

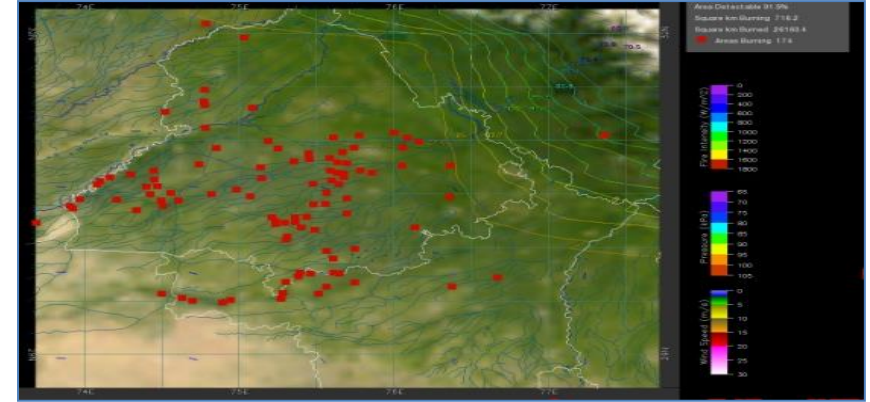
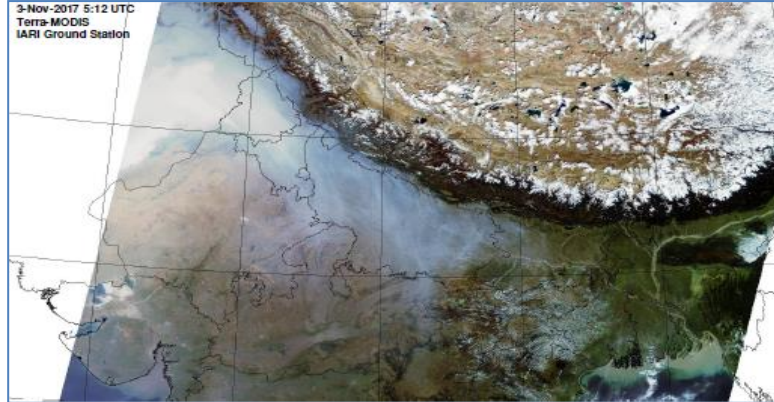


MONITORING PADDY RESIDUE BURNING IN INDIA USING SATELLITE REMOTE SENSING DURING 2024

Bulletin
No. 05

Events Date:
19-Sep-2024

Issued on:
19-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

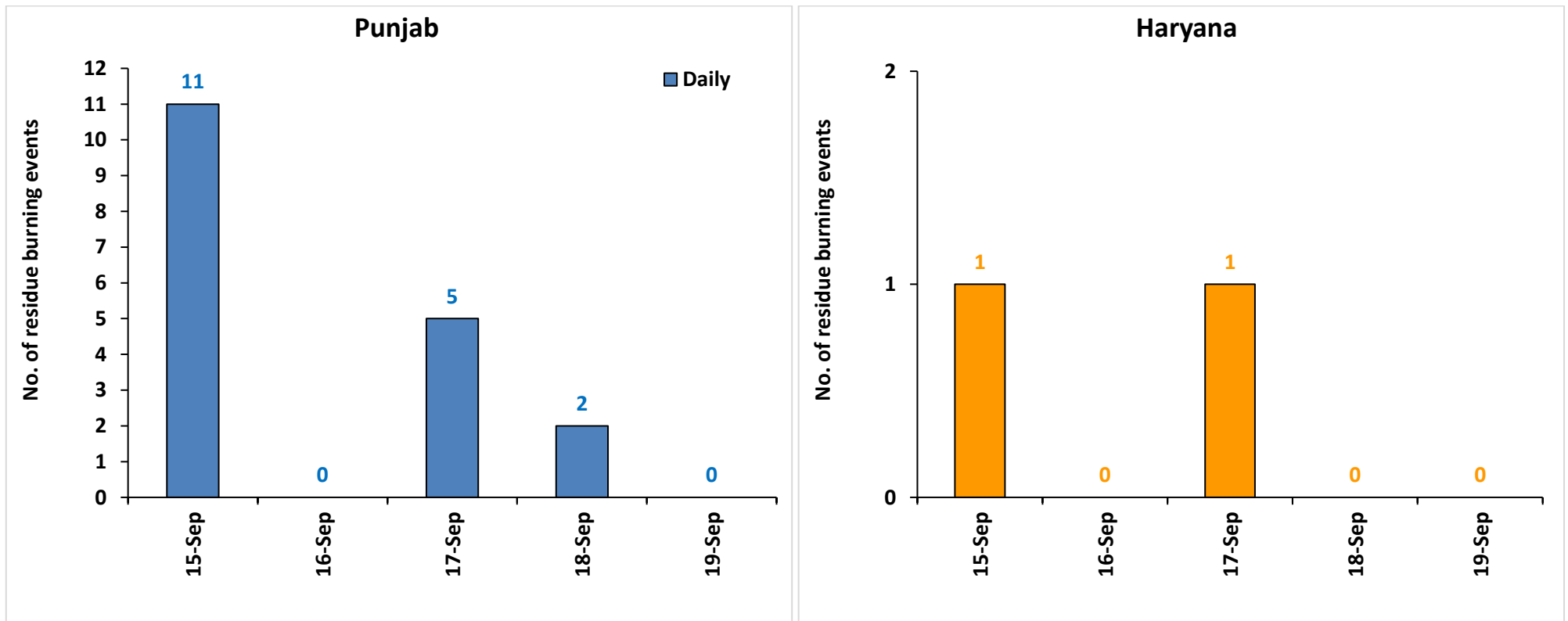
<https://creams.iari.res.in>



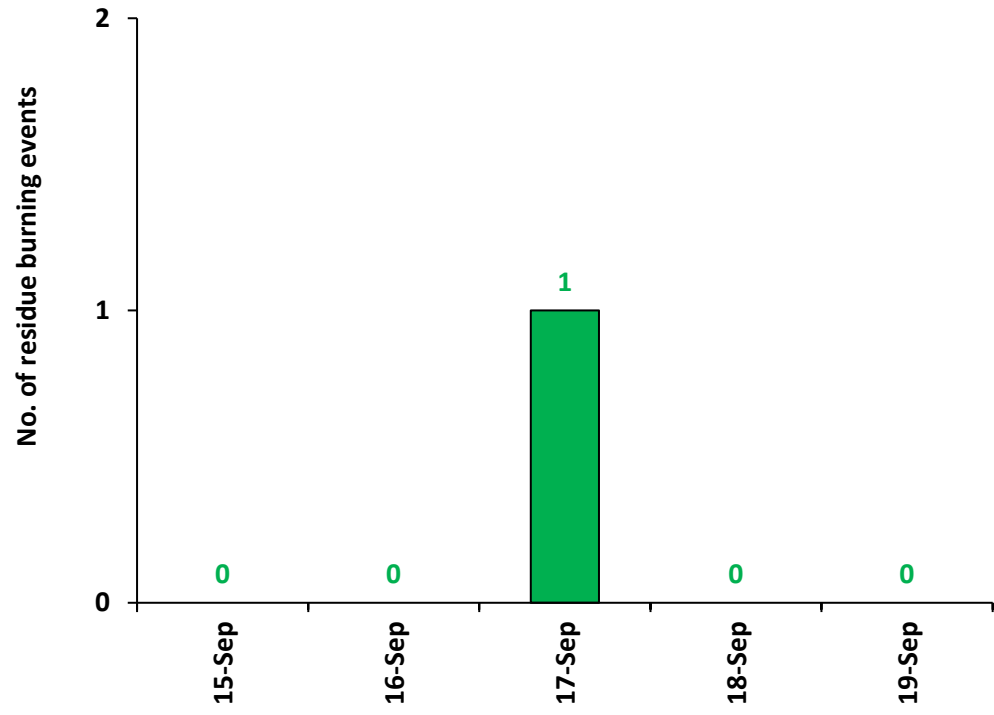
Highlights for 19-Sep-2024

- 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 **00** residue burning events in the six study States on **19-Sep-2024**.
- The state wise events detected on **19-Sep-2024** were **00** 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 Punjab, Haryana, Delhi, Rajasthan and Madhya Pradesh states.

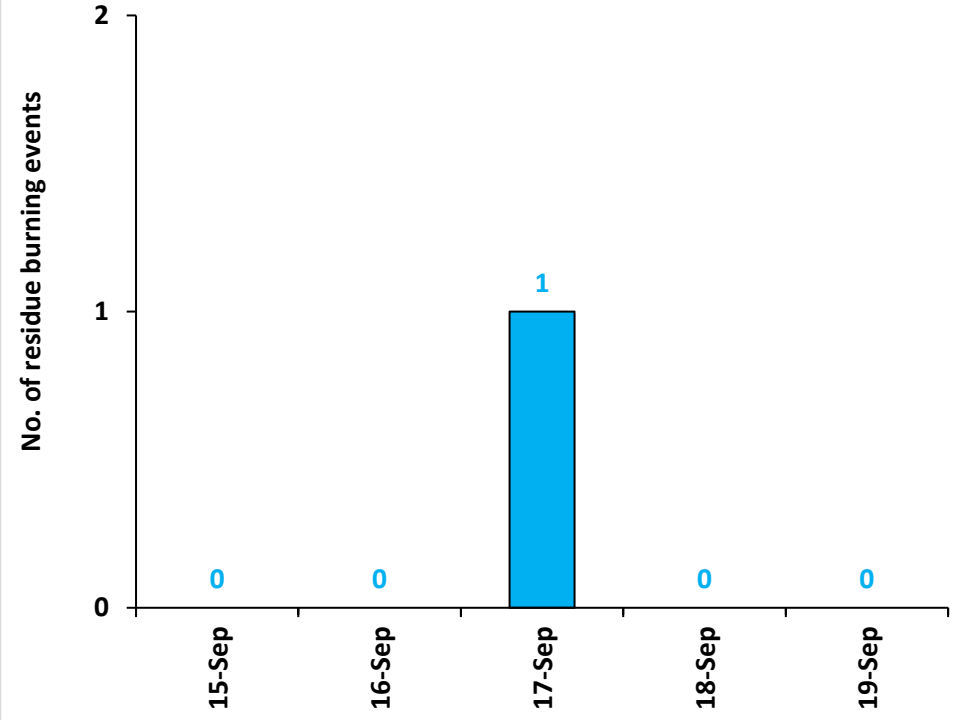
Temporal distribution of rice residue burning events for the study States in 2024



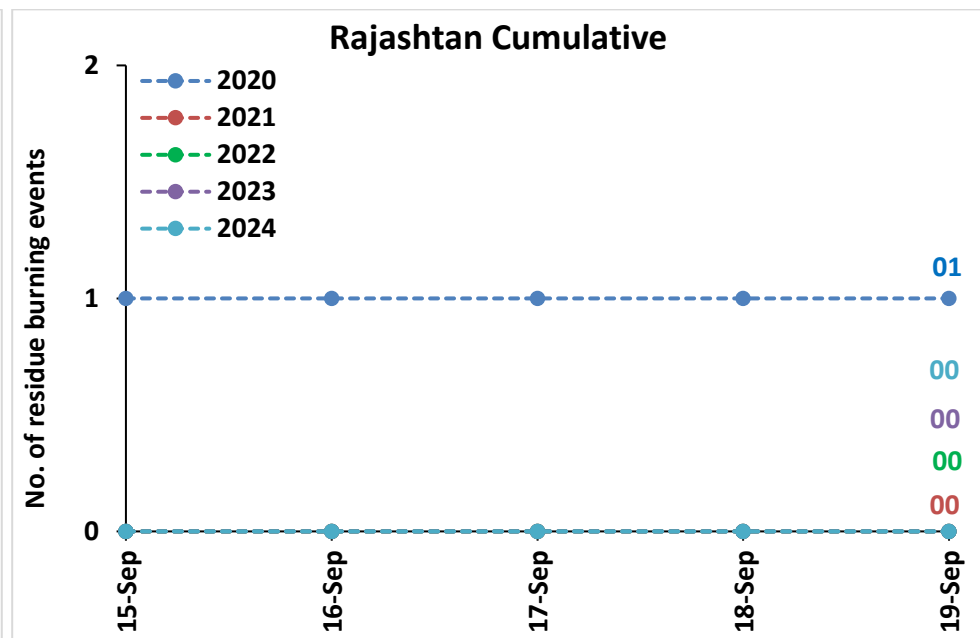
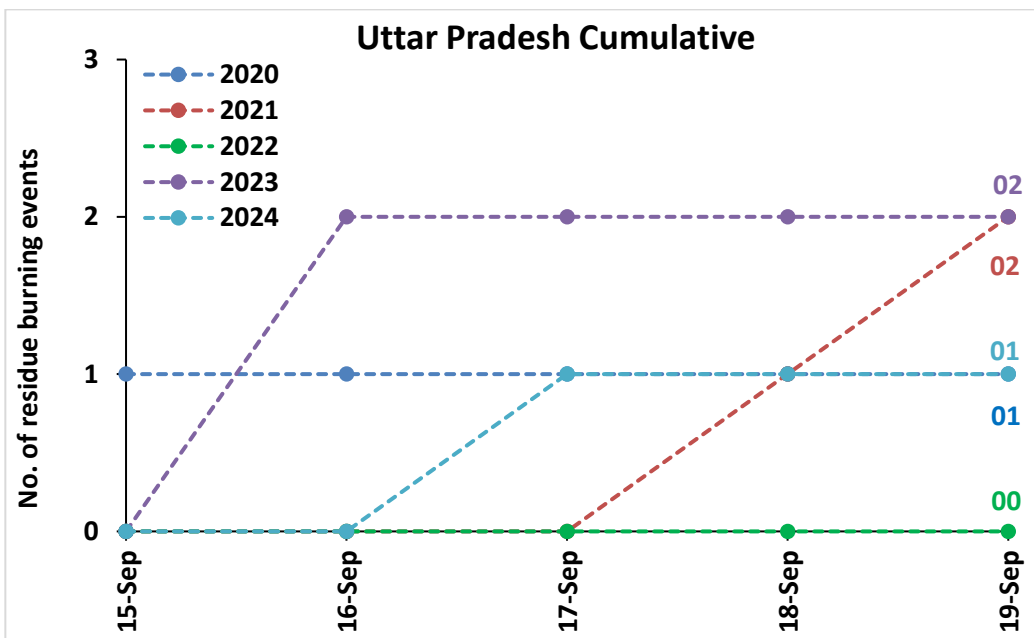
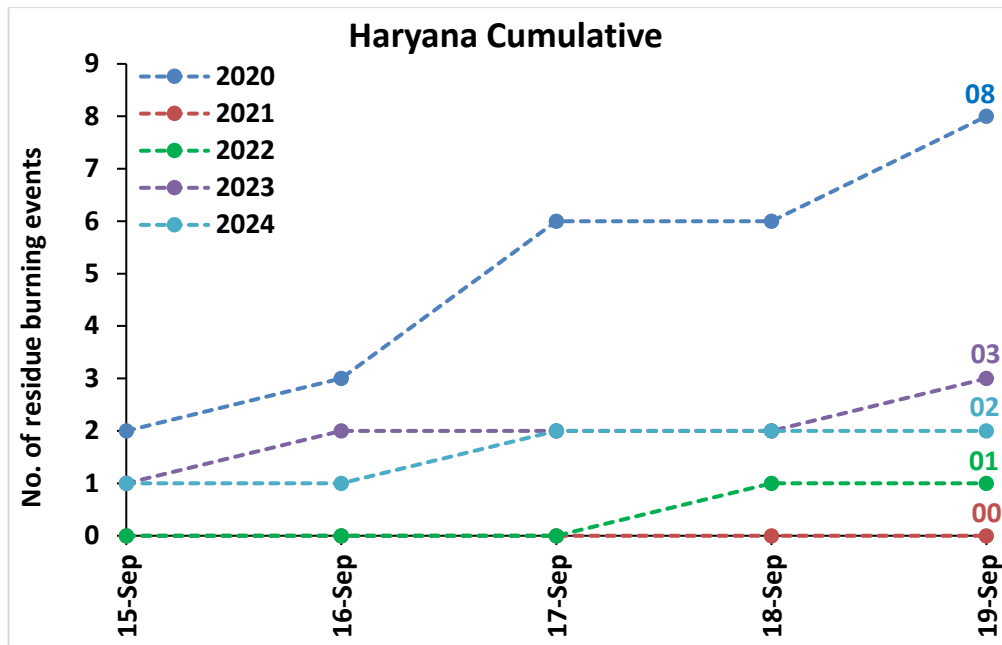
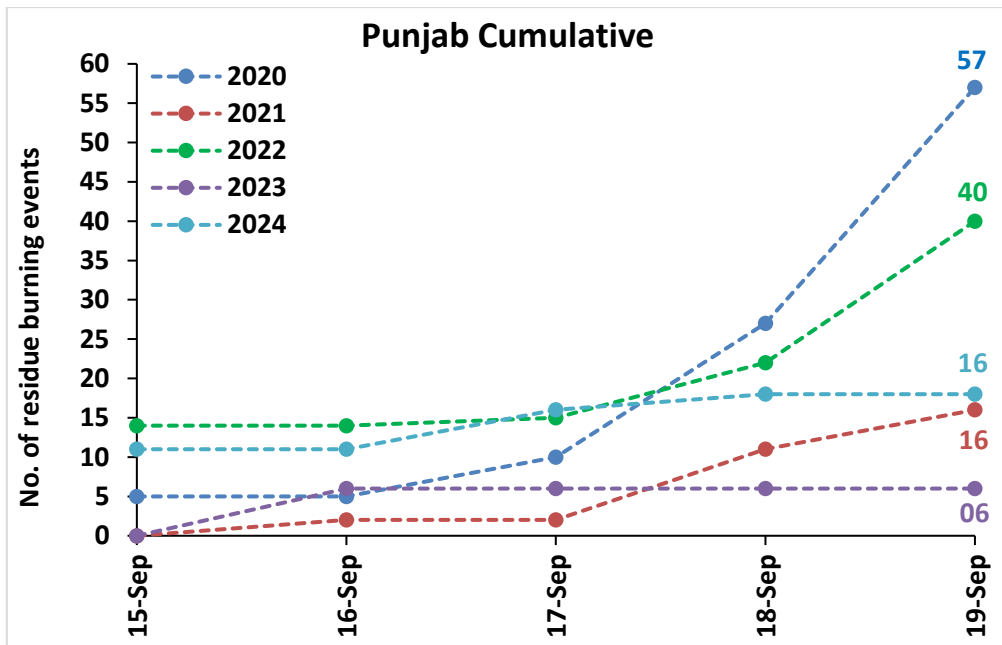
Uttar Pradesh



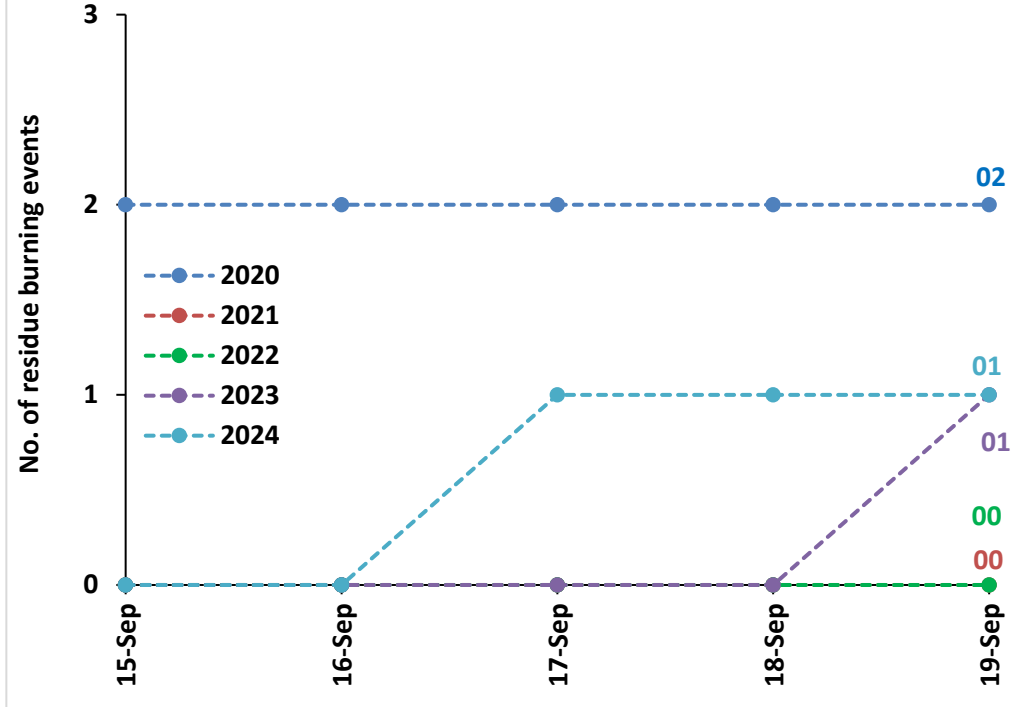
Madhya Pradesh



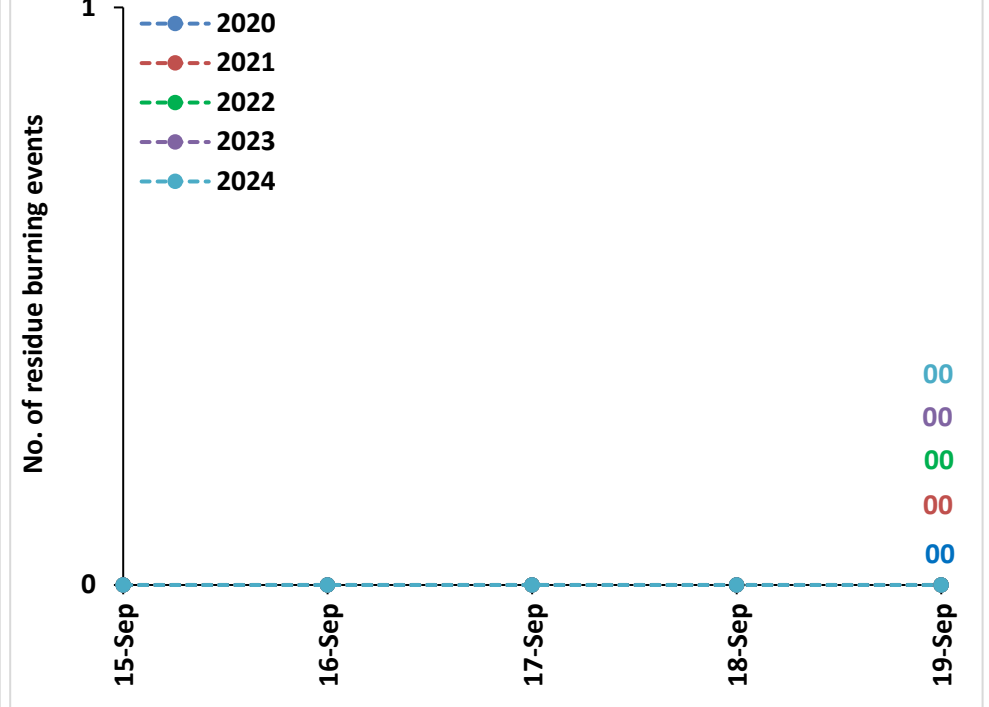
Comparison of residue burning events in current year (2024) with previous years (2020, 2021, 2022 and 2023) for the study States



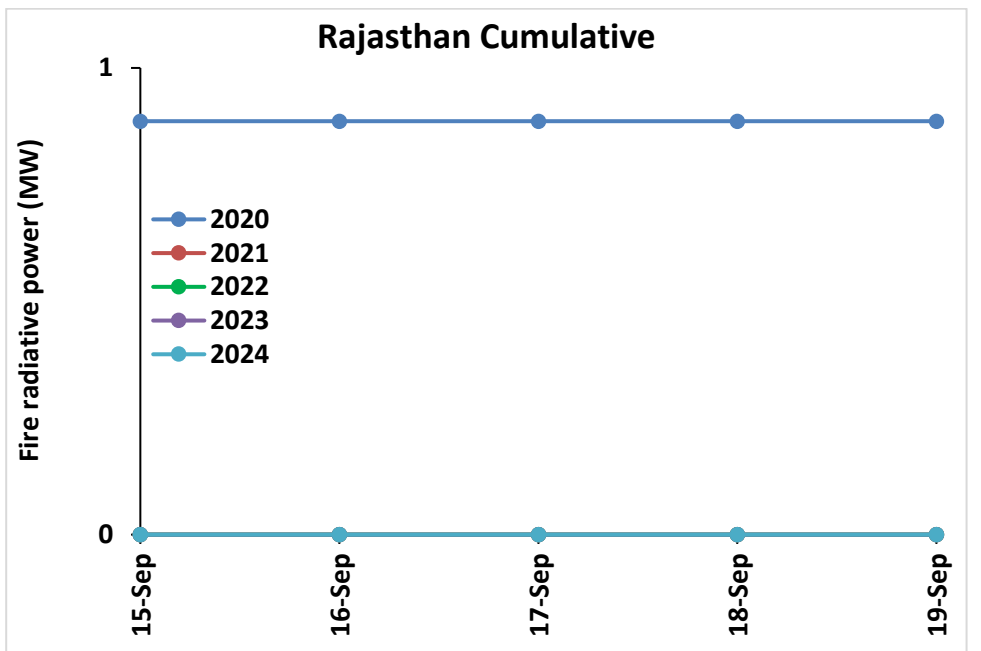
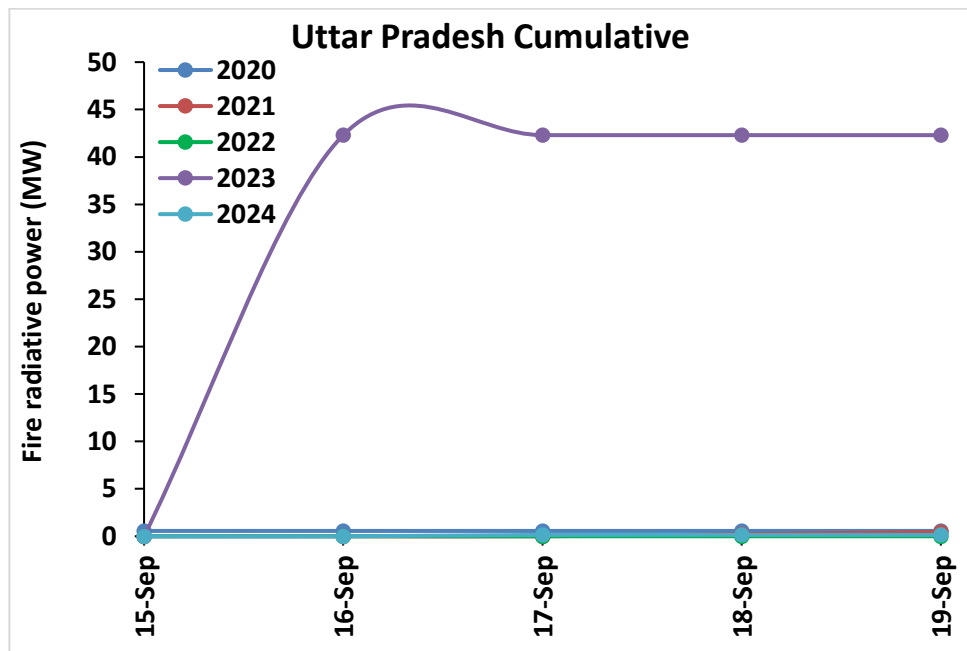
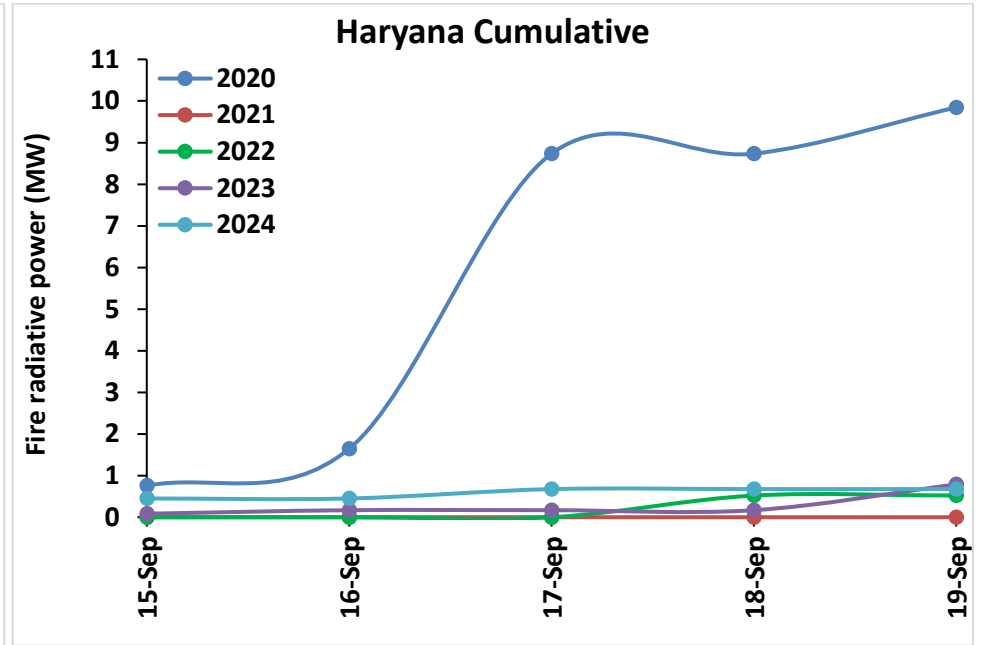
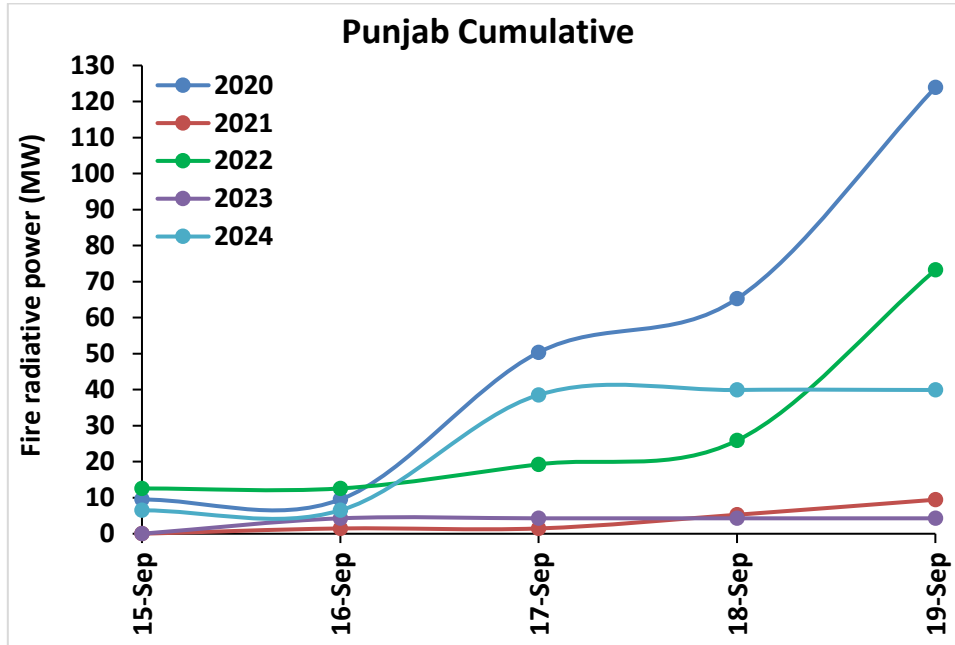
Madhya Pradesh Cumulative



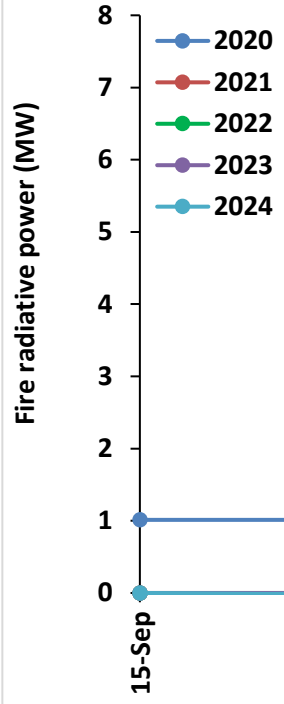
Delhi Cumulative



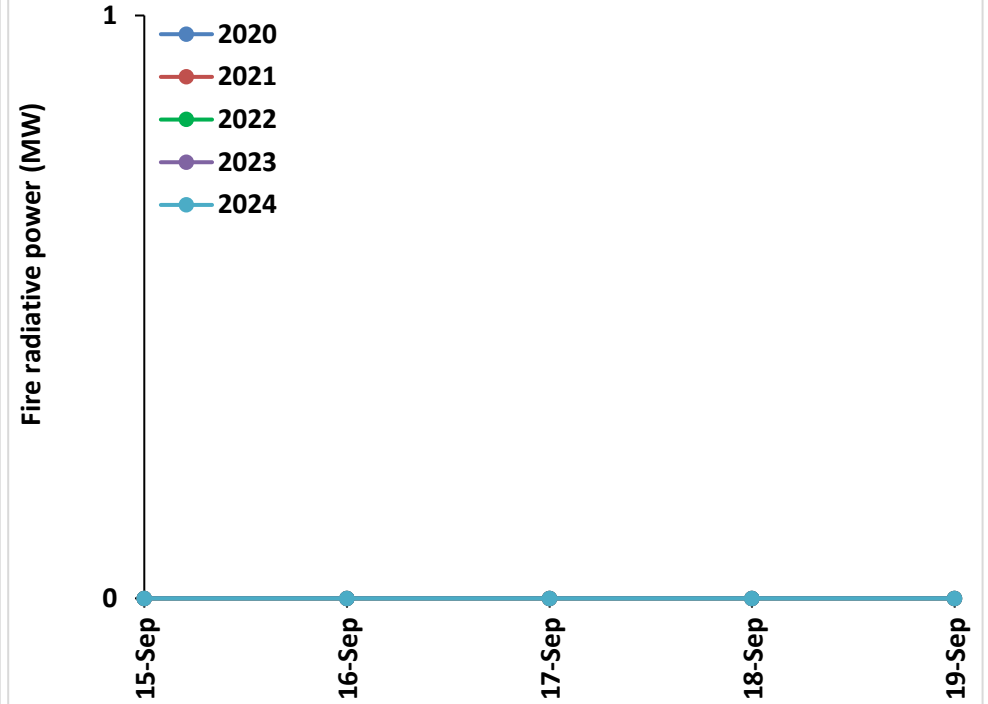
Comparison of residue burning fire power in current year (2024) with previous years (2020,2021,2022 and 2023) for the study States



Madhya Pradesh Cumulative



Delhi Cumulative



District-wise cumulative number of residues burning events detected in 2020, 2021, 2022, 2023 and 2024
(Period: 15 September-19 September)

(a) Punjab

District	15 Sep-19 Sep				
	2020	2021	2022	2023	2024
Amritsar	55	13	31	6	15
Barnala	0	0	0	0	0
Bathinda	0	0	0	0	0
Faridkot	0	1	0	0	0
Fatehgarh Sahib	0	0	0	0	0
Fazilka	0	0	0	0	0
Firozpur	0	0	0	0	1
Gurdaspur	0	0	0	0	0
Hoshiarpur	0	0	0	0	0
Jalandhar	0	0	0	0	0
Kapurthala	0	0	0	0	0
Ludhiana	0	0	0	0	0
Malerkotla	0	0	0	0	0
Mansa	1	0	0	0	0
Moga	0	0	0	0	0
Muktsar	0	0	0	0	0
Pathankot	0	0	0	0	0
Patiala	0	2	0	0	0
Rupnagar	0	0	0	0	0
Sangrur	0	0	0	0	0
SAS NAGAR (Mohali)	0	0	1	0	0
SBS Nagar	0	0	1	0	0
Tarn Taran	1	0	7	0	2
Total	57	16	40	6	18

(b) Haryana

District	15 Sep-19 Sep				
	2020	2021	2022	2023	2024
AMBALA	1	0	0	0	0
BHIWANI	0	0	0	0	0
CHARKHI DADRI	0	0	0	0	0
FARIDABAD	0	0	0	0	0
FATEHABAD	1	0	0	0	0
GURGAON	0	0	0	0	0
HISAR	0	0	0	0	0
JHAJJAR	0	0	0	0	0
JIND	0	0	1	1	0
KAITHAL	0	0	0	0	0
KARNAL	5	0	0	0	0
KURUKSHETRA	0	0	0	0	0
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	0	0	0	0	0
REWARI	0	0	0	0	0
ROHTAK	0	0	0	1	1
SIRSA	1	0	0	0	1
SONIPAT	0	0	0	1	0
YAMUNANAGAR	0	0	0	0	0
Total	8	0	1	3	2

(c) Uttar Pradesh

District	15 Sep-19 Sep																
	2020	2021	2022	2023	2024	GAUTAMBUDHNAGAR	0	0	0	0	0	MUZAFARNAGAR	0	0	0	0	0
AGRA	0	0	0	0	0	GAZIPUR	0	0	0	0	0	PILHIBHIT	0	0	0	0	0
ALIGARH	0	0	0	0	0	GHAZIABAD	0	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	0	0	0	0	0
AMROHA	0	0	0	0	0	HAPUR	0	0	0	0	0	SANTKABIRNAGAR	0	0	0	0	0
AURAIYA	0	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	0	0
BADAUN	0	0	0	0	0	JALAUN	0	0	0	0	0	SHAMLI	0	0	0	0	0
BAGHPAT	0	0	0	0	0	JAUNPUR	0	0	0	0	0	SHARANPUR	0	0	0	0	0
BAHRAICH	0	0	0	0	0	JHANSI	0	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	0	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	0	0	0	0	0	KUSHINAGAR	0	0	0	0	0	Total	1	2	0	2	1
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	0	0	0	0						
FAIZABAD	0	0	0	0	0	MAU	0	0	0	0	0						
FARRUKHABAD	0	0	0	0	0	MEERUT	0	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-19 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	0	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	0	0

(e) Rajasthan

District	15 Sep-19 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	0	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	0	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	0	0	0	0	0
HANUMANGARH	0	0	0	0	0
JAIPUR	0	0	0	0	0
JAISELMER	0	0	0	0	0
JALOR	0	0	0	0	0
JHALAWAR	0	0	0	0	0
JHUNJHUNUN	0	0	0	0	0
JODHPUR	0	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	1	0	0	0	0

(f) Madhya Pradesh

District	15 Sep-19 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	0	0	0	0	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	0	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	0
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	0	0	0	0	0	VIDESHA	0	0	0	0	0
GWALIOR	0	0	0	0	0	WEST NIMAR	0	0	0	0	0
HARDA	2	0	0	0	0	Total	2	0	0	1	1
HOSHANGABAD	0	0	0	1	0						
INDORE	0	0	0	0	0						
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-19 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
Total	57	16	40	6	18	8	0	1	3	2	1	2	0	2	1

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
Total	0	0	0	0	0	1	0	0	0	0	2	0	0	1	1

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](#)
