

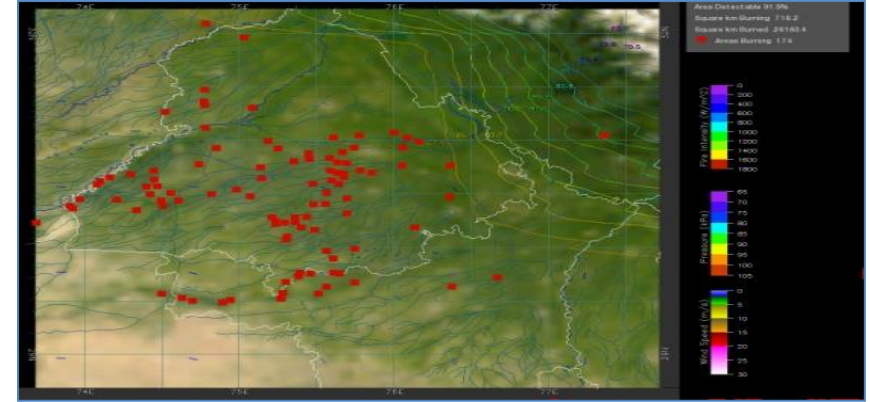
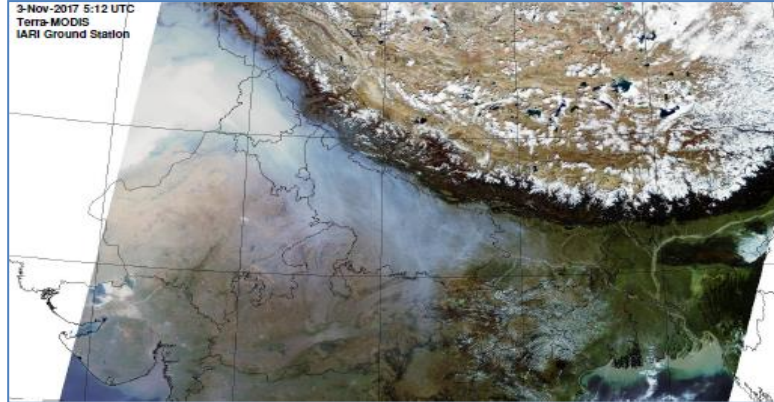


MONITORING PADDY RESIDUE BURNING IN INDIA USING SATELLITE REMOTE SENSING DURING 2024

Bulletin
No. 15

Events Date:
29-Sep-2024

Issued on:
29-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

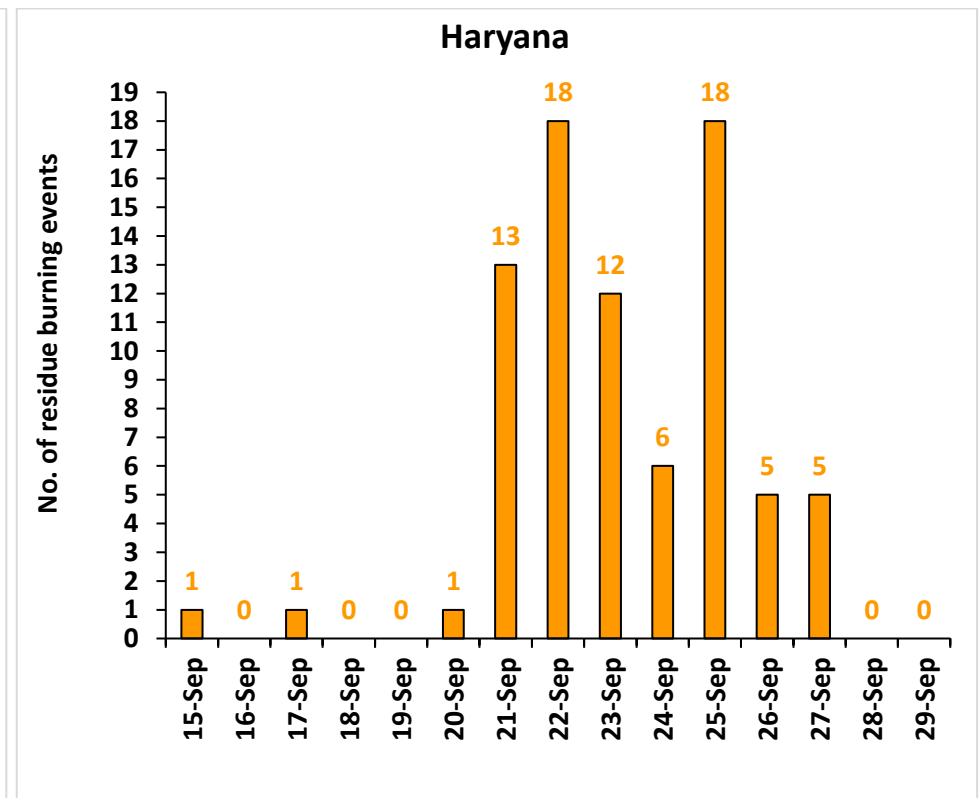
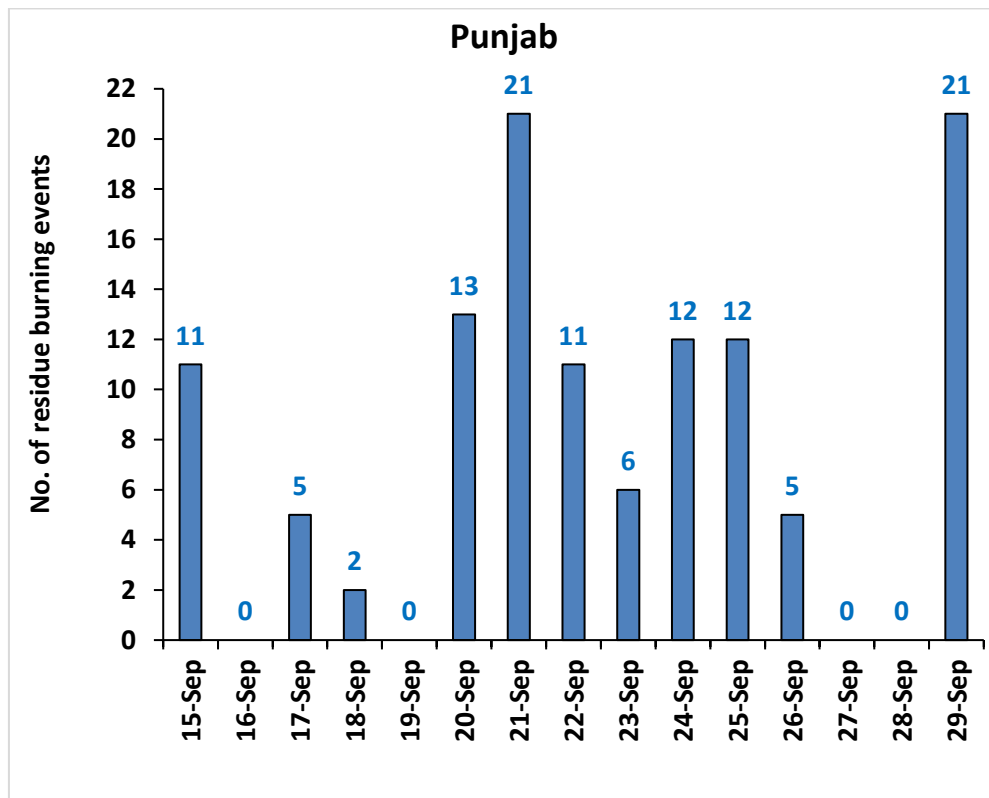
<https://creams.iari.res.in>



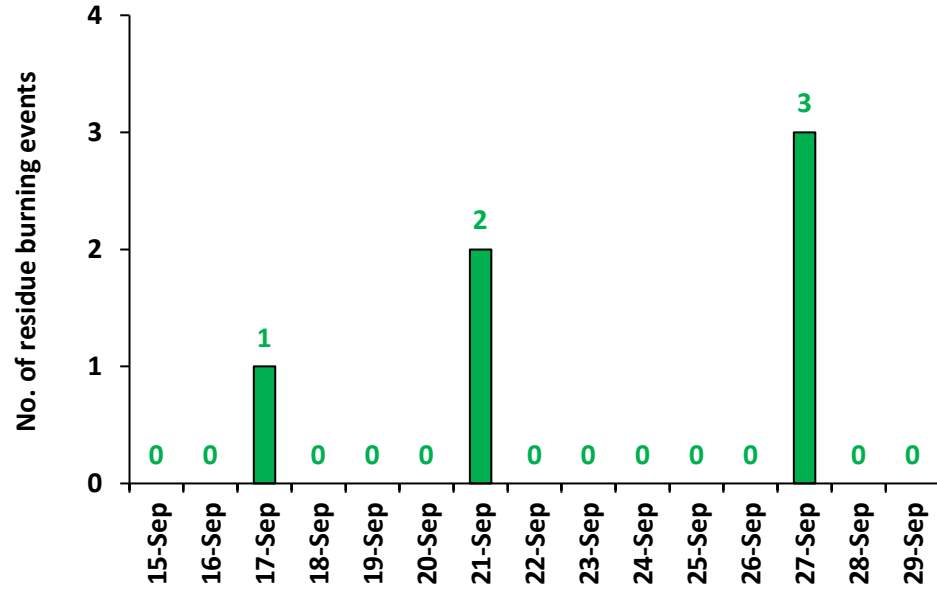
Highlights for 29-Sep-2024

- 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 **21** residue burning events in the six study States on **29-Sep-2024**.
- The state wise events detected on **29-Sep-2024** were **21** in Punjab, **00** in Haryana, **00** in UP, **00** in Delhi, **00** in Rajasthan and **00** in MP.
- Detection of residue burning events was hampered by the presence of clouds over parts of Uttar Pradesh, Rajasthan and Madhya Pradesh states.

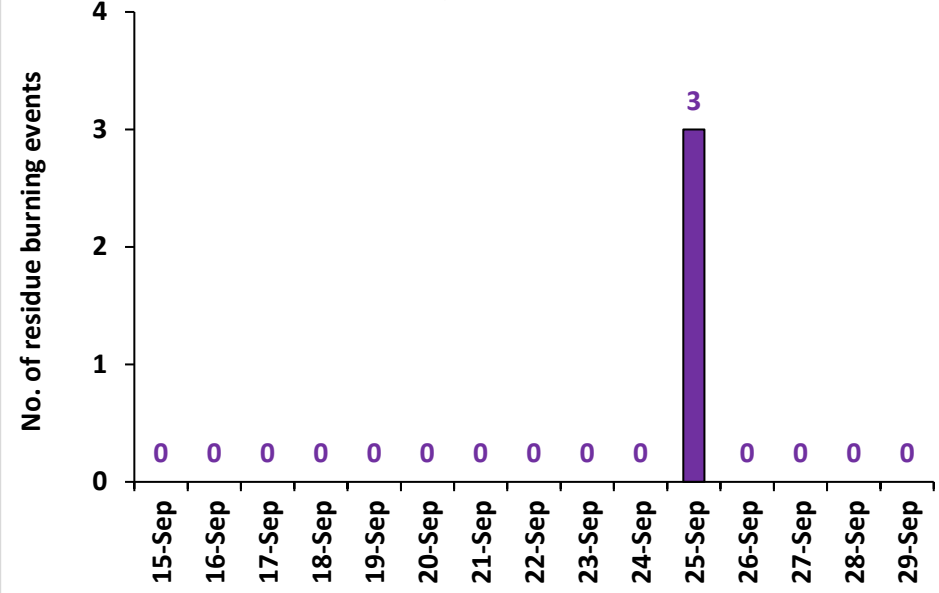
Temporal distribution of rice residue burning events for the study States in 2024



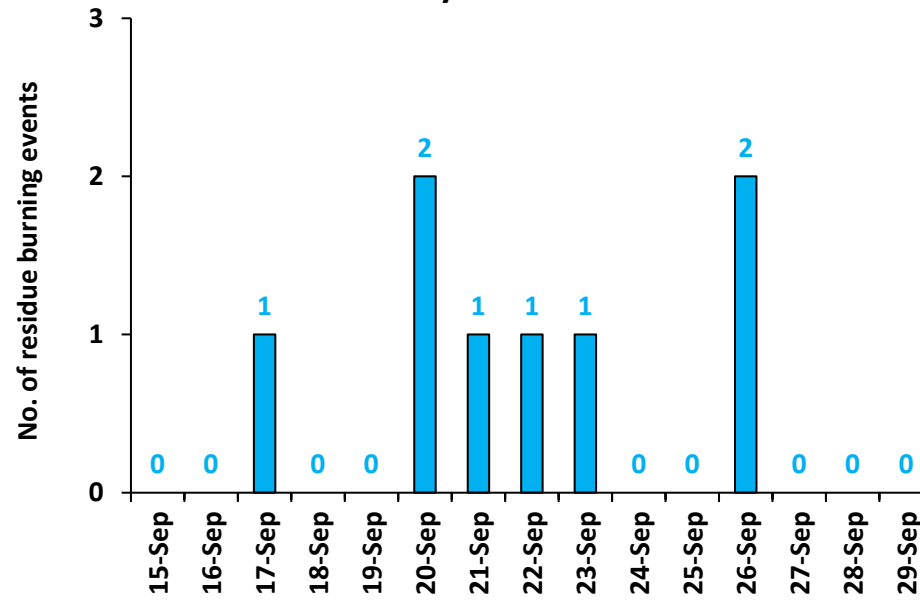
Uttar Pradesh



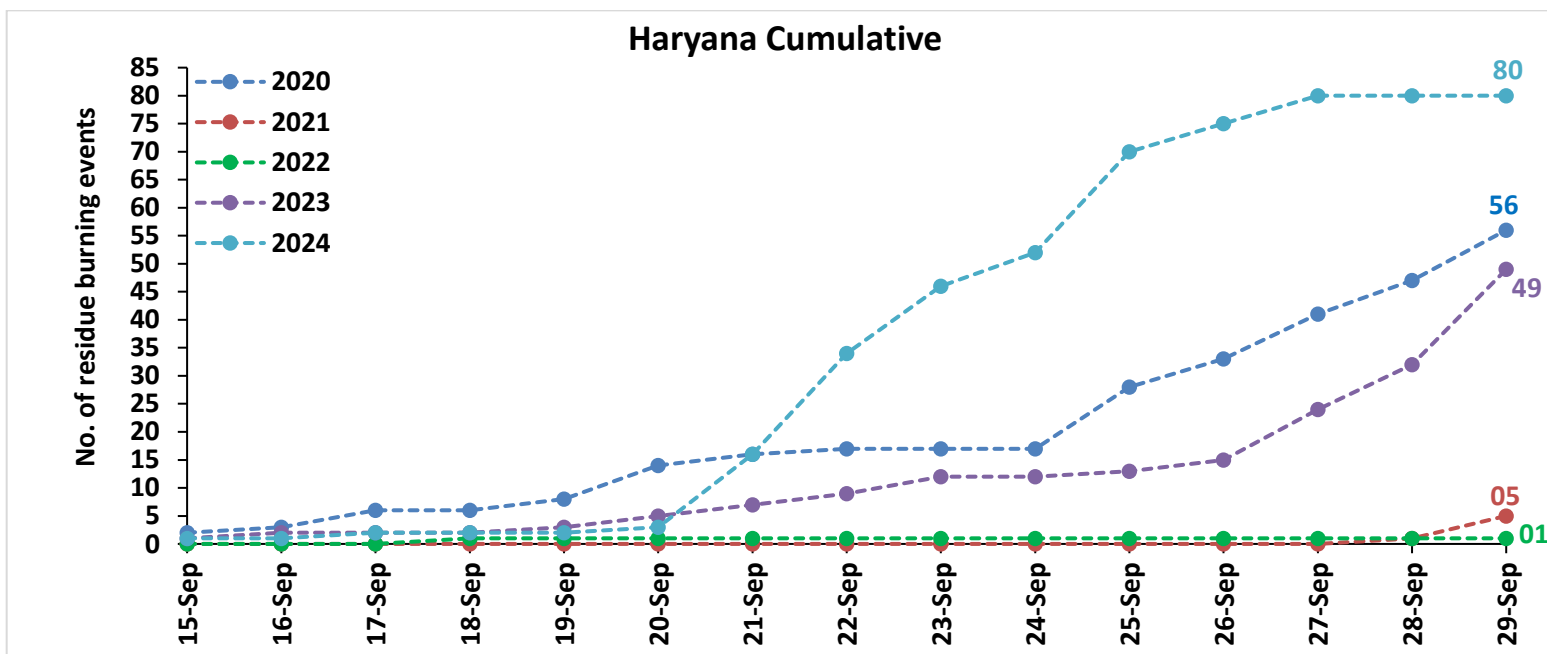
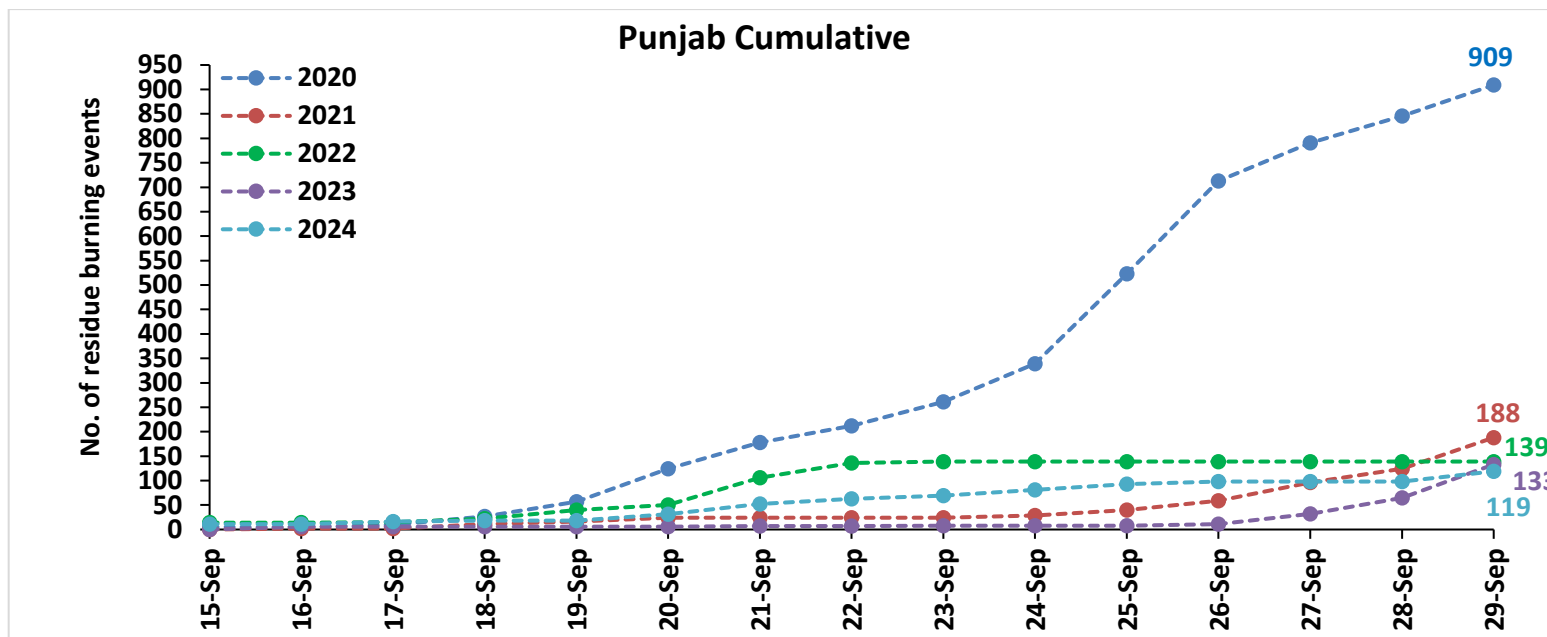
Rajasthan

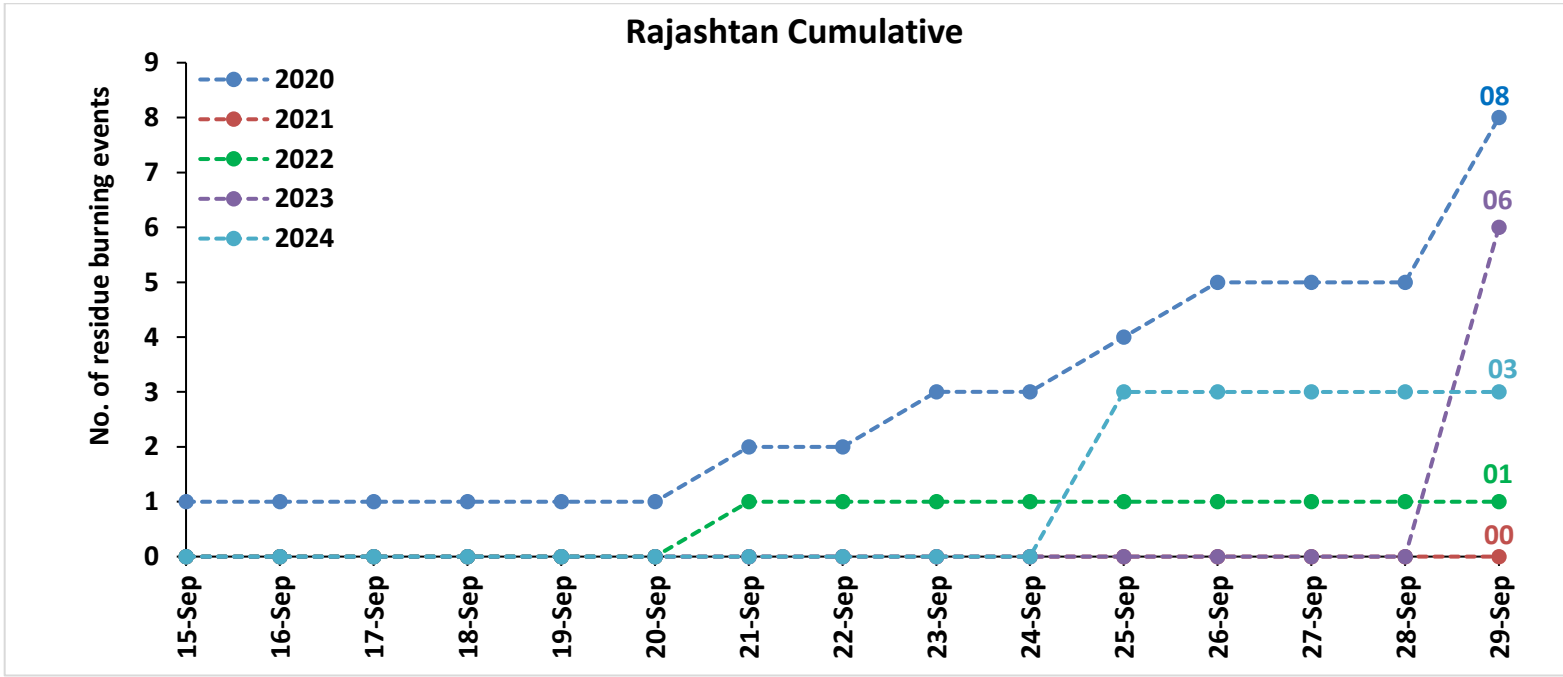
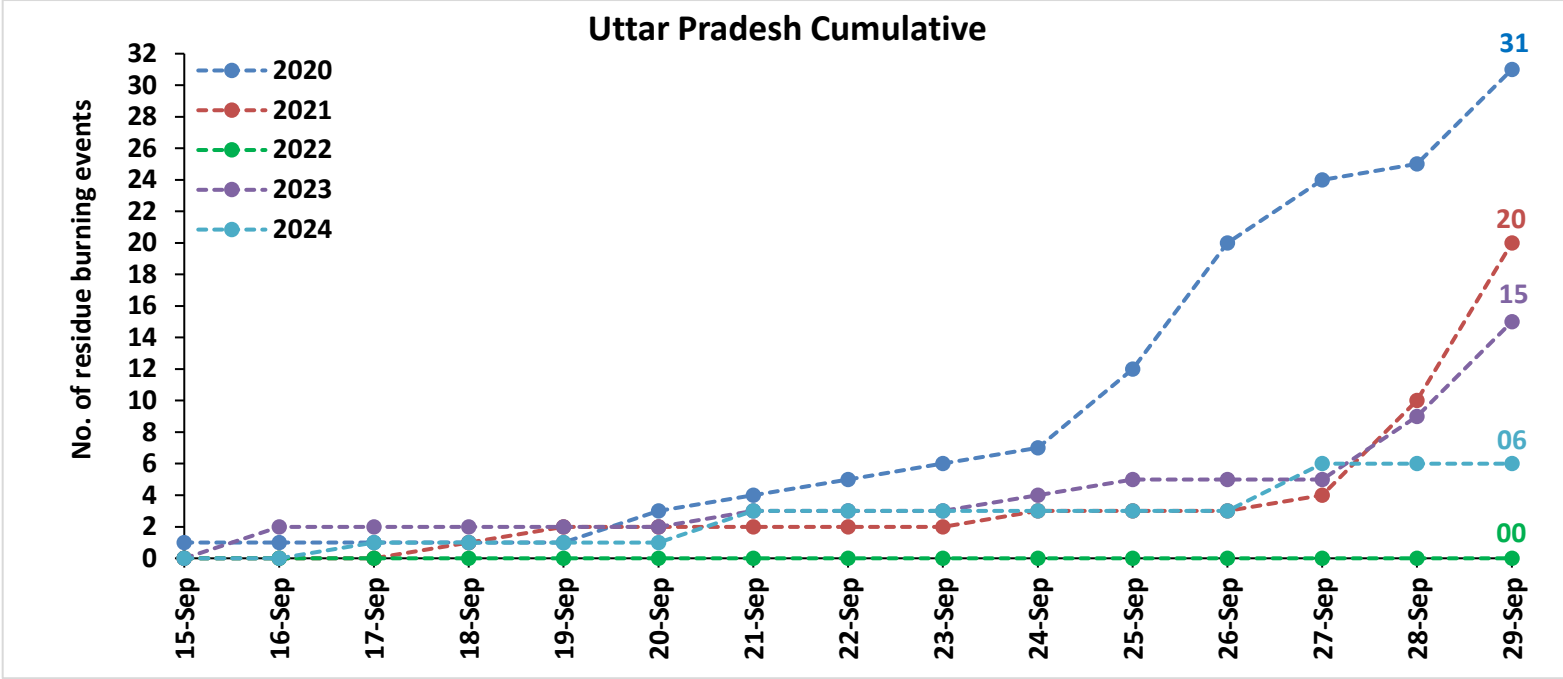


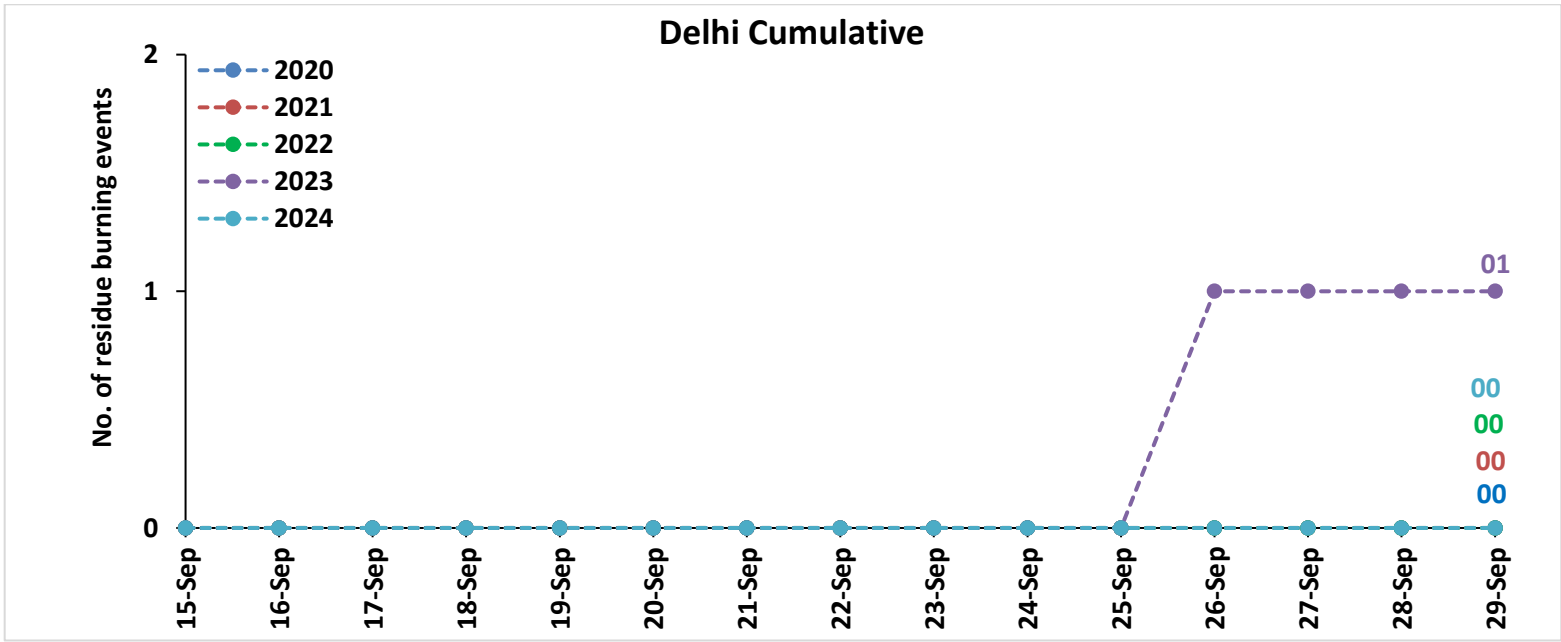
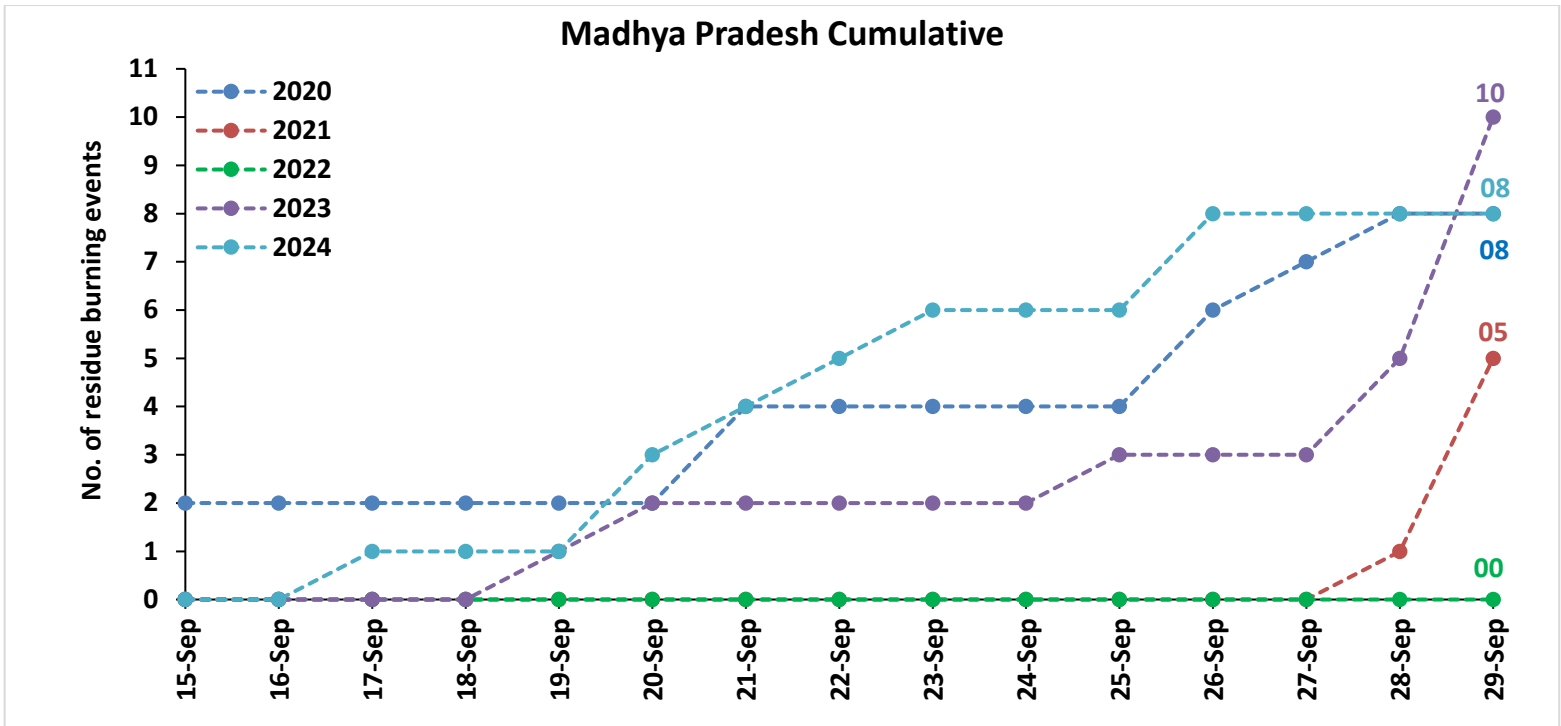
Madhya Pradesh



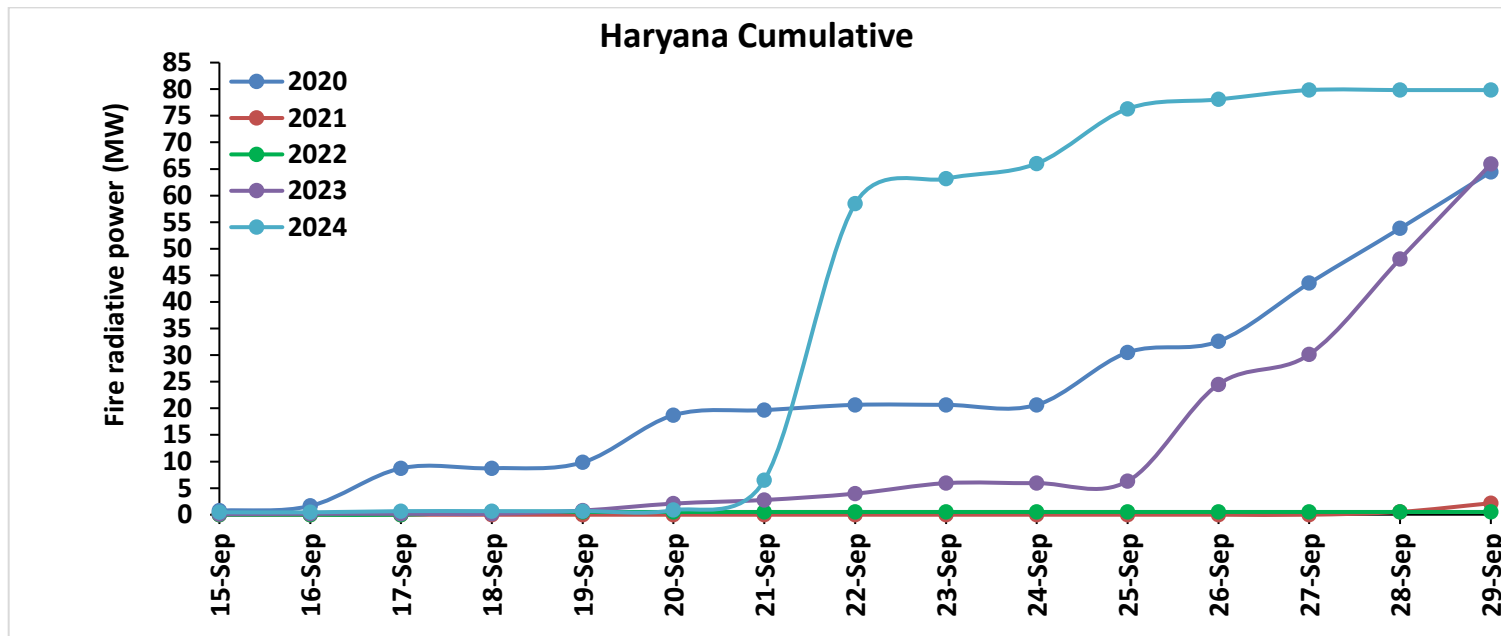
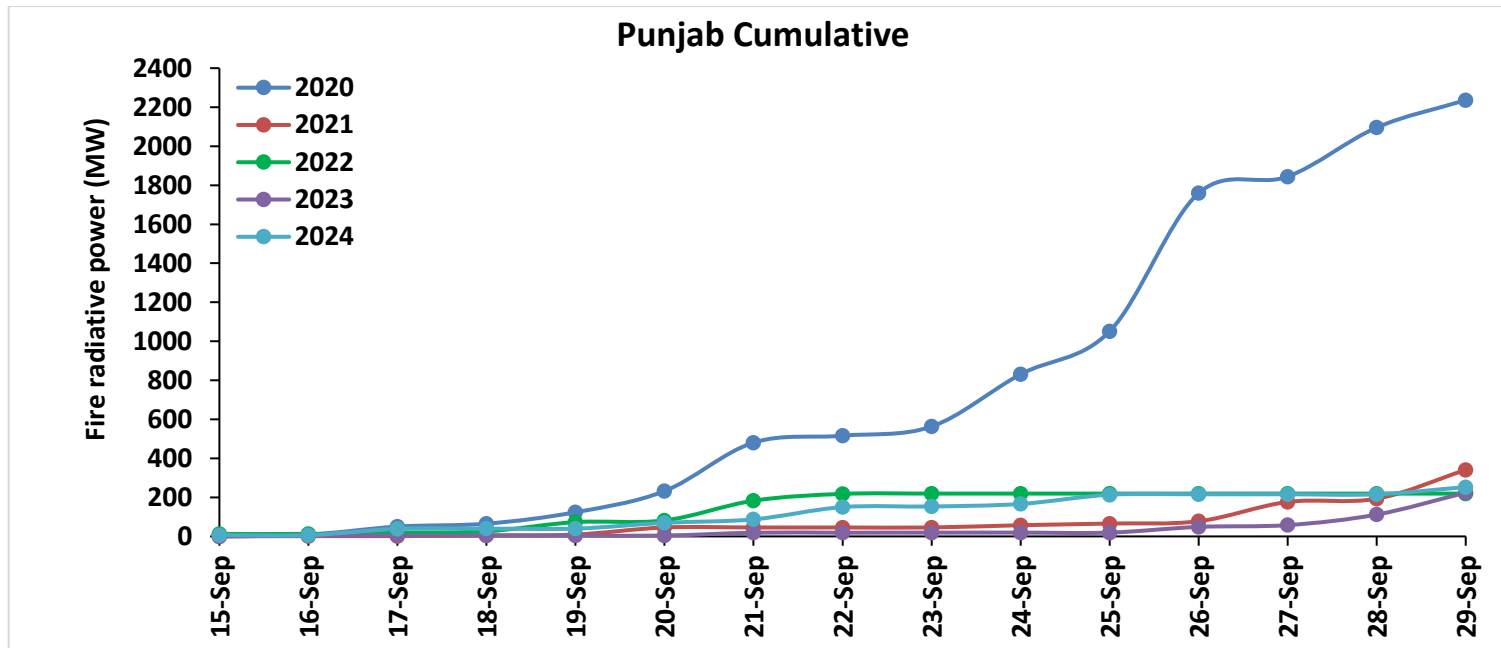
Comparison of residue burning events in current year (2024) with previous years (2020, 2021, 2022 and 2023) for the study States

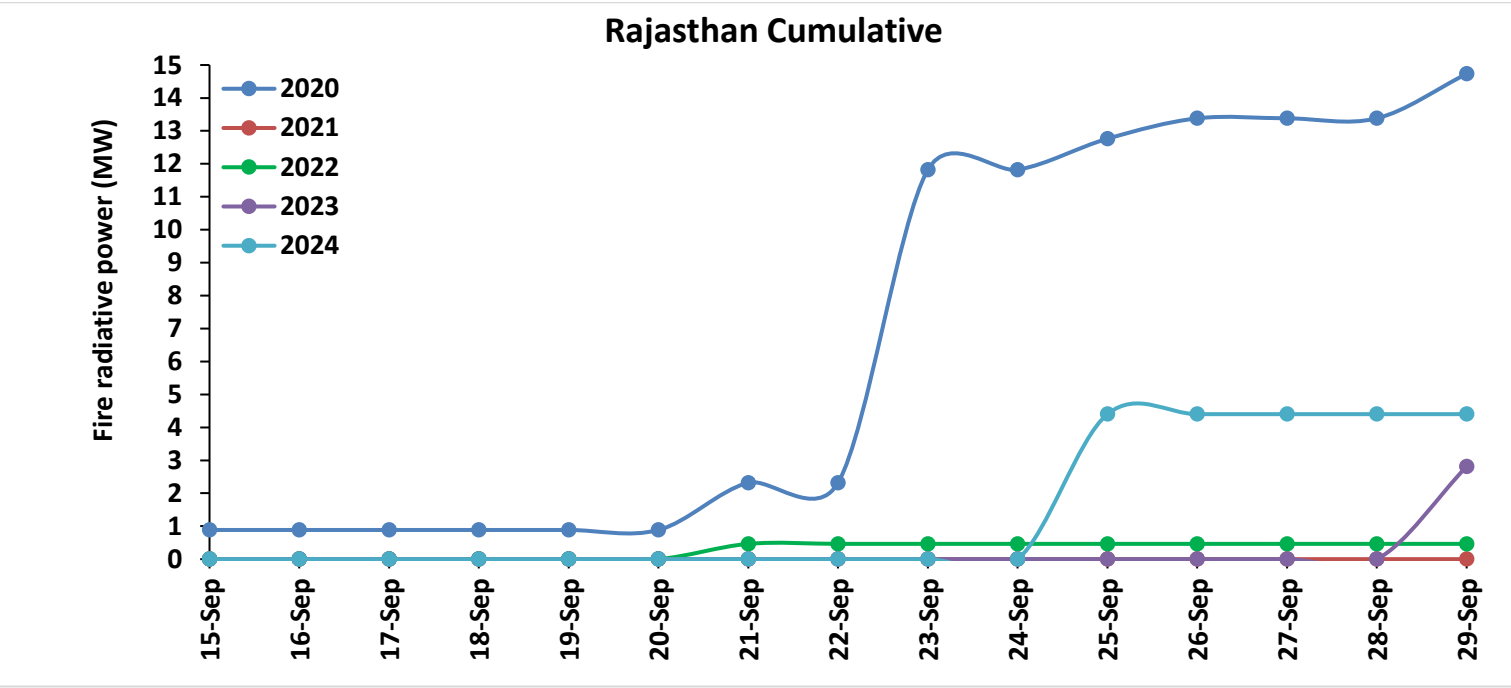
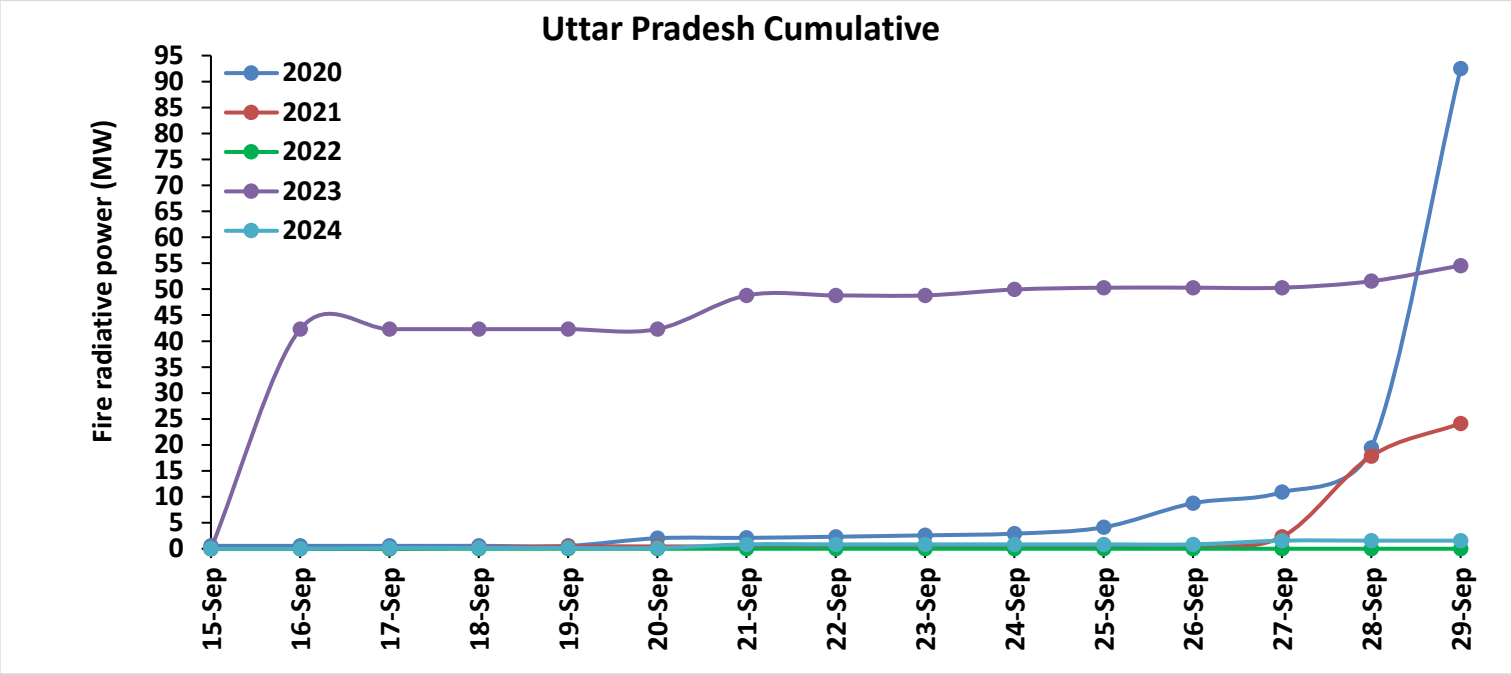


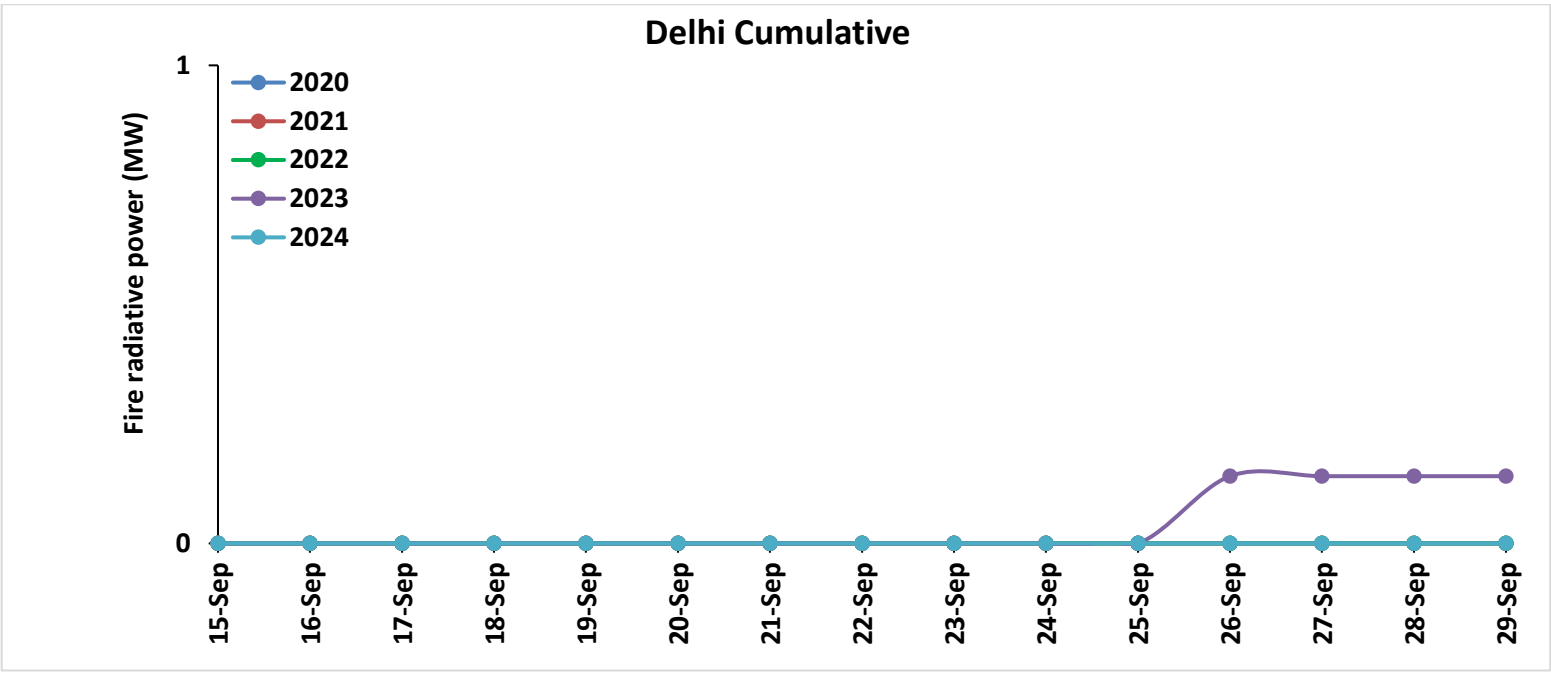
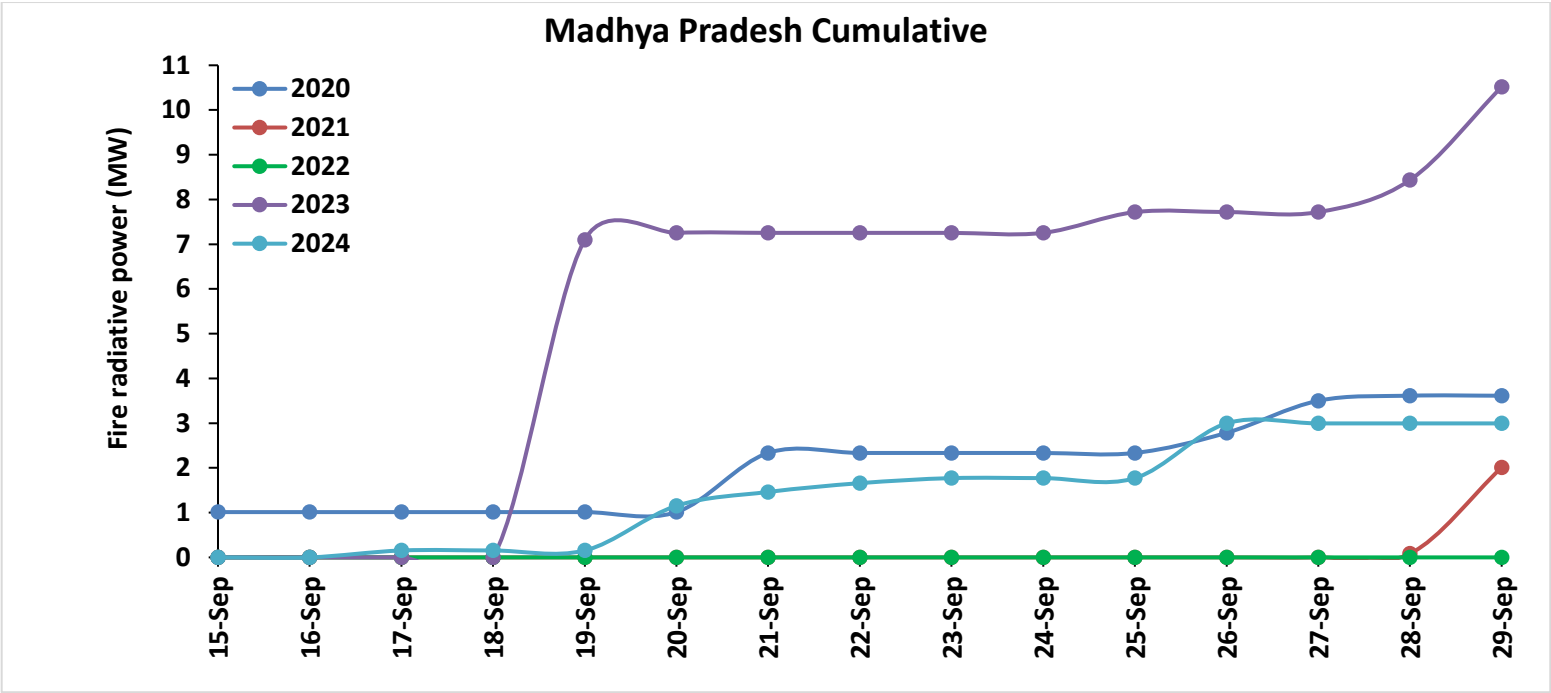




Comparison of residue burning fire power in current year (2024) with previous years (2020,2021,2022 and 2023) for the study States

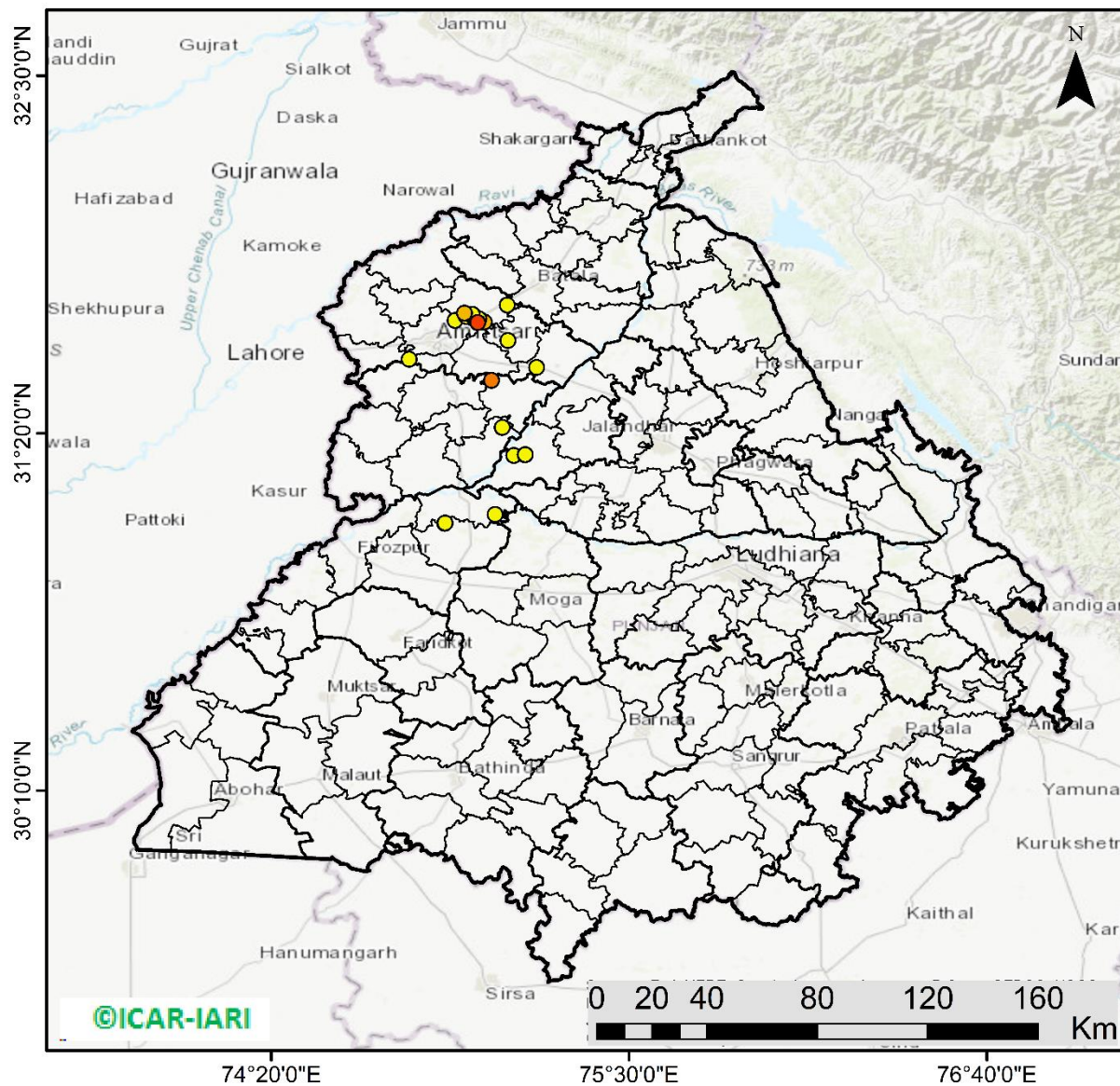






Punjab

RICE RESIDUE BURNING IN PUNJAB



21 burning events detected in Punjab during (29th Sep 2024)

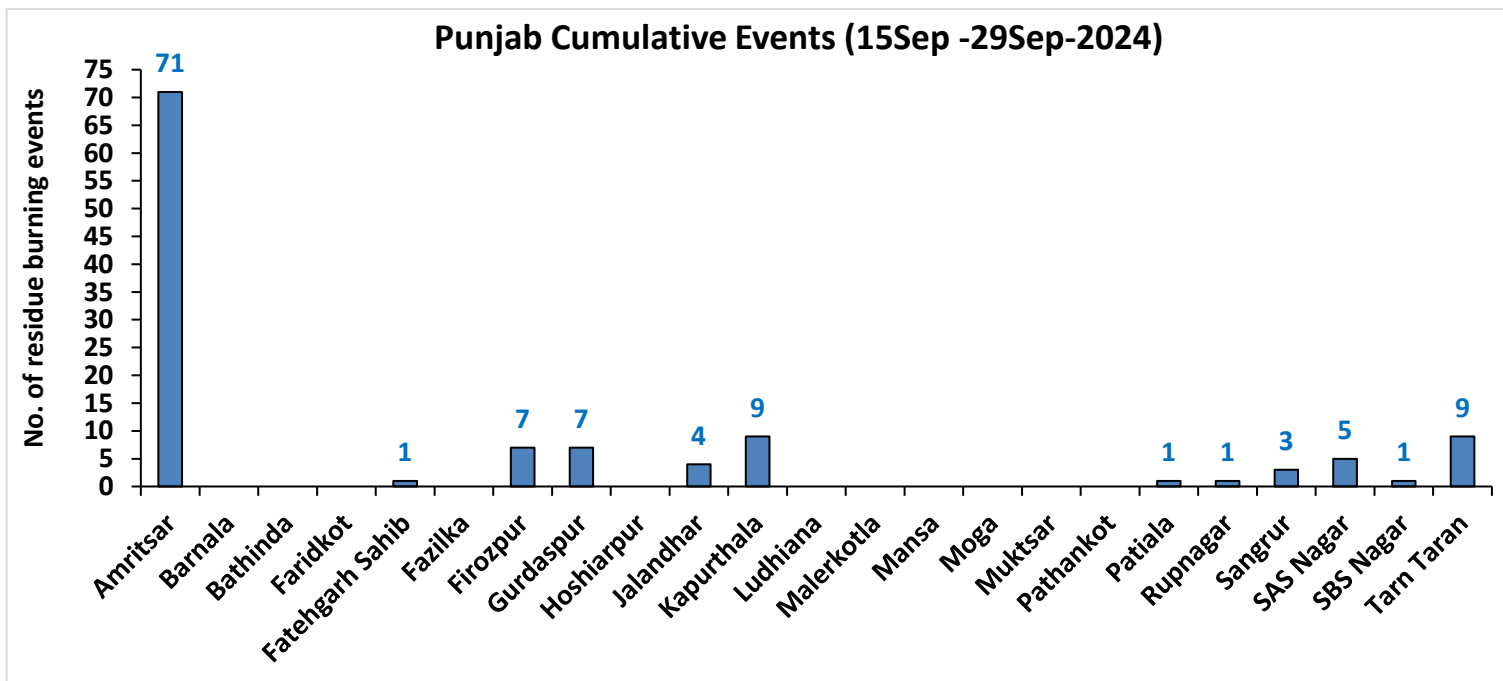
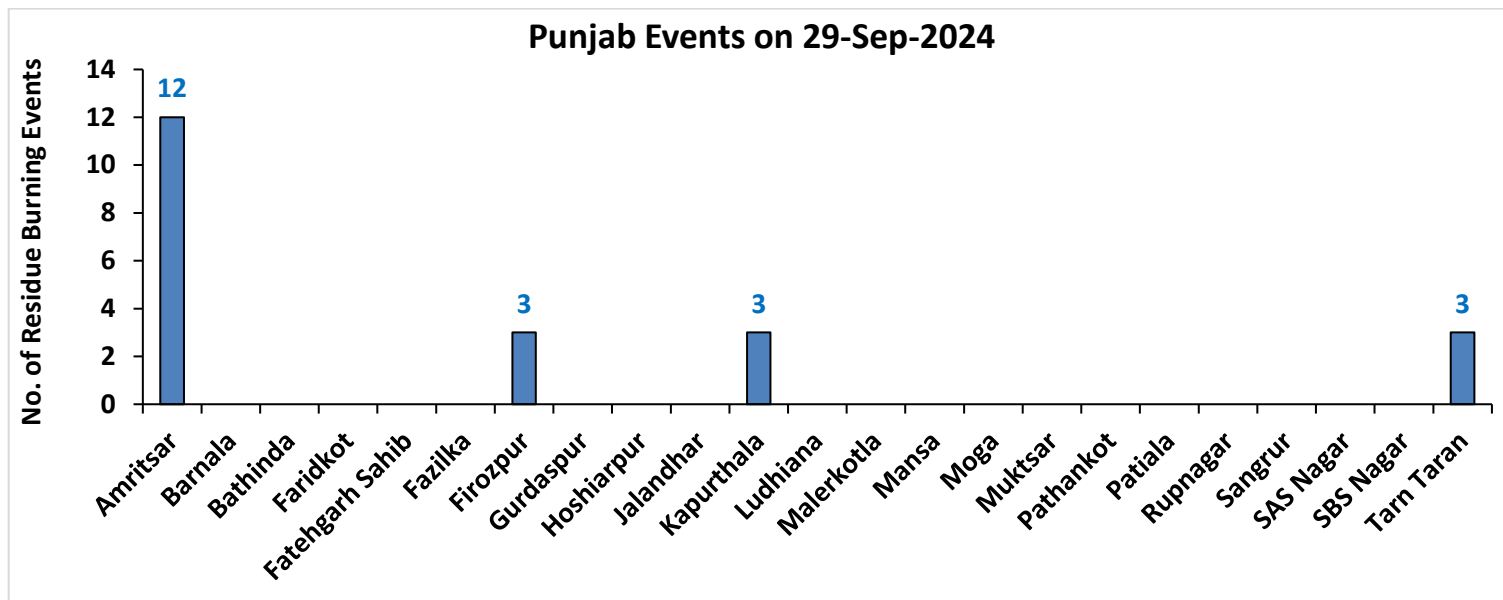
Fire Intensity (W/m²)

- 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-29Sep-2024)



District-wise cumulative number of residues burning events detected in 2020, 2021, 2022, 2023 and 2024
(Period: 15 September-29 September)

(a) Punjab

District	15 Sep-29 Sep				
	2020	2021	2022	2023	2024
Amritsar	691	138	121	111	71
Barnala	2	0	0	0	0
Bathinda	0	0	0	0	0
Faridkot	1	8	0	1	0
Fatehgarh Sahib	0	0	0	0	1
Fazilka	0	1	0	0	0
Firozpur	4	2	0	3	7
Gurdaspur	22	2	1	3	7
Hoshiarpur	1	0	0	1	0
Jalandhar	2	1	0	1	4
Kapurthala	8	1	0	1	9
Ludhiana	13	7	0	1	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	21	5	1	1	1
Rupnagar	0	0	0	0	1
Sangrur	3	3	0	2	3
SAS NAGAR (Mohali)	5	0	1	2	5
SBS Nagar	0	0	1	1	1
Tarn Taran	130	20	14	5	9
Total	909	188	139	133	119

(b) Haryana

District	15 Sep-29 Sep				
	2020	2021	2022	2023	2024
AMBALA	6	0	0	4	6
BHIWANI	0	0	0	0	0
CHARKHI DADRI	0	0	0	0	0
FARIDABAD	0	0	0	0	8
FATEHABAD	5	0	0	4	4
GURGAON	0	0	0	0	0
HISAR	1	0	0	0	0
JHAJJAR	0	0	0	0	0
JIND	0	0	1	2	1
KAITHAL	9	0	0	0	2
KARNAL	20	2	0	12	31
KURUKSHETRA	9	2	0	11	17
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	3	0	0	1	0
REWARI	0	0	0	0	0
ROHTAK	0	0	0	1	3
SIRSA	1	0	0	0	1
SONIPAT	0	0	0	9	1
YAMUNANAGAR	2	1	0	5	6
Total	56	5	1	49	80

(c) Uttar Pradesh

District	15 Sep-29 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	1	0	0	1	0
ALIGARH	1	0	0	7	1	GHAZIABAD	1	0	0	0	2	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	2	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	2	0	0	2	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	3	15	0	2	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	3	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	2	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	1	KUSHINAGAR	0	0	0	0	0	Total	31	20	0	15	6
BULANDSAHAR	0	0	0	0	0	LALITPUR	0	1	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	1	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	2	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-29 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-29 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	2	0	0	2	0
BARMER	2	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	1	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	1	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
KARALI	0	0	0	0	0
KOTA	0	0	0	2	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	8	0	1	6	3

(f) Madhya Pradesh

District	15 Sep-29 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	1	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	2	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	1	0
CHHINDWARA	0	0	0	0	0	SHEOPUR	0	0	0	0	0
DAMOH	0	0	0	2	0	SHIVPURI	0	0	0	0	0
DATIA	0	0	0	0	0	SIDHI	0	0	0	0	0
DEWAS	0	0	0	1	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	1	0
EAST NIMAR	0	0	0	0	0	UMARIA	0	0	0	0	0
GUNA	2	1	0	0	0	VIDESHA	0	1	0	1	2
GWALIOR	2	0	0	0	0	WEST NIMAR	0	0	0	0	0
HARDA	2	1	0	0	0	Total	8	5	0	10	8
HOSHANGABAD	0	0	0	1	0						
INDORE	0	0	0	1	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-29 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
27-Sep	78	37	0	21	0	8	0	0	9	5	4	1	0	0	3
28-Sep	55	28	0	33	0	6	1	0	8	0	1	6	0	4	0
29-Sep	63	64	0	68	21	9	4	0	17	0	6	10	0	6	0
Total	909	188	139	133	119	56	5	1	49	80	31	20	0	15	6

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
27-Sep	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
28-Sep	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0
29-Sep	0	0	0	0	0	3	0	0	6	0	0	4	0	5	0
Total	0	0	0	1	0	8	0	1	6	3	8	5	0	10	8

Details of residue burning events in Punjab on 29-Sep-2024

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m ²)
1	AMRITSAR	ATTARI	S-NPP	31.57441	74.78348	14:11:35	D	3.00
2	AMRITSAR	JANDIALA GURU	AQUA	31.69400	75.00700	14:04:46	D	16.40
3	AMRITSAR	MAJITHA	S-NPP	31.69603	75.02837	14:11:35	D	5.90
4	AMRITSAR	MAJITHA	S-NPP	31.70589	75.01089	14:11:35	D	3.20
5	AMRITSAR	MAJITHA	S-NPP	31.71404	74.96888	14:11:35	D	2.20
6	AMRITSAR	MAJITHA	S-NPP	31.71545	74.98940	14:11:35	D	3.30
7	AMRITSAR	MAJITHA	S-NPP	31.72093	74.98890	14:11:35	D	1.80
8	AMRITSAR	MAJITHA	S-NPP	31.72470	74.96384	14:11:35	D	7.20
9	AMRITSAR	MAJITHA	S-NPP	31.75093	75.10294	14:11:35	D	3.80
10	AMRITSAR	RAYYA	S-NPP	31.54739	75.19880	14:11:35	D	2.50
11	AMRITSAR	TARSIKKA	S-NPP	31.63510	75.10523	14:11:35	D	4.90
12	AMRITSAR	VERKA	S-NPP	31.70060	74.93312	14:11:35	D	2.00
13	FIROZPUR	MAKHU	S-NPP	31.06761	75.06359	14:11:35	D	4.30
14	FIROZPUR	ZIRA	S-NPP	31.03843	74.89924	14:11:35	D	3.20
15	FIROZPUR	ZIRA	S-NPP	31.03991	74.90059	14:11:35	D	2.60
16	KAPURTHALA	SULTANPUR LODHI	S-NPP	31.26021	75.12460	14:11:35	D	3.30
17	KAPURTHALA	SULTANPUR LODHI	S-NPP	31.26248	75.16125	14:11:35	D	2.30
18	KAPURTHALA	SULTANPUR LODHI	S-NPP	31.26292	75.16174	14:11:35	D	2.30
19	TARN TARAN	CHOHLA SAHIB	S-NPP	31.35137	75.08675	14:11:35	D	3.70
20	TARN TARAN	CHOHLA SAHIB	S-NPP	31.35186	75.08685	14:11:35	D	4.30
21	TARN TARAN	KHADUR SAHIB	AQUA	31.50500	75.05200	14:04:46	D	11.30

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](#)
