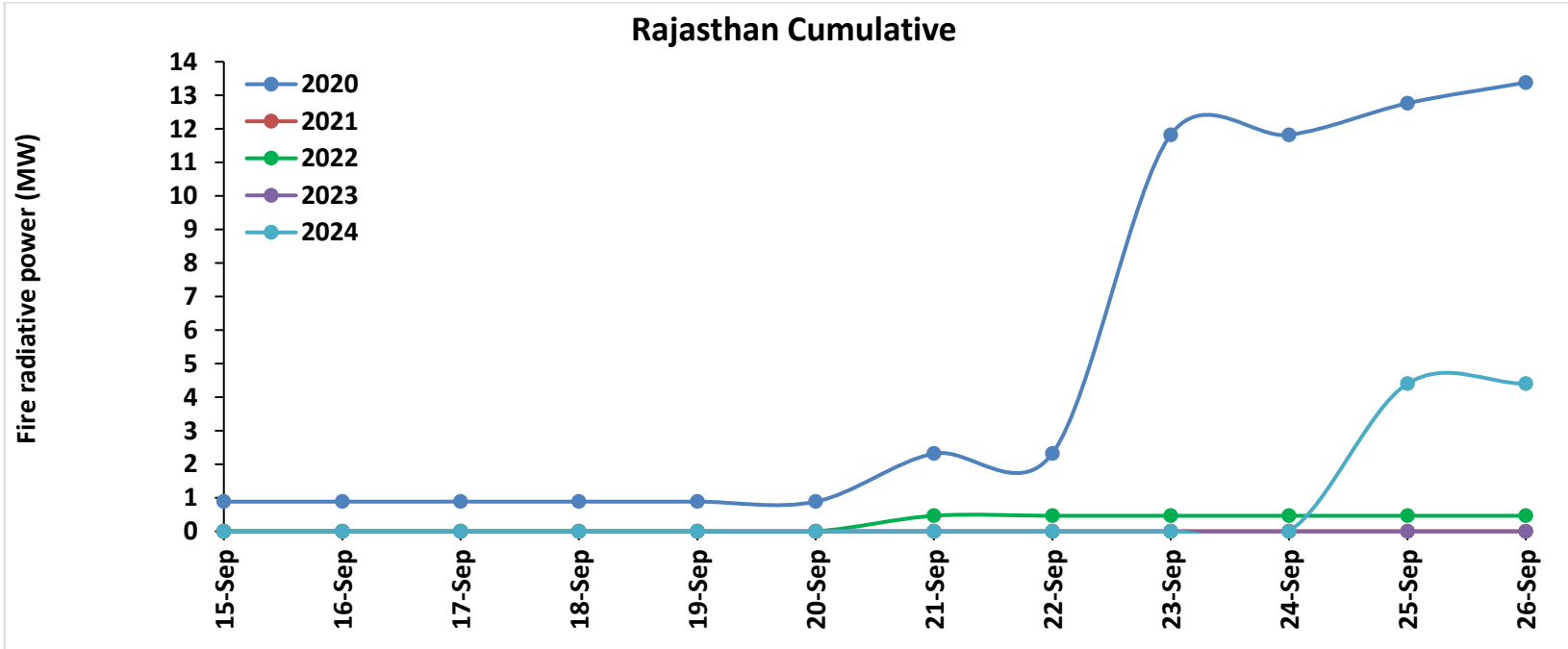
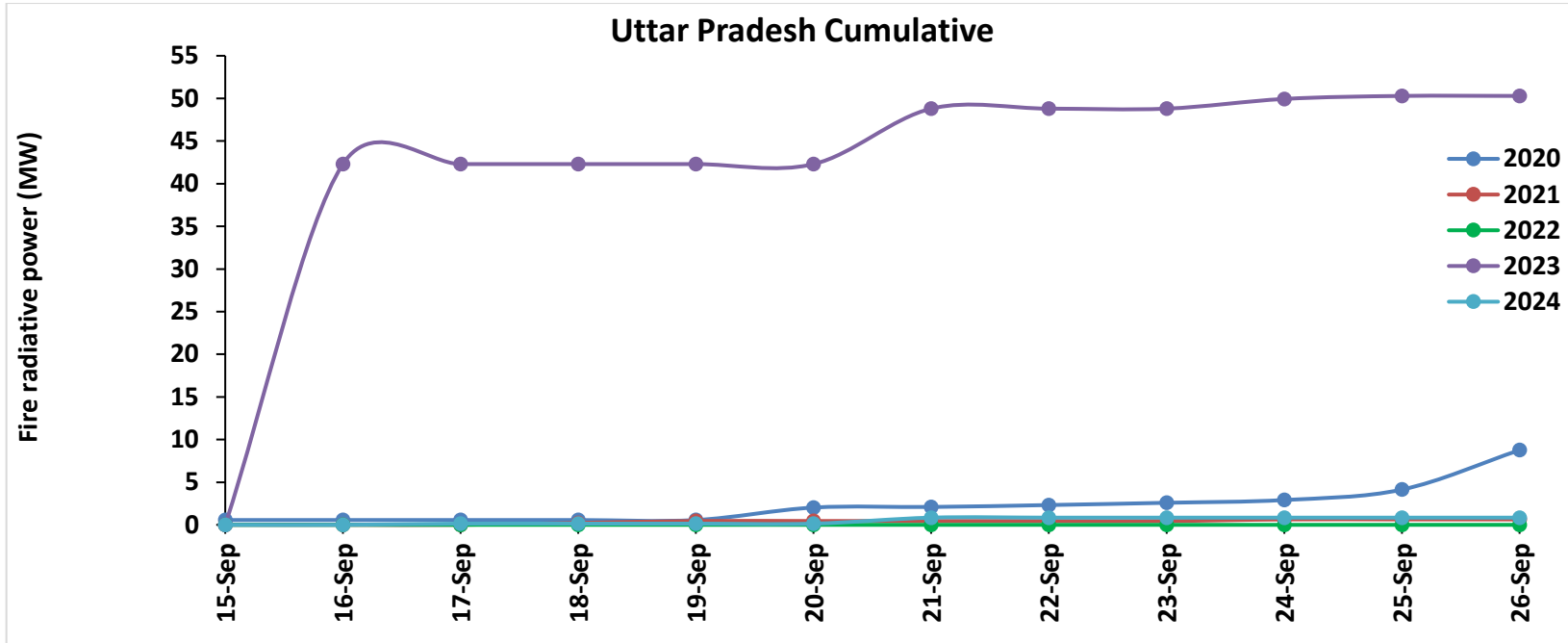


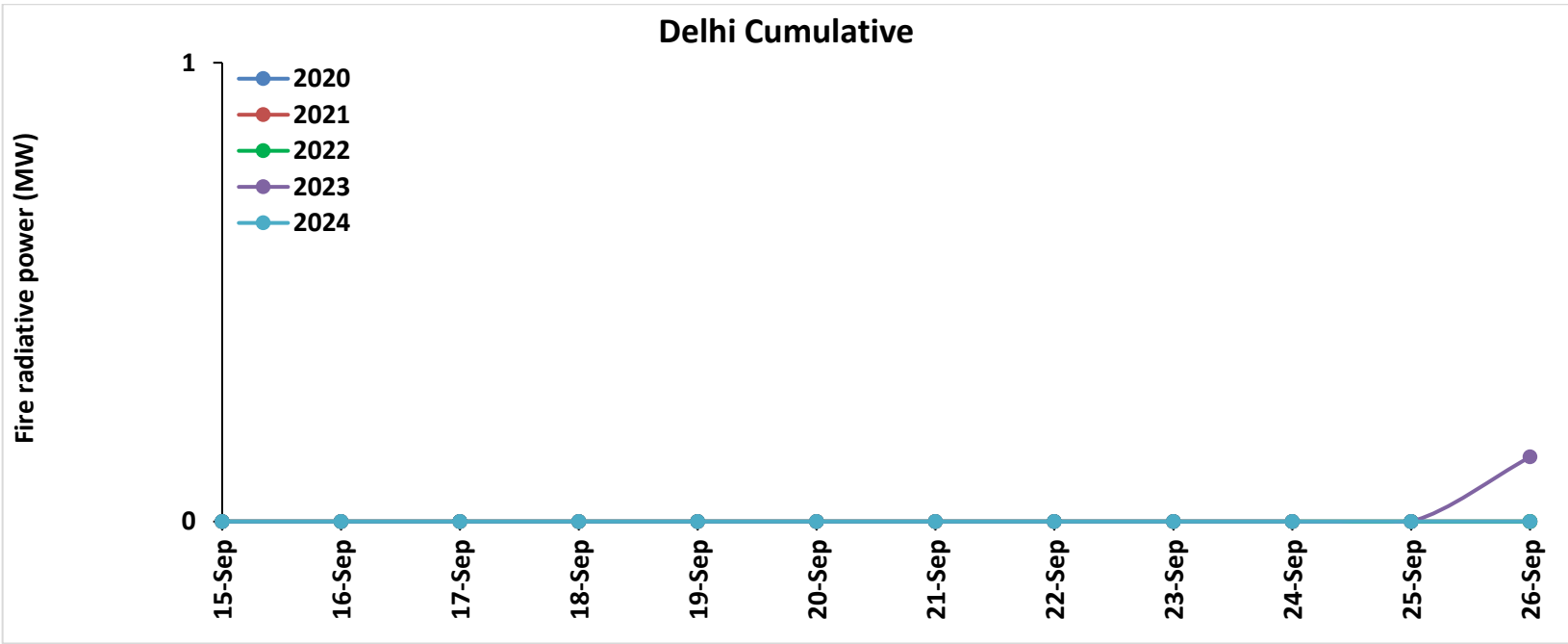
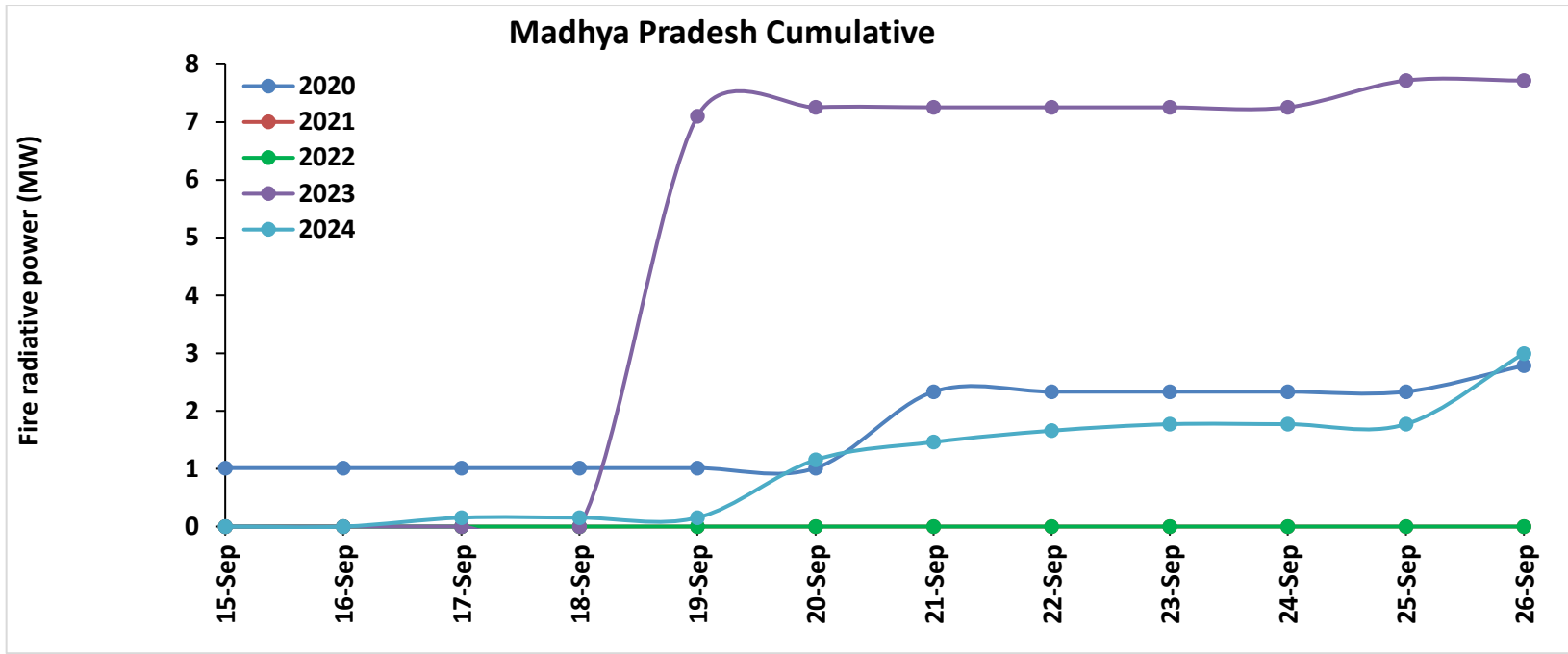




Comparison of residue burning fire power in current year (2024) with previous years (2020,2021,2022 and 2023) for the study States

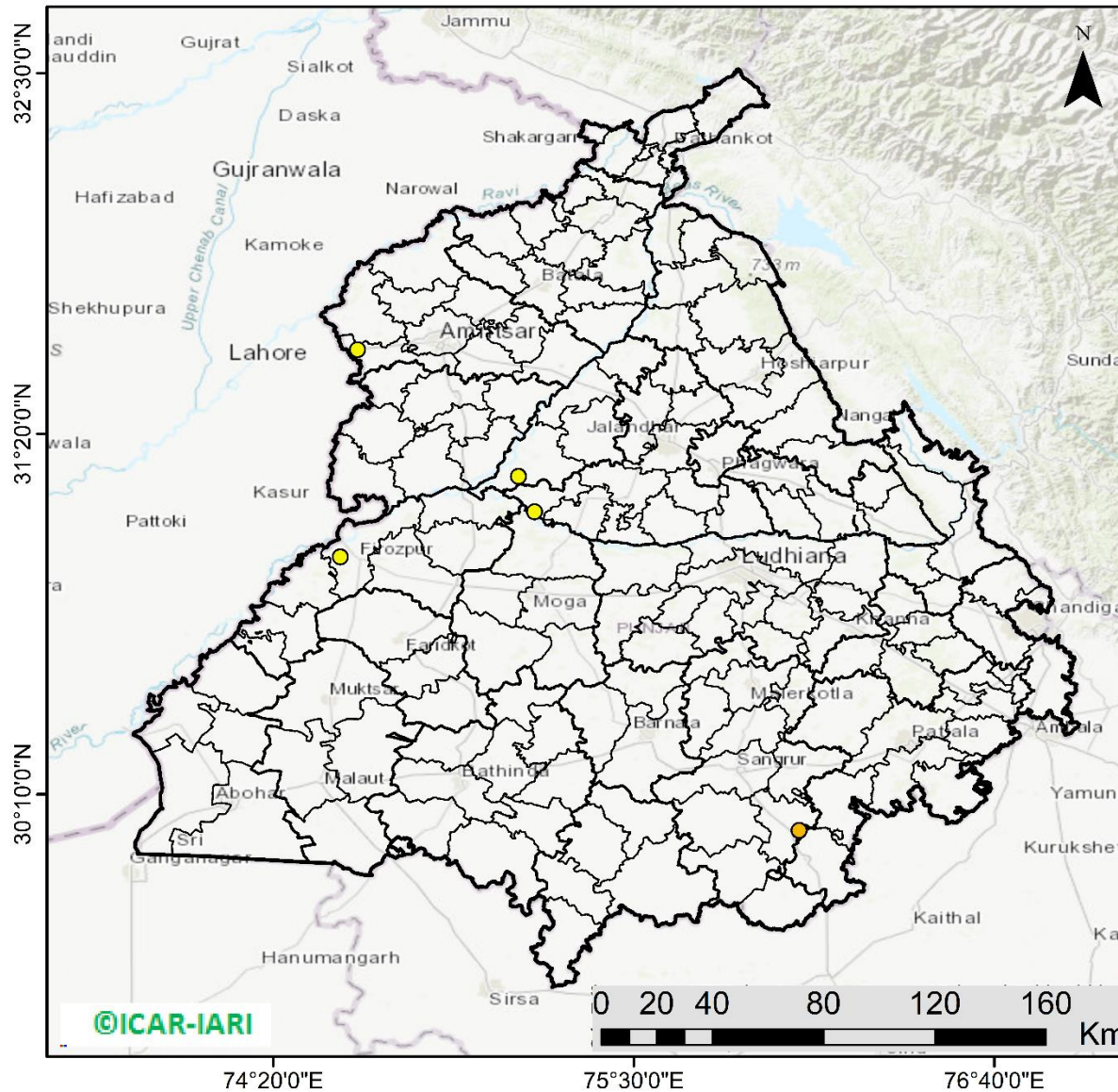






Punjab

RICE RESIDUE BURNING IN PUNJAB



05 burning events detected in Punjab during (26th Sep 2024)

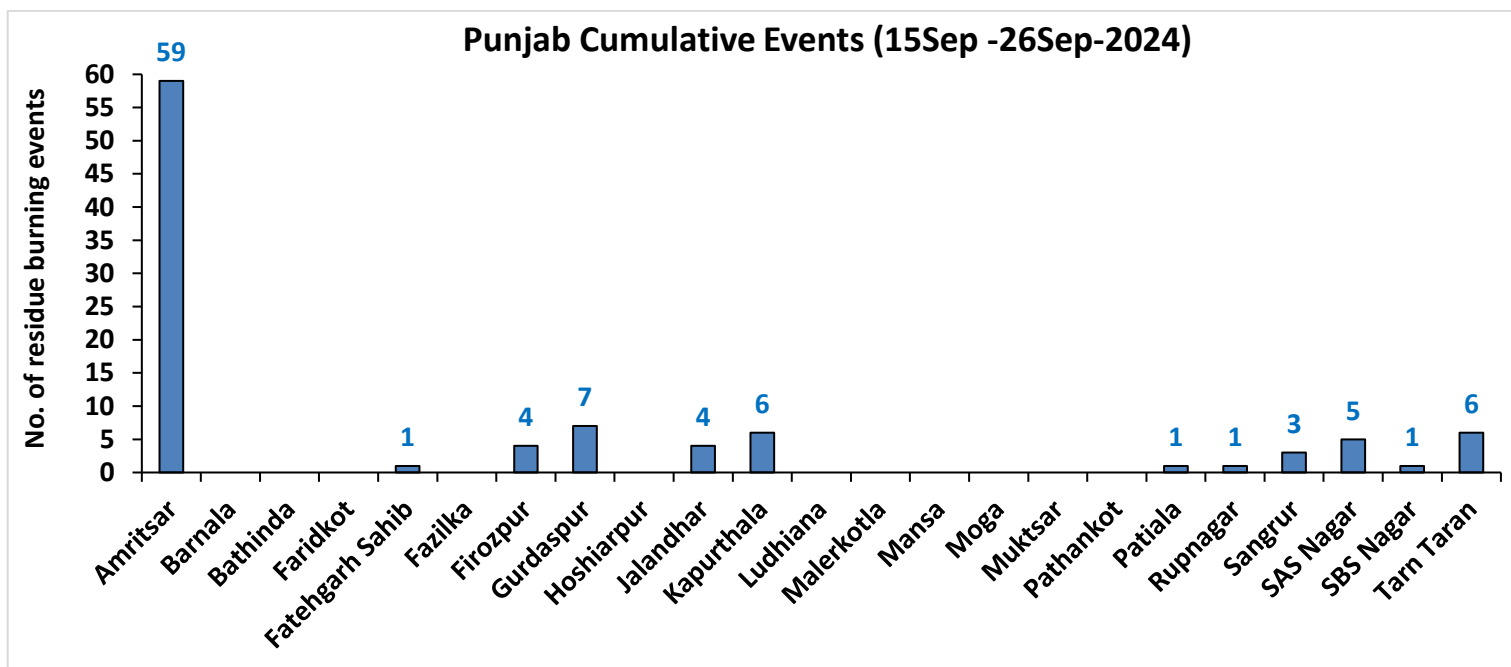
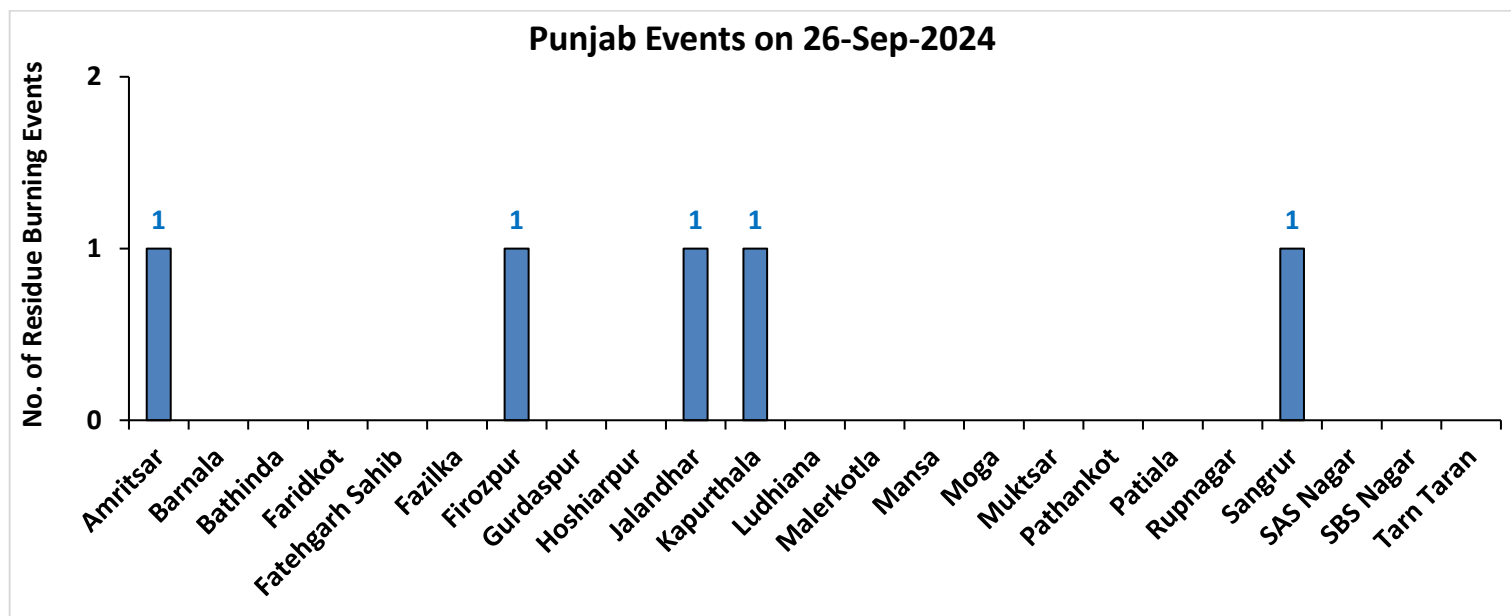
Fire Intensity (W/m²)

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



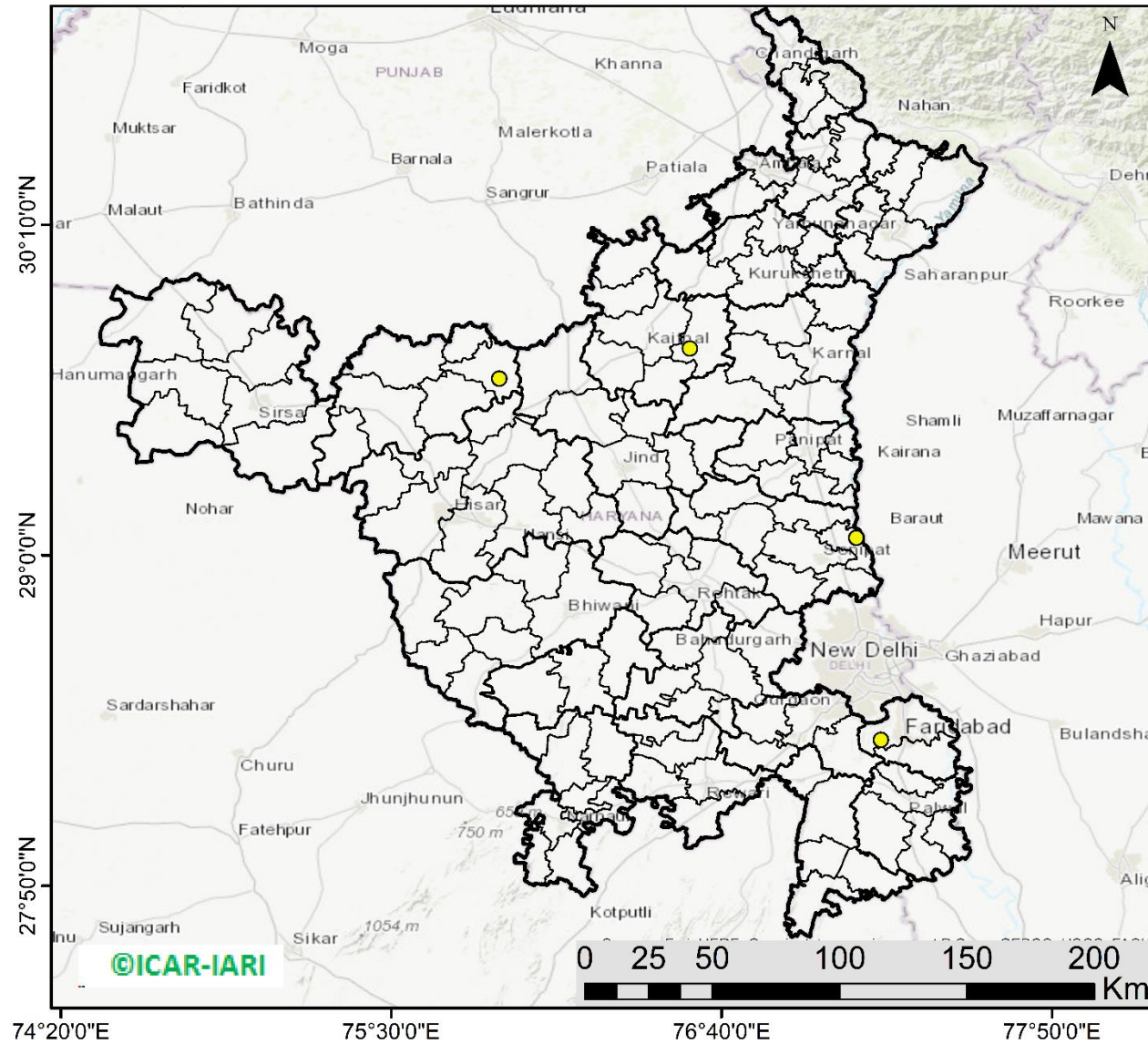
<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

District-wise cumulative number of residues burning events in Punjab (15Sep-26Sep-2024)



Haryana

RICE RESIDUE BURNING IN HARYANA



05 burning events detected in Haryana on (26th Sep 2024)

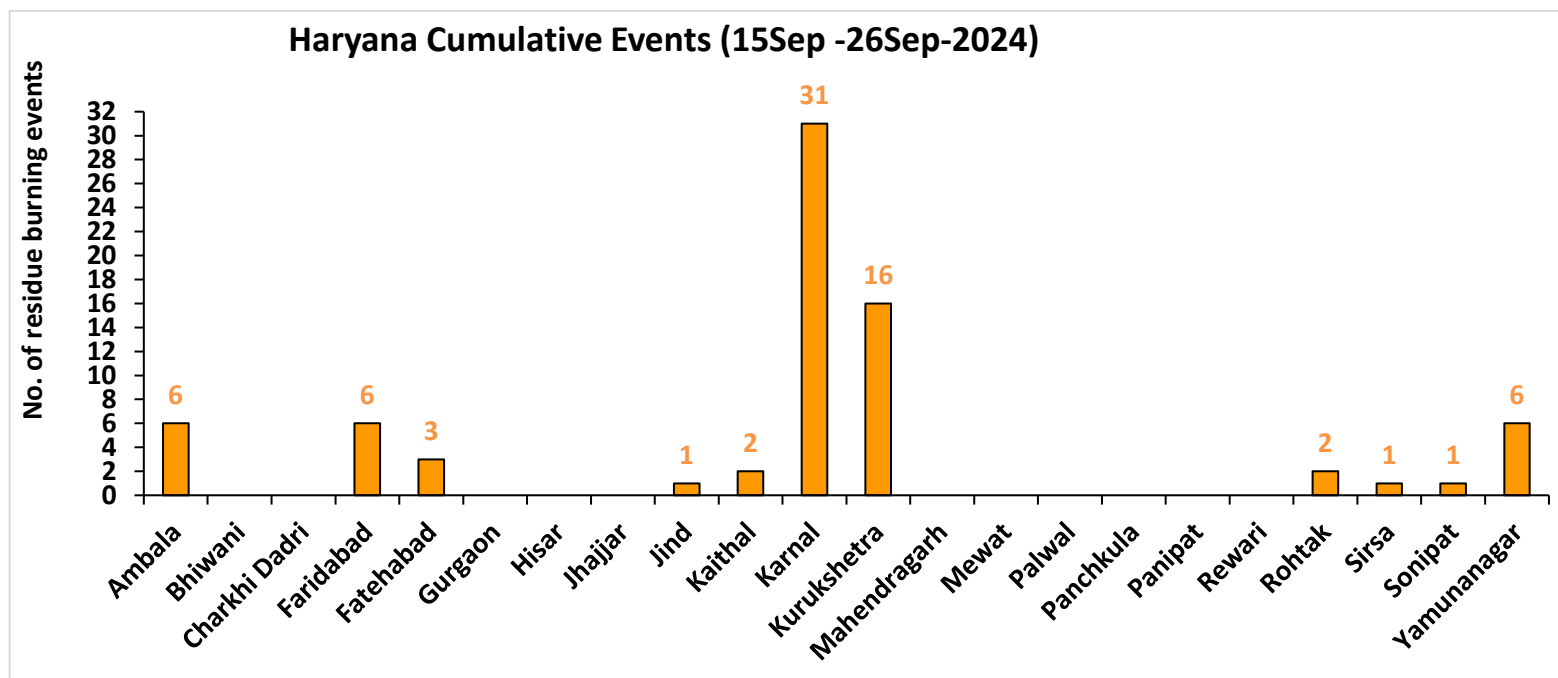
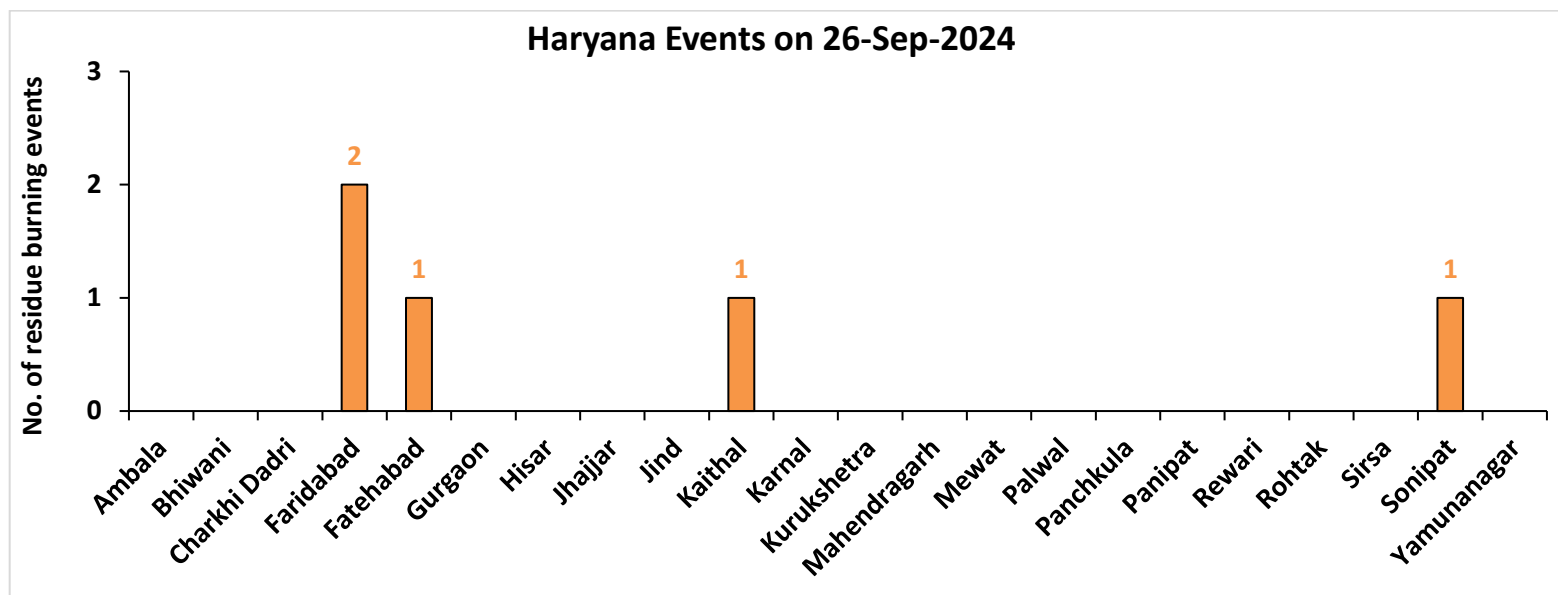
Fire Intensity (W/m²)

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



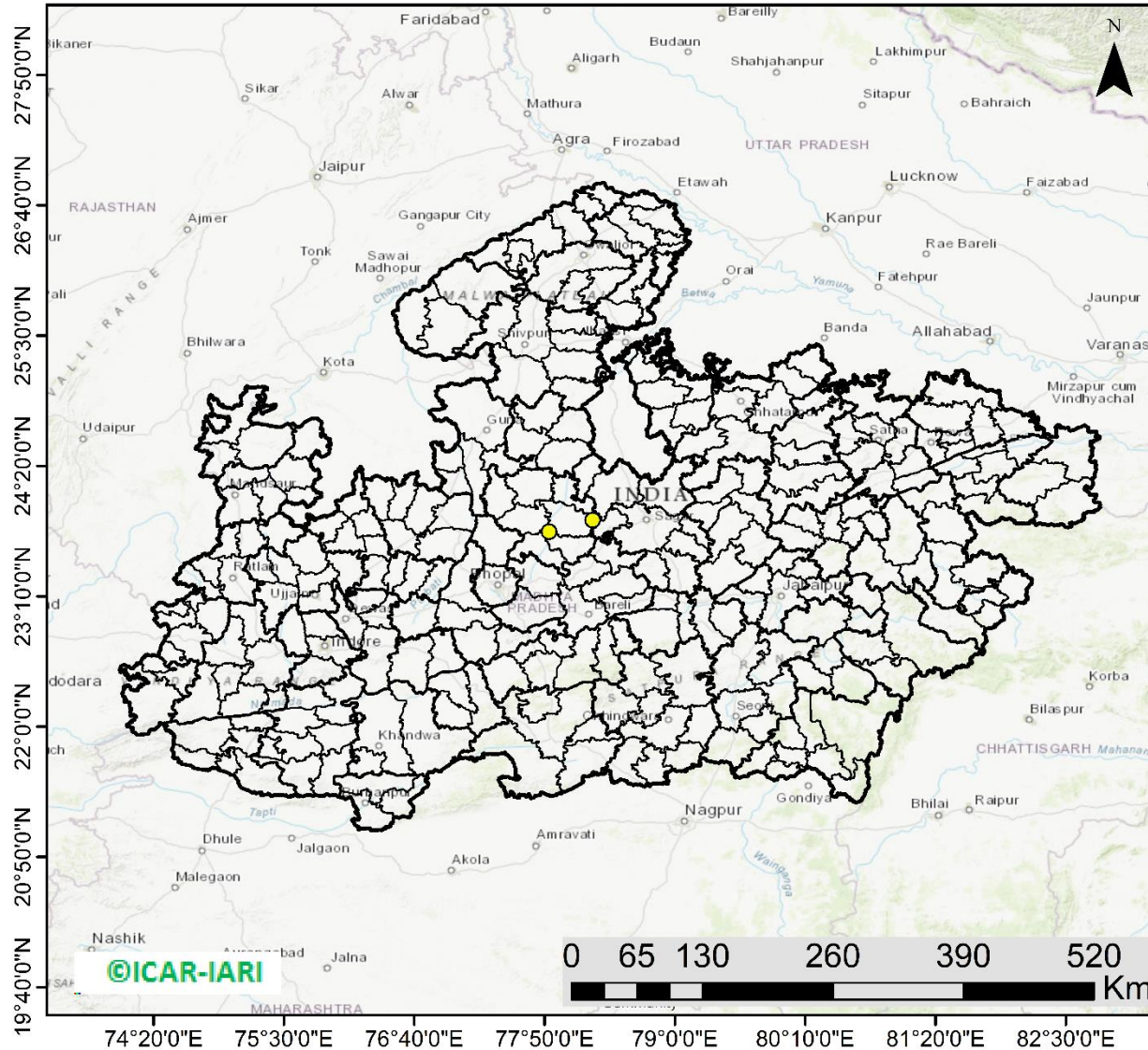
<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

District-wise cumulative number of residues burning events in Haryana (15Sep-26Sep-2024)



Madhya Pradesh

RICE RESIDUE BURNING IN MADHYA PRADESH



02 burning events detected in MP on (26th Sep 2024)

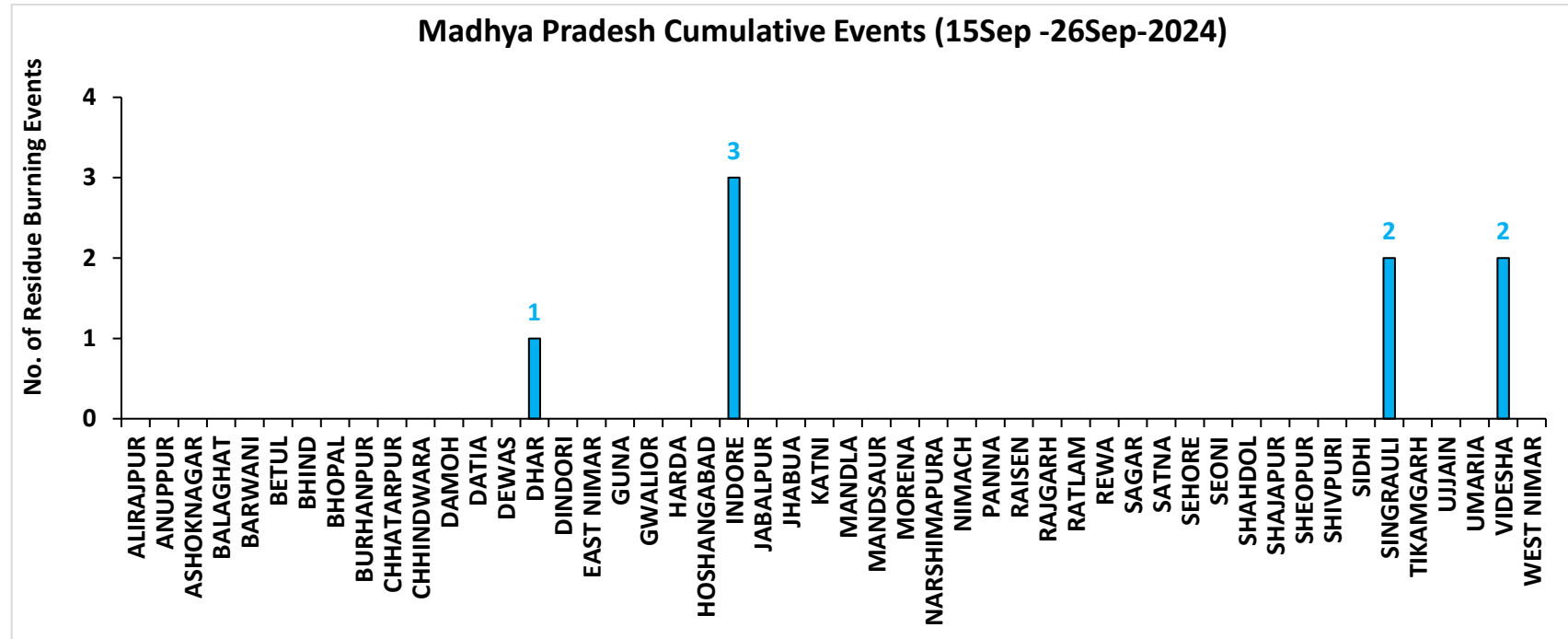
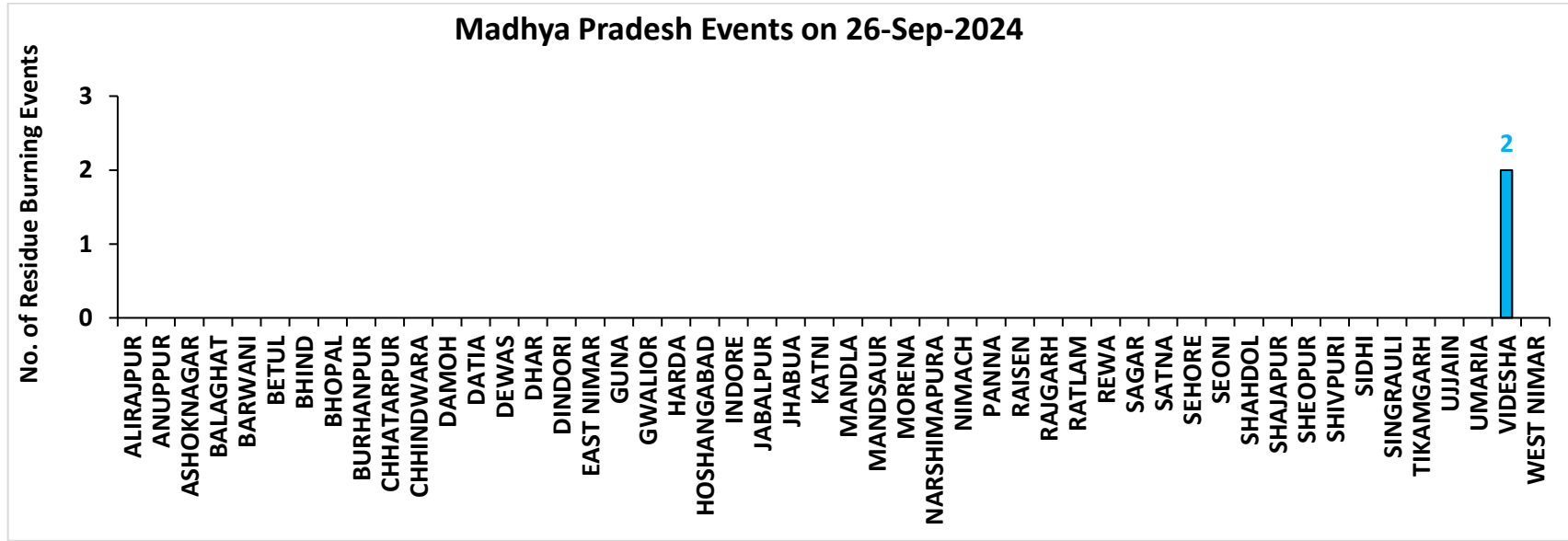
Fire Intensity (W/m²)

- 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-26Sep-2024)



District-wise cumulative number of residues burning events detected in 2020, 2021, 2022, 2023 and 2024
(Period: 15 September-26 September)

(a) Punjab

District	15 Sep-26 Sep				
	2020	2021	2022	2023	2024
Amritsar	560	47	121	9	59
Barnala	1	0	0	0	0
Bathinda	0	0	0	0	0
Faridkot	1	3	0	0	0
Fatehgarh Sahib	0	0	0	0	1
Fazilka	0	0	0	0	0
Firozpur	2	0	0	1	4
Gurdaspur	12	0	1	0	7
Hoshiarpur	0	0	0	1	0
Jalandhar	2	0	0	0	4
Kapurthala	7	0	0	0	6
Ludhiana	6	1	0	0	0
Malerkotla	0	0	0	0	0
Mansa	1	0	0	0	0
Moga	4	0	0	0	0
Muktsar	1	0	0	0	0
Pathankot	0	0	0	0	0
Patiala	13	3	1	0	1
Rupnagar	0	0	0	0	1
Sangrur	2	0	0	0	3
SAS NAGAR (Mohali)	3	0	1	0	5
SBS Nagar	0	0	1	0	1
Tarn Taran	98	5	14	0	6
Total	713	59	139	11	98

(b) Haryana

District	15 Sep-26 Sep				
	2020	2021	2022	2023	2024
AMBALA	3	0	0	1	6
BHIWANI	0	0	0	0	0
CHARKHI DADRI	0	0	0	0	0
FARIDABAD	0	0	0	0	6
FATEHABAD	2	0	0	1	3
GURGAON	0	0	0	0	0
HISAR	0	0	0	0	0
JHAJJAR	0	0	0	0	0
JIND	0	0	1	1	1
KAITHAL	3	0	0	0	2
KARNAL	16	0	0	6	31
KURUKSHETRA	7	0	0	1	16
MAHENDRAGARH	0	0	0	0	0
MEWAT	0	0	0	0	0
PALWAL	0	0	0	0	0
PANCHKULA	0	0	0	0	0
PANIPAT	1	0	0	0	0
REWARI	0	0	0	0	0
ROHTAK	0	0	0	1	2
SIRSA	1	0	0	0	1
SONIPAT	0	0	0	2	1
YAMUNANAGAR	0	0	0	2	6
Total	33	0	1	15	75

(c) Uttar Pradesh

District	15 Sep-26 Sep																
	2020	2021	2022	2023	2024	GAUTAMBUDHNAGAR	0	0	0	0	1	MUZAFARNAGAR	0	0	0	0	0
AGRA	0	0	0	0	0	GAZIPUR	0	0	0	0	0	PILHIBHIT	0	0	0	1	0
ALIGARH	1	0	0	0	0	GHAZIABAD	1	0	0	0	1	PRATAPGARH	0	0	0	0	0
ALLAHABAD	0	0	0	0	0	GONDA	0	0	0	0	0	RAIBEARELI	1	0	0	0	0
AMBEDKARNAGAR	0	0	0	0	0	GORAKHPUR	0	0	0	0	0	RAMPUR	0	1	0	0	0
AMETHI	0	0	0	0	0	HAMIRPUR	0	0	0	0	0	SAMBHAL	3	0	0	0	0
AMROHA	0	0	0	0	0	HAPUR	1	0	0	0	0	SANTKABIRNAGAR	0	0	0	0	0
AURAIYA	1	0	0	0	0	HARDOI	0	0	0	0	0	SANTRAVIDASNAGAR	0	0	0	0	0
AZAMGARH	0	0	0	0	0	HATHRAS	0	0	0	0	0	SHAHJAHANPUR	0	0	0	1	1
BADAUN	0	0	0	0	0	JALAUN	0	0	0	0	0	SHAMLI	6	0	0	0	0
BAGHPAT	1	0	0	0	0	JAUNPUR	0	0	0	0	0	SHARANPUR	1	0	0	0	0
BAHRAICH	0	0	0	0	0	JHANSI	2	0	0	0	0	SHRAWASTI	0	0	0	0	0
BALLIA	0	0	0	0	0	KANNAUJ	0	0	0	0	0	SIDDHARTHANAGAR	0	0	0	0	0
BALRAMPUR	0	0	0	0	0	KANPUR	0	1	0	0	0	SITAPUR	0	0	0	0	0
BANDA	0	0	0	0	0	KANPUR DEHAT	0	0	0	0	0	SONBHADRA	0	0	0	0	0
BARABANKI	0	0	0	0	0	KASGANJ	0	0	0	0	0	SULTANPUR	0	0	0	0	0
BAREILLY	0	0	0	0	0	KAUSHAMBI	0	0	0	1	0	UNNAO	0	0	0	0	0
BASTI	0	0	0	0	0	KHERI	0	0	0	0	0	VARANASI	0	0	0	0	0
BIJNOR	1	0	0	0	0	KUSHINAGAR	0	0	0	0	0	Total	20	3	0	5	3
BULANDSAHAR	0	0	0	0	0	LALITPUR	0	0	0	0	0						
CHANDAULI	0	0	0	0	0	LUCKNOW	0	0	0	0	0						
CHITRAKOOT	0	0	0	0	0	MAHARAJGANJ	0	0	0	0	0						
DEORIA	0	0	0	2	0	MAHOBA	0	0	0	0	0						
ETAH	0	0	0	0	0	MAINPURI	0	0	0	0	0						
ETAWAH	0	0	0	0	0	MATHURA	0	1	0	0	0						
FAIZABAD	0	0	0	0	0	MAU	0	0	0	0	0						
FARRUKHABAD	0	0	0	0	0	MEERUT	1	0	0	0	0						
FATEHPUR	0	0	0	0	0	MIRZAPUR	0	0	0	0	0						
FIROZABAD	0	0	0	0	0	MORADABAD	0	0	0	0	0						

(d) Delhi

District	15 Sep-26 Sep				
	2020	2021	2022	2023	2024
CENTRAL	0	0	0	0	0
EAST	0	0	0	0	0
NEW DELHI	0	0	0	0	0
NORTH	0	0	0	1	0
NORTH EAST	0	0	0	0	0
NORTH WEST DELHI	0	0	0	0	0
SHAHADRA	0	0	0	0	0
SOUTH	0	0	0	0	0
SOUTH EAST	0	0	0	0	0
SOUTH WEST DELHI	0	0	0	0	0
WEST DELHI	0	0	0	0	0
Total	0	0	0	1	0

(e) Rajasthan

District	15 Sep-26 Sep				
	2020	2021	2022	2023	2024
AJMER	0	0	0	0	0
ALWAR	0	0	0	0	0
BANSWARA	0	0	0	0	0
BARAN	0	0	0	0	0
BARMER	1	0	0	0	0
BHARATPUR	0	0	0	0	0
BHILWARA	1	0	0	0	0
BIKANER	0	0	0	0	0
BUNDI	0	0	1	0	0
CHITTAURGARH	0	0	0	0	0
CHURU	0	0	0	0	0
DAUSA	0	0	0	0	0
DHOLPUR	0	0	0	0	0
DUNGARPUR	0	0	0	0	0
GANGANAGAR	1	0	0	0	0
HANUMANGARH	0	0	0	0	3
JAIPUR	0	0	0	0	0
JAISELMER	1	0	0	0	0
JALOR	0	0	0	0	0
JHALAWAR	0	0	0	0	0
JHUNJHUNUN	0	0	0	0	0
JODHPUR	1	0	0	0	0
KARAULI	0	0	0	0	0
KOTA	0	0	0	0	0
NAGOUR	0	0	0	0	0
PALI	0	0	0	0	0
PRATAPGARH	0	0	0	0	0
RAJSMAND	0	0	0	0	0
SIKAR	0	0	0	0	0
SIROHI	0	0	0	0	0
SWAIMADHOPUR	0	0	0	0	0
TONK	0	0	0	0	0
UDAIPUR	0	0	0	0	0
Total	5	0	1	0	3

(f) Madhya Pradesh

District	15 Sep-26 Sep										
	2020	2021	2022	2023	2024	PANNA	0	0	0	0	0
ALIRAJPUR	0	0	0	0	0	RAISEN	0	0	0	0	0
ANUPPUR	0	0	0	0	0	RAJGARH	0	0	0	0	0
ASHOKNAGAR	0	0	0	0	0	RATLAM	0	0	0	0	0
BALAGHAT	0	0	0	0	0	REWA	0	0	0	0	0
BARWANI	0	0	0	0	0	SAGAR	2	0	0	1	0
BETUL	0	0	0	0	0	SATNA	0	0	0	0	0
BHIND	0	0	0	0	0	SEHORE	0	0	0	0	0
BHOPAL	0	0	0	0	0	SEONI	0	0	0	0	0
BURHANPUR	0	0	0	0	0	SHAHDOL	0	0	0	0	0
CHHATARPUR	0	0	0	0	0	SHAJAPUR	0	0	0	0	0
CHHINDWARA	0	0	0	0	0	SHEOPUR	0	0	0	0	0
DAMOH	0	0	0	1	0	SHIVPURI	0	0	0	0	0
DATIA	0	0	0	0	0	SIDHI	0	0	0	0	0
DEWAS	0	0	0	0	0	SINGRAULI	0	0	0	0	2
DHAR	0	0	0	0	1	TIKAMGARH	0	0	0	0	0
DINDORI	0	0	0	0	0	UJJAIN	0	0	0	0	0
EAST NIMAR	0	0	0	0	0	UMARIA	0	0	0	0	0
GUNA	1	0	0	0	0	VIDESHA	0	0	0	0	2
GWALIOR	1	0	0	0	0	WEST NIMAR	0	0	0	0	0
HARDA	2	0	0	0	0	Total	6	0	0	3	8
HOSHANGABAD	0	0	0	1	0						
INDORE	0	0	0	0	3						
JABALPUR	0	0	0	0	0						
JHABUA	0	0	0	0	0						
KATNI	0	0	0	0	0						
MANDLA	0	0	0	0	0						
MANDSAUR	0	0	0	0	0						
MORENA	0	0	0	0	0						
NARSHIMAPURA	0	0	0	0	0						
NIMACH	0	0	0	0	0						

State-wise and date-wise number of paddy residue burning events detected in 2020 ,2021 ,2022, 2023 and 2024
(Period: 15 September-26 September)

Number of Paddy Residue Burning Events Detected

Date	Punjab					Haryana					Uttar Pradesh				
	2020	2021	2022	2023	2024	2020	2021	2022	2023	2024	2020	2021	2022	2023	2024
15-Sep	5	0	14	0	11	2	0	0	1	1	1	0	0	0	0
16-Sep	0	2	0	6	0	1	0	0	1	0	0	0	0	2	0
17-Sep	5	0	1	0	5	3	0	0	0	1	0	0	0	0	1
18-Sep	17	9	7	0	2	0	0	1	0	0	0	1	0	0	0
19-Sep	30	5	18	0	0	2	0	0	1	0	0	1	0	0	0
20-Sep	67	8	10	0	13	6	0	0	2	1	2	0	0	0	0
21-Sep	54	0	56	1	21	2	0	0	2	13	1	0	0	1	2
22-Sep	34	0	30	0	11	1	0	0	2	18	1	0	0	0	0
23-Sep	49	0	3	1	6	0	0	0	3	12	1	0	0	0	0
24-Sep	78	5	0	0	12	0	0	0	0	6	1	1	0	1	0
25-Sep	184	11	0	0	12	11	0	0	1	18	5	0	0	1	0
26-Sep	190	19	0	3	5	5	0	0	2	5	8	0	0	0	0
Total	713	59	139	11	98	33	0	1	15	75	20	3	0	5	3

Number of Paddy Residue Burning Events Detected

Date	Delhi					Rajasthan					Madhya Pradesh				
	2020	2021	2022	2023	2024	2020	2021	2022	2023	2024	2020	2021	2022	2023	2024
15-Sep	0	0	0	0	0	1	0	0	0	0	2	0	0	0	0
16-Sep	0	0	0	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	0	0	1
18-Sep	0	0	0	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	0	0	1	0
20-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2
21-Sep	0	0	0	0	0	1	0	1	0	0	2	0	0	0	1
22-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
23-Sep	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
24-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25-Sep	0	0	0	0	0	1	0	0	0	3	0	0	0	1	0
26-Sep	0	0	0	1	0	1	0	0	0	0	2	0	0	0	2
Total	0	0	0	1	0	5	0	1	0	3	6	0	0	3	8

Details of residue burning events in Punjab on 26-Sep-2024

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m2)
1	AMRITSAR	ATTARI	S-NPP	31.60533	74.60648	13:28:04	D	1.80
2	FIROZPUR	FIROZPUR	S-NPP	30.93478	74.55072	13:28:04	D	2.60
3	JALANDHAR	LOHIAN	S-NPP	31.08084	75.17923	13:28:04	D	3.30
4	KAPURTHALA	SULTANPUR LODHI	S-NPP	31.19510	75.12702	13:28:04	D	2.60
5	SANGRUR	DIRBA	S-NPP	30.04943	76.03552	13:28:04	D	5.60

Details of residue burning events in Haryana on 26-Sep-2024

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m2)
1	FARIDABAD	FARIDABAD	S-NPP	28.34788	77.22990	02:18:46	N	1.70
2	FARIDABAD	FARIDABAD	S-NPP	28.36019	77.24172	02:18:46	N	0.30
3	FATEHABAD	TOHANA	S-NPP	29.62294	75.88183	13:28:04	D	4.70
4	KAITHAL	PUNDRI	S-NPP	29.72943	76.55486	13:28:04	D	3.70
5	SONIPAT	MURTHAL	S-NPP	29.06094	77.14310	13:28:04	D	2.10

Details of residue burning events in Madhya Pradesh on 26-Sep-2024

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m2)
1	VIDESHA	BASODA	S-NPP	23.74407	77.87421	13:28:04	D	4.10
2	VIDESHA	BASODA	S-NPP	23.84862	78.26524	13:28:04	D	4.60

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**

Study Team

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GIS Maps of fire events can be visualized online on ICAR KRISHI Geoportal website: <http://geoportal.icar.gov.in:8080/geoexplorer/composer/>
(Part of KRISHI Portal: <https://krishi.icar.gov.in> initiative)

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