

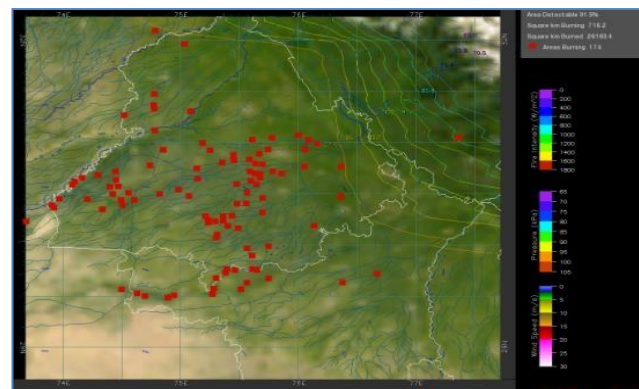
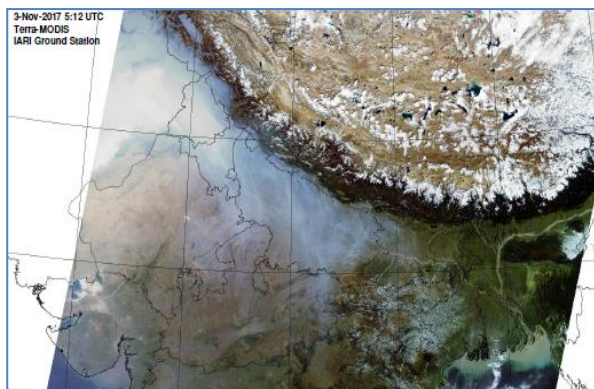


**Bulletin
No. 05**

**Events Date:
19-Sep-2022**

**Issued on:
19-Sep-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**

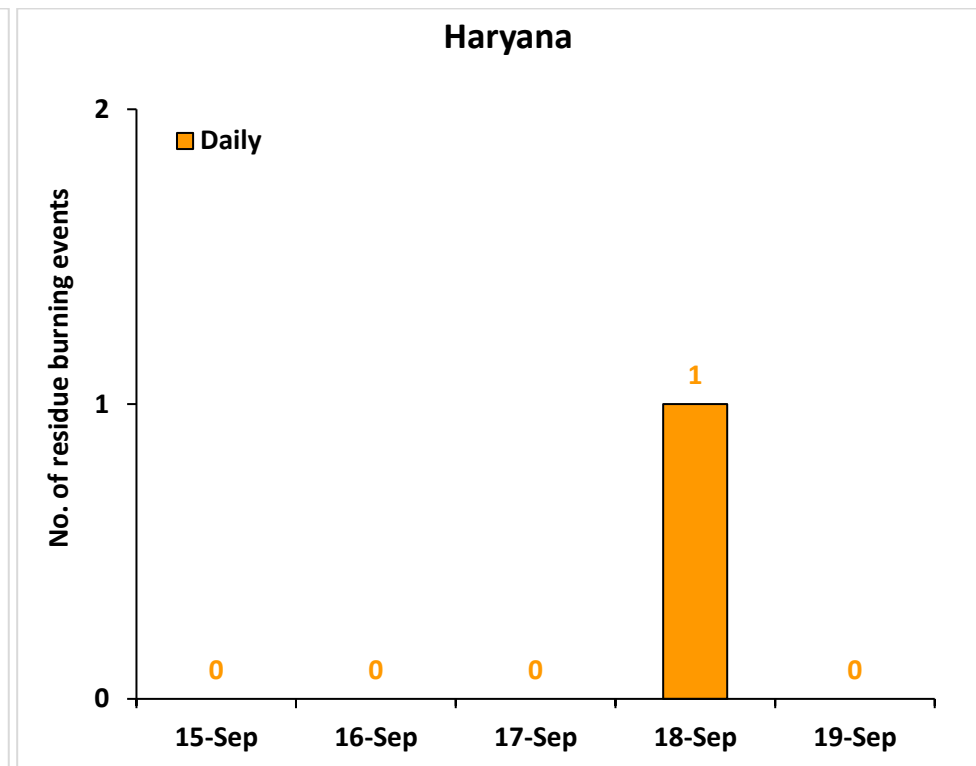
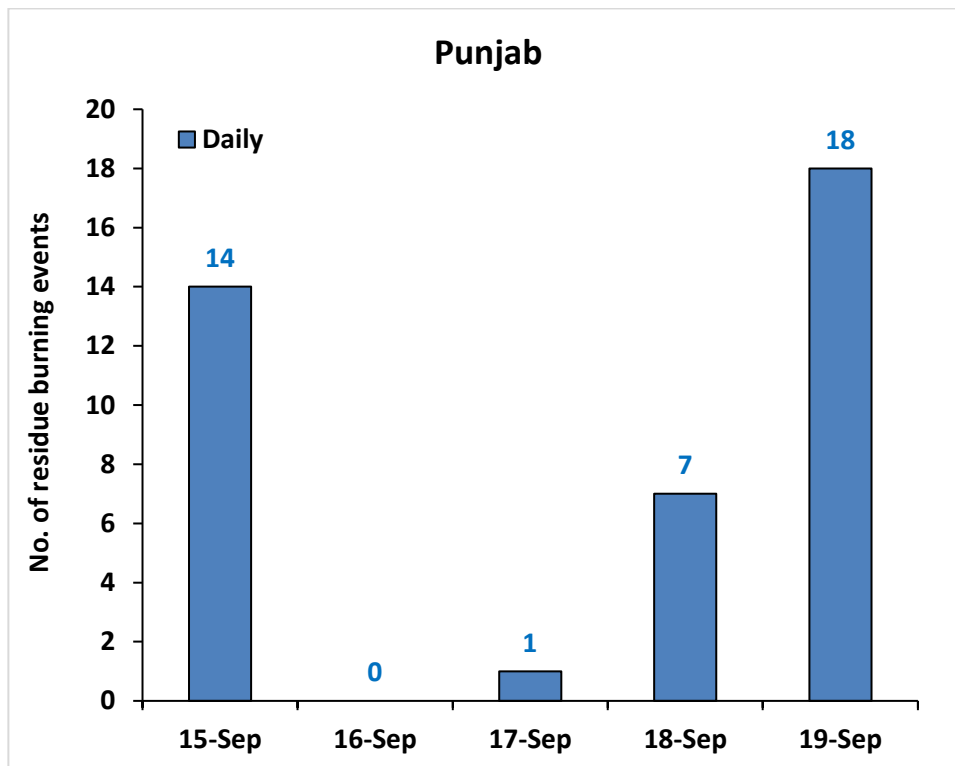
<http://creams.iari.res.in>



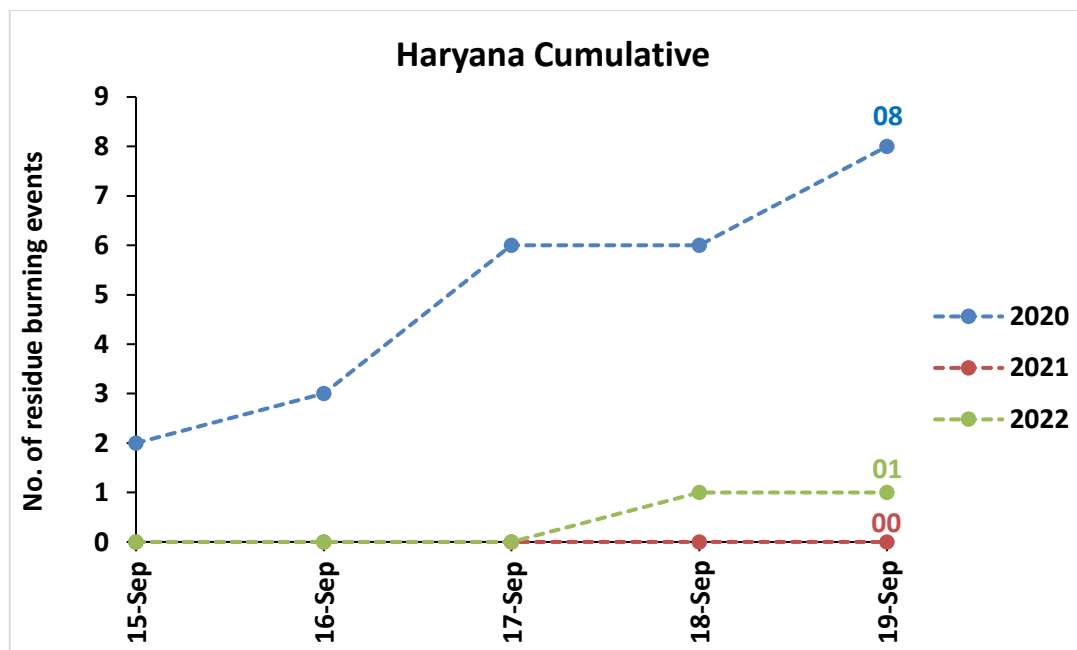
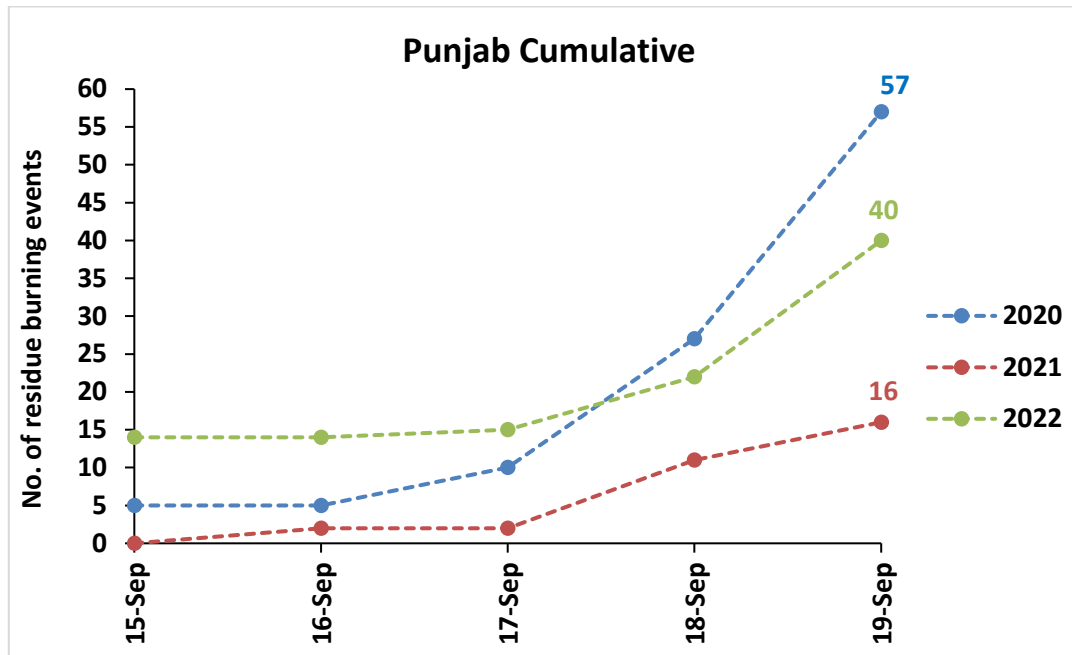
Highlights for 19-Sep-2022

- 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 **18** residue burning events in the six study States on 19-Sep-2022.
- The state wise events detected on 19-Sep-2022 were **18** in Punjab, **0** in Haryana, **0** in UP, **0** in Delhi, **0** in Rajasthan and **0** in MP.
- Detection of residue burning events was hampered by the presence of scattered clouds over Delhi, Uttar Pradesh, Rajasthan and Madhya Pradesh states.

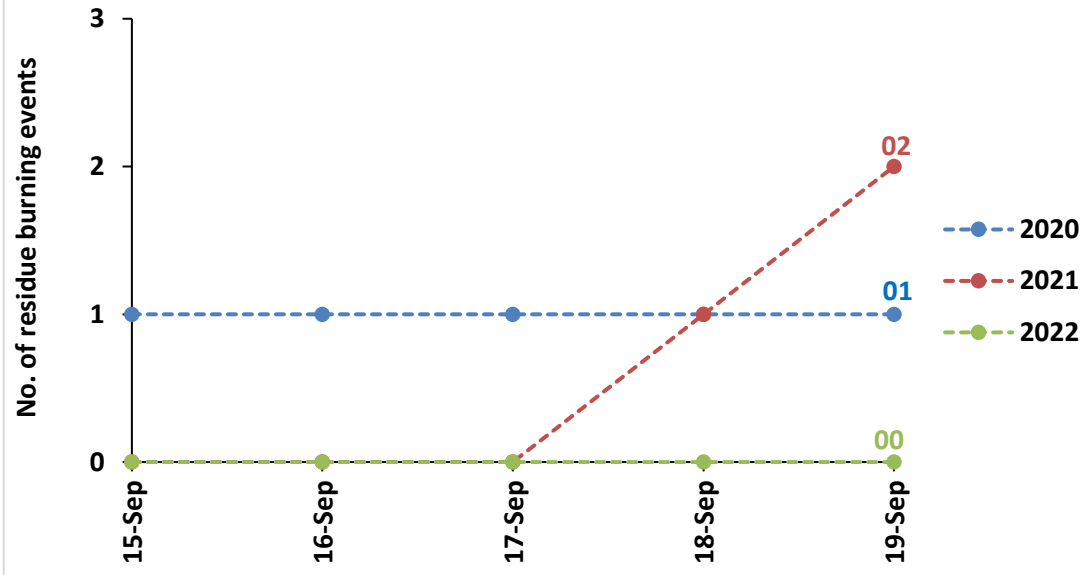
Temporal distribution of rice residue burning events for the study States in 2022



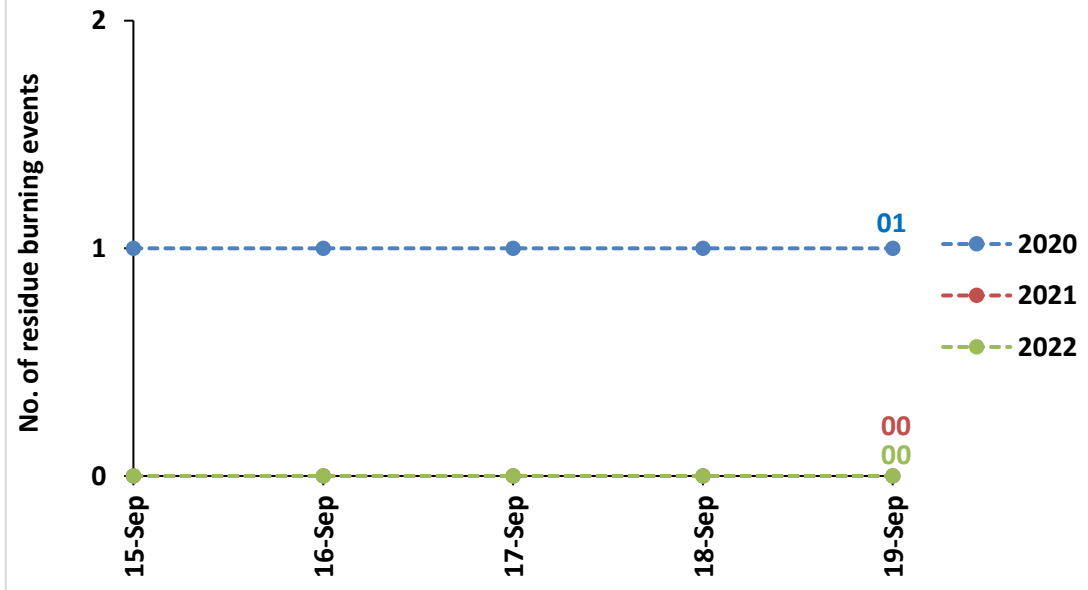
Comparison of residue burning events in current year (2022) with previous year (2020 and 2021) for the study States

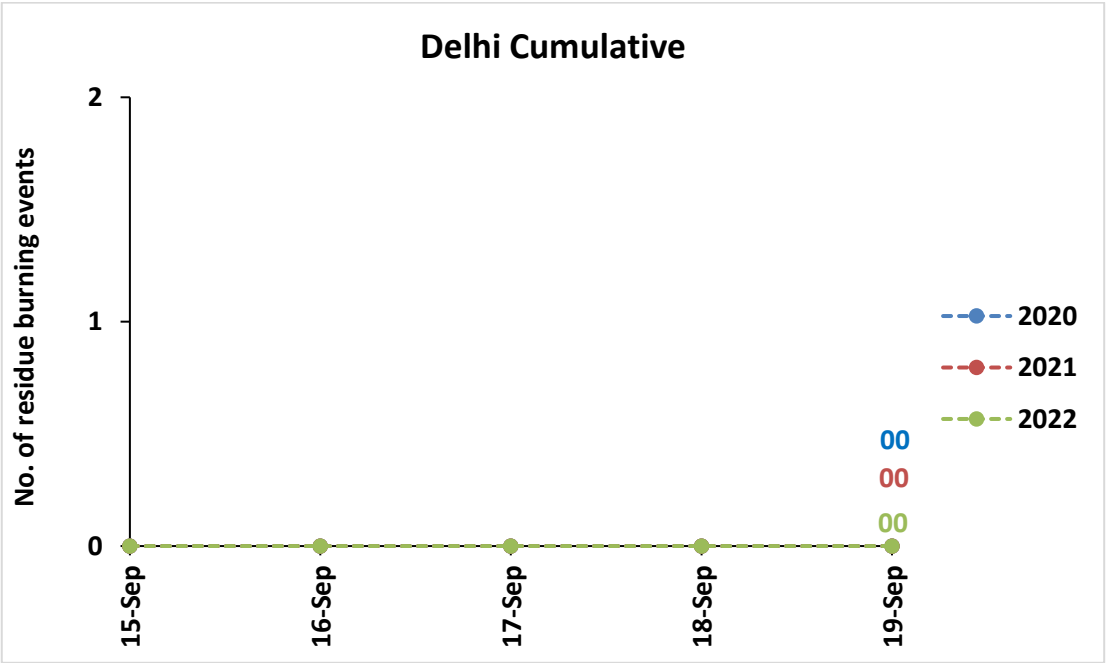
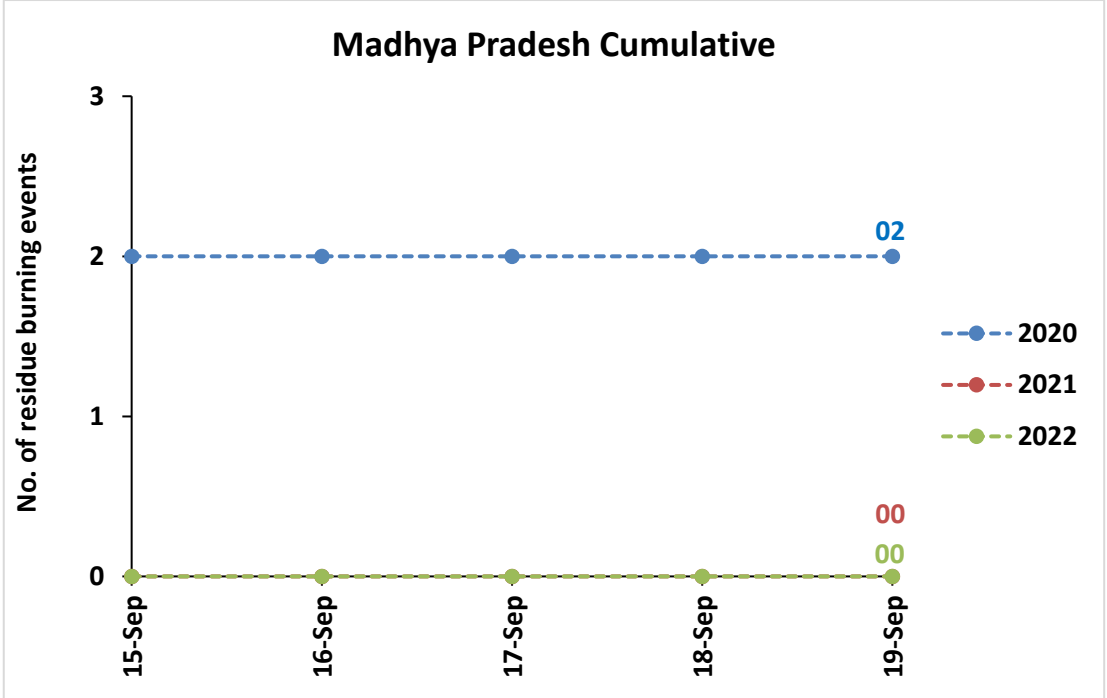


Uttar Pradesh Cumulative

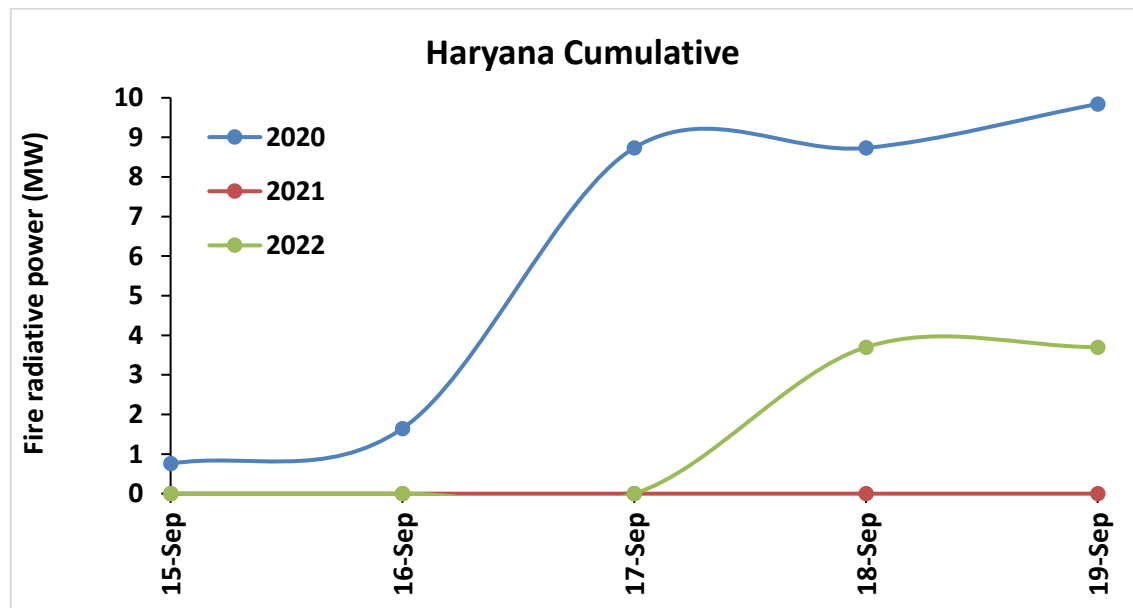
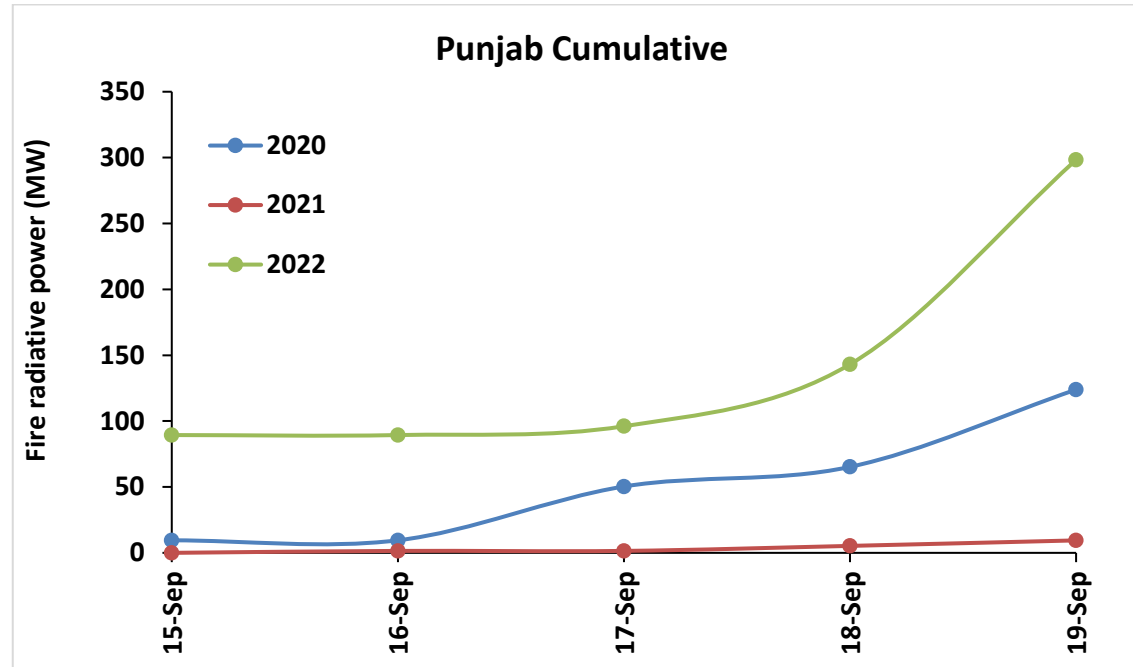


Rajashtan Cumulative

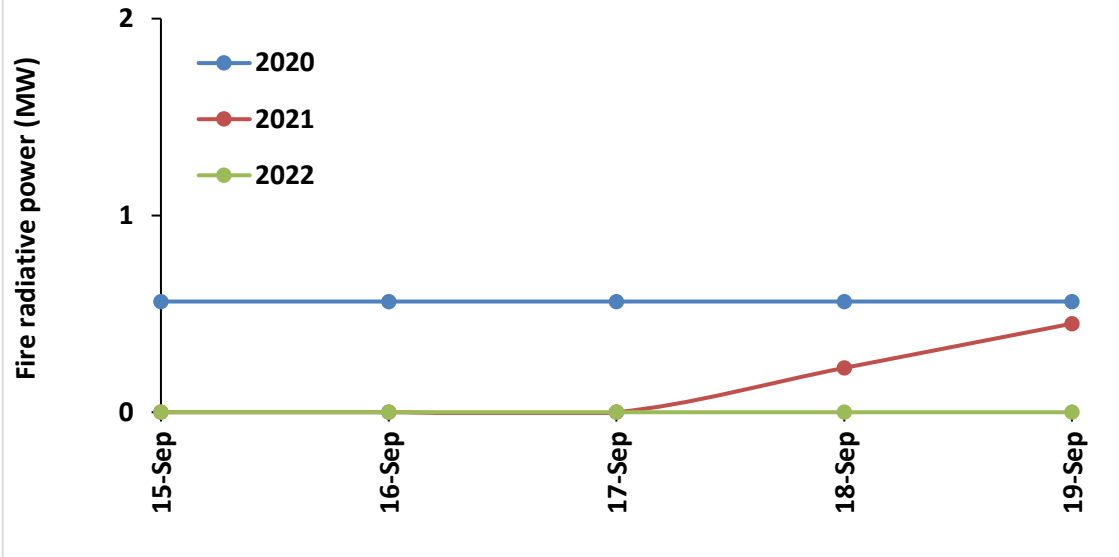




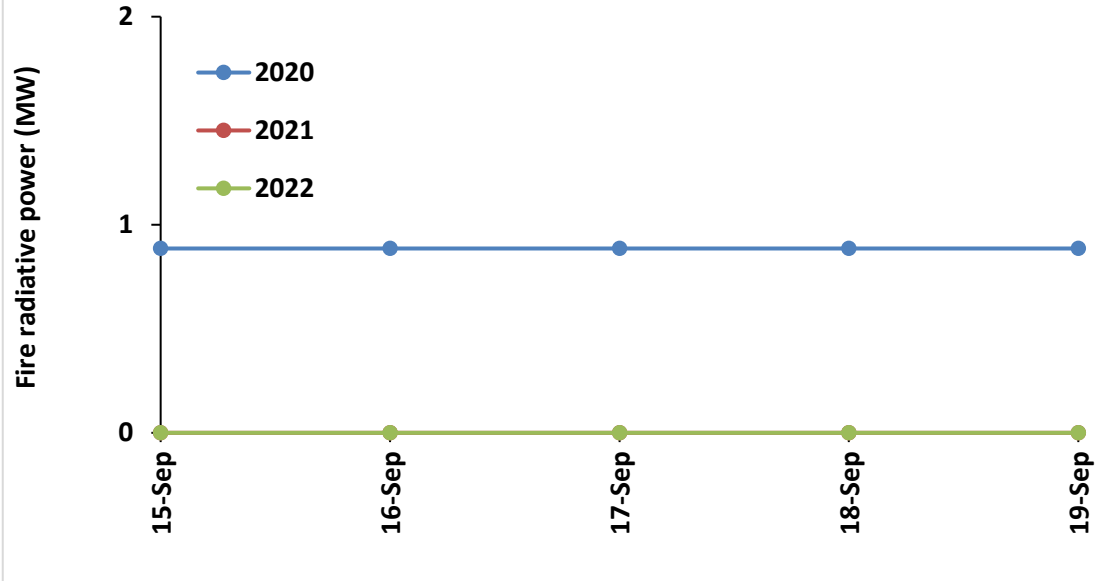
Comparison of residue burning fire power in current year (2022) with previous year (2021 and 2020) for the study States

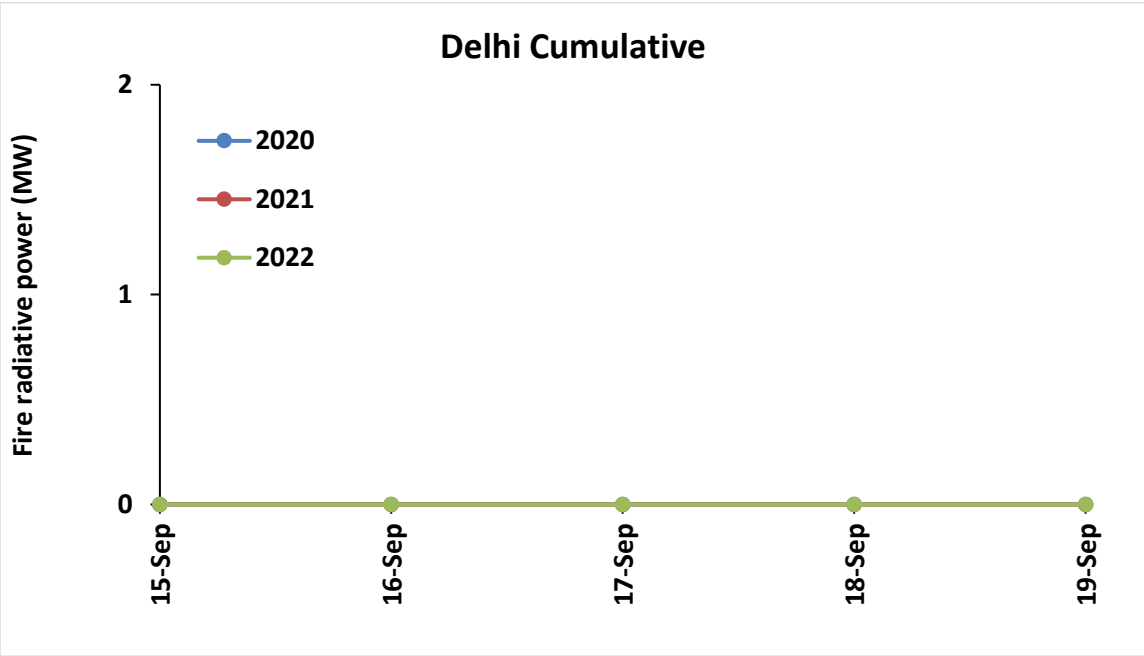
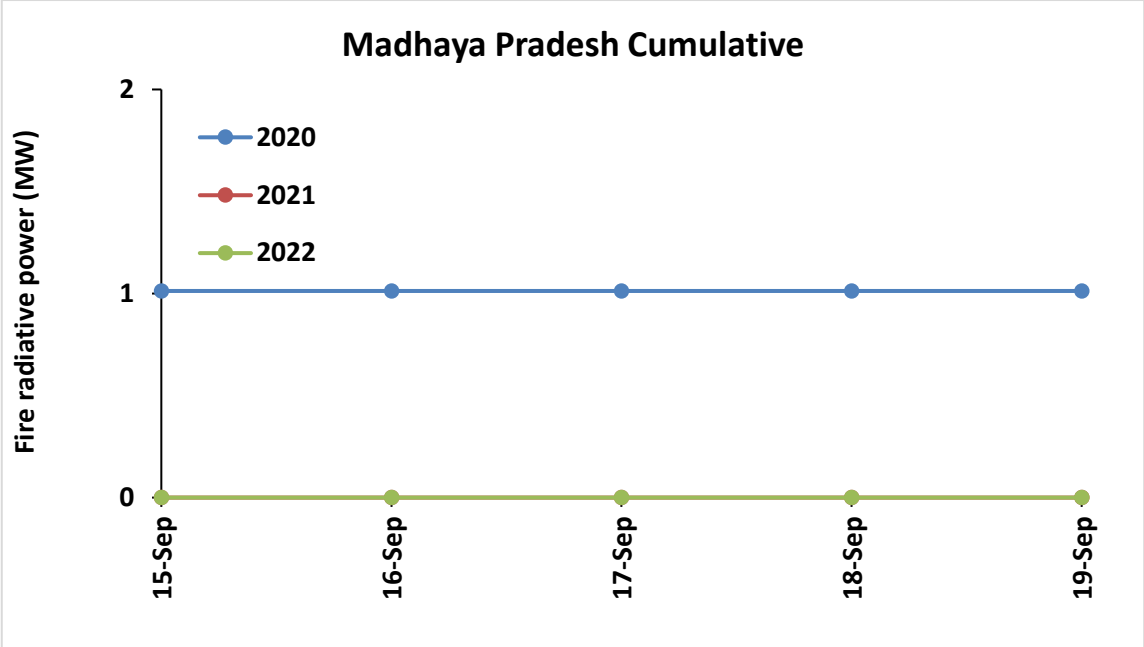


Uttar Pradesh Cumulative



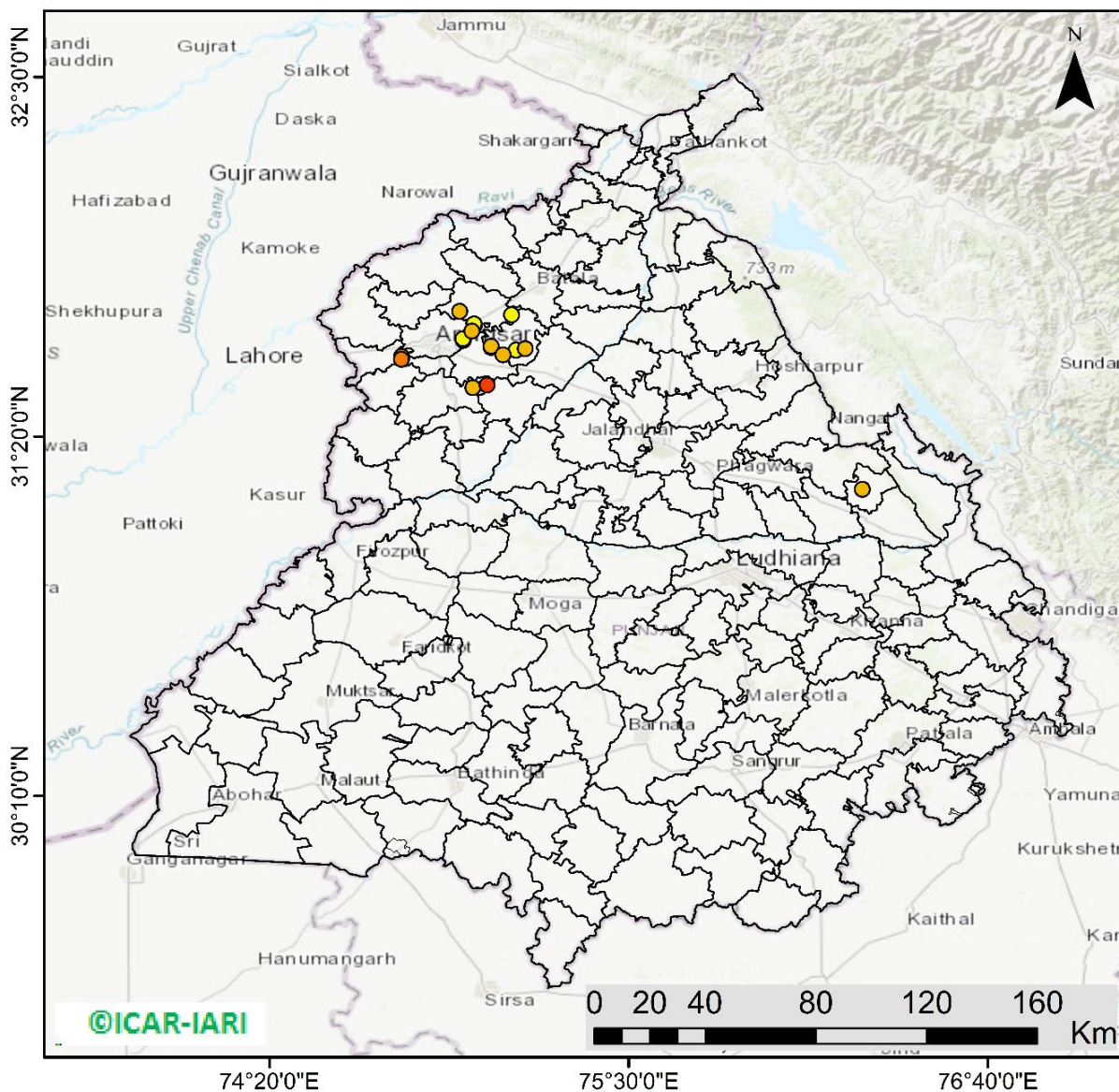
Rajasthan Cumulative





Punjab

RICE RESIDUE BURNING IN PUNJAB



18 burning events detected in Punjab during (19th Sep 2022)

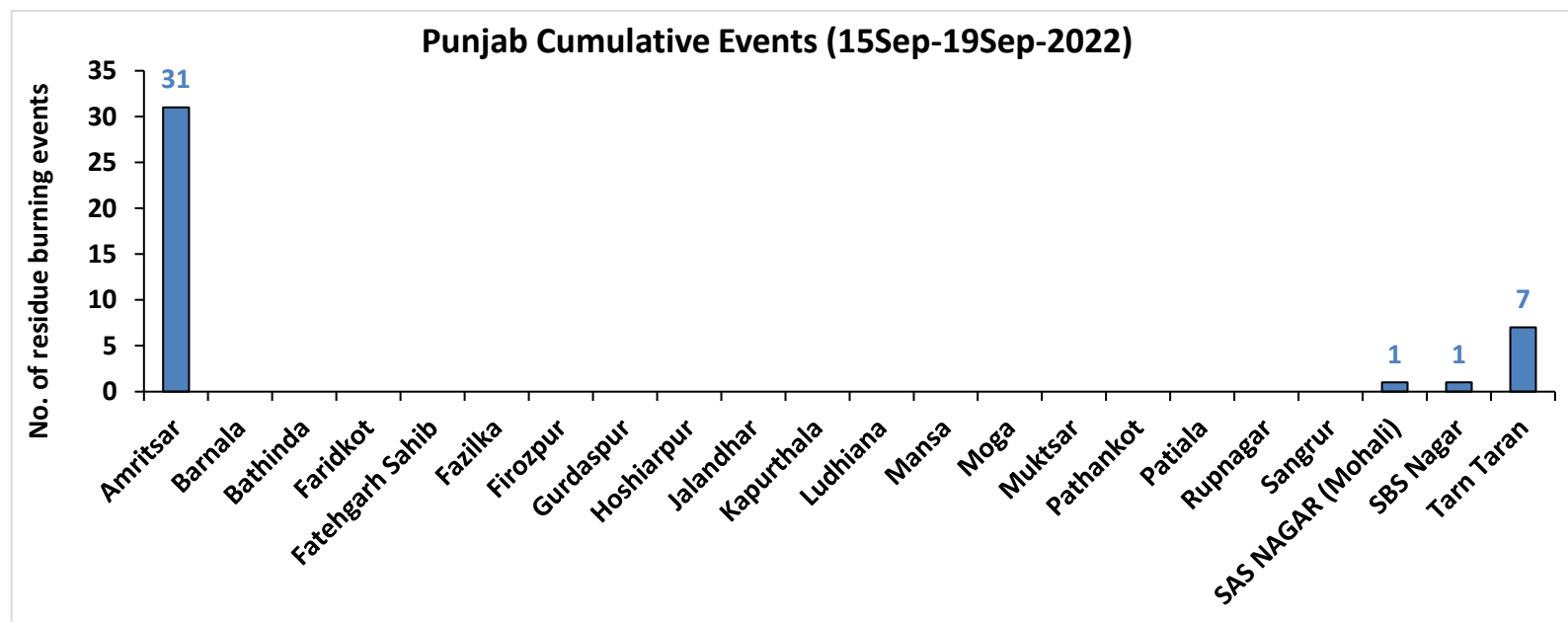
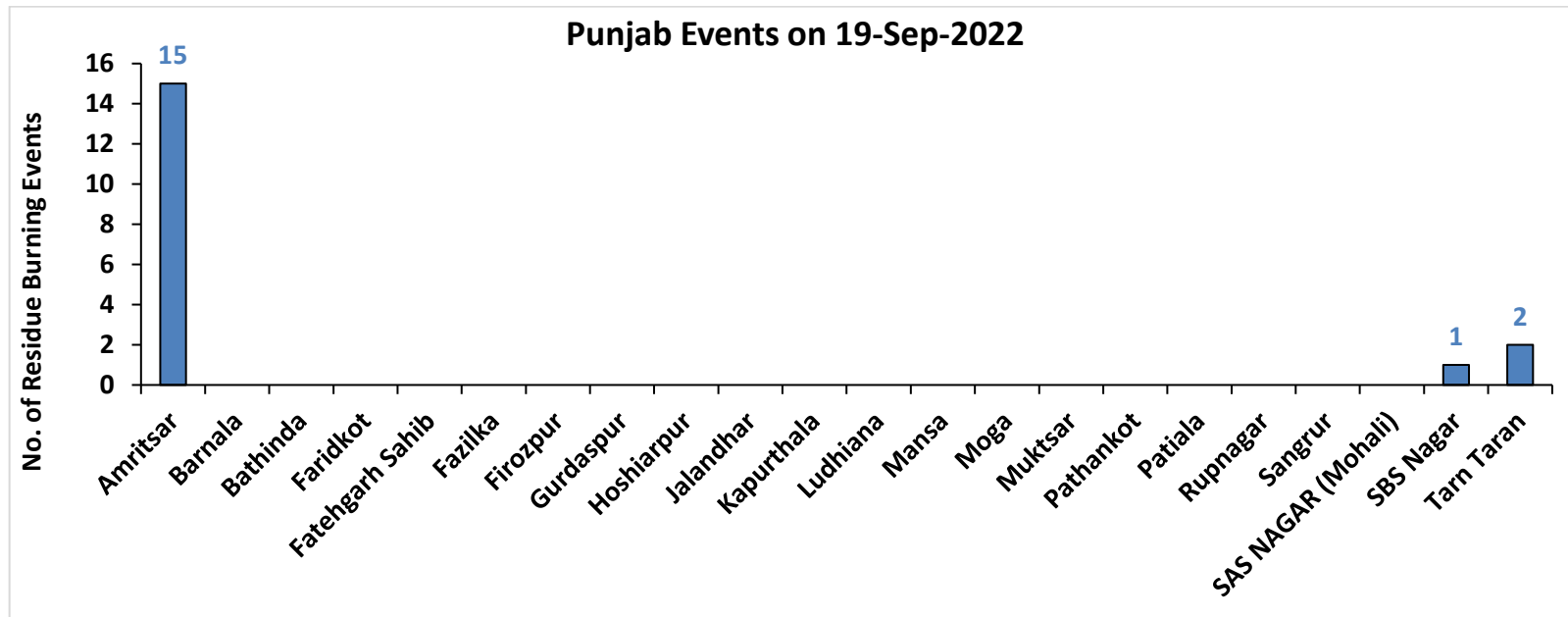
Fire Intensity (W/m²)

- 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- 19Sep-2022)



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

(a) Punjab

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

(b) Haryana

District	15 Sep-19 Sep 2022		
	2020	2021	2022
AMBALA	1	0	0
BHIWANI	0	0	0
CHARKHI DADRI	0	0	0
FARIDABAD	0	0	0
FATEHABAD	1	0	0
GURGAON	0	0	0
HISAR	0	0	0
JHAJJAR	0	0	0
JIND	0	0	1
KAITHAL	0	0	0
KARNAL	5	0	0
KURUKSHETRA	0	0	0
MAHENDRAGARH	0	0	0
MEWAT	0	0	0
PALWAL	0	0	0
PANCHKULA	0	0	0
PANIPAT	0	0	0
REWARI	0	0	0
ROHTAK	0	0	0
SIRSA	1	0	0
SONIPAT	0	0	0
YAMUNANAGAR	0	0	0
Total	8	0	1

(c) Uttar Pradesh

District	15 Sep-19 Sep 2022										
	2020	2021	2022	GAUTAMBUDHNAGAR	0	0	0	MUZAFARNAGAR	0	0	0
AGRA	0	0	0	GAZIPUR	0	0	0	PILHIBHIT	0	0	0
ALIGARH	0	0	0	GHAZIABAD	0	0	0	PRATAPGARH	0	0	0
ALLAHABAD	0	0	0	GONDA	0	0	0	RAIBEARELI	1	0	0
AMBEDKARNAGAR	0	0	0	GORAKHPUR	0	0	0	RAMPUR	0	1	0
AMETHI	0	0	0	HAMIRPUR	0	0	0	SAMBHAL	0	0	0
AMROHA	0	0	0	HAPUR	0	0	0	SANTKABIRNAGAR	0	0	0
AURAIYA	0	0	0	HARDOI	0	0	0	SANTRAVIDASNAGAR	0	0	0
AZAMGARH	0	0	0	HATHRAS	0	0	0	SHAHJAHANPUR	0	0	0
BADAUN	0	0	0	JALAUN	0	0	0	SHAMLI	0	0	0
BAGHPAT	0	0	0	JAUNPUR	0	0	0	SHARANPUR	0	0	0
BAHRAICH	0	0	0	JHANSI	0	0	0	SHRAWASTI	0	0	0
BALLIA	0	0	0	KANNAUJ	0	0	0	SIDDHARTHANAGAR	0	0	0
BALRAMPUR	0	0	0	KANPUR	0	1	0	SITAPUR	0	0	0
BANDA	0	0	0	KANPUR DEHAT	0	0	0	SONBHADRA	0	0	0
BARABANKI	0	0	0	KASGANJ	0	0	0	SULTANPUR	0	0	0
BAREILLY	0	0	0	KAUSHAMBI	0	0	0	UNNAO	0	0	0
BASTI	0	0	0	KHERI	0	0	0	VARANASI	0	0	0
BIJNOR	0	0	0	KUSHINAGAR	0	0	0	Total	1	2	0
BULANDSAHAR	0	0	0	LALITPUR	0	0	0				
CHANDAULI	0	0	0	LUCKNOW	0	0	0				
CHITRAKOOT	0	0	0	MAHARAJGANJ	0	0	0				
DEORIA	0	0	0	MAHOBA	0	0	0				
ETAH	0	0	0	MAINPURI	0	0	0				
ETAWAH	0	0	0	MATHURA	0	0	0				
FAIZABAD	0	0	0	MAU	0	0	0				
FARRUKHABAD	0	0	0	MEERUT	0	0	0				
FATEHPUR	0	0	0	MIRZAPUR	0	0	0				
FIROZABAD	0	0	0	MORADABAD	0	0	0				

(d) Delhi

District	15 Sep-19 Sep 2022		
	2020	2021	2022
CENTRAL	0	0	0
EAST	0	0	0
NEW DELHI	0	0	0
NORTH	0	0	0
NORTH EAST	0	0	0
NORTH WEST DELHI	0	0	0
SHAHADRA	0	0	0
SOUTH	0	0	0
SOUTH EAST	0	0	0
SOUTH WEST DELHI	0	0	0
WEST DELHI	0	0	0
Total	0	0	0

(e) Rajasthan

District	15 Sep-19 Sep 2022		
	2020	2021	2022
AJMER	0	0	0
ALWAR	0	0	0
BANSWARA	0	0	0
BARAN	0	0	0
BARMER	0	0	0
BHARATPUR	0	0	0
BHILWARA	1	0	0
BIKANER	0	0	0
BUNDI	0	0	0
CHITTAURGARH	0	0	0
CHURU	0	0	0
DAUSA	0	0	0
DHOLPUR	0	0	0
DUNGARPUR	0	0	0
GANGANAGAR	0	0	0
HANUMANGARH	0	0	0
JAIPUR	0	0	0
JAISELMER	0	0	0
JALOR	0	0	0
JHALAWAR	0	0	0
JHUNJHUNUN	0	0	0
JODHPUR	0	0	0
KARALI	0	0	0
KOTA	0	0	0
NAGOUR	0	0	0
PALI	0	0	0
PRATAPGARH	0	0	0
RAJSMAND	0	0	0
SIKAR	0	0	0
SIROHI	0	0	0
SWAIMADHOPUR	0	0	0
TONK	0	0	0
UDAIPUR	0	0	0
Total	1	0	0

(f) Madhya Pradesh

District	15 Sep-19 Sep 2022						
	2020	2021	2022	PANNA	0	0	0
ALIRAJPUR	0	0	0	RAISEN	0	0	0
ANUPPUR	0	0	0	RAJGARH	0	0	0
ASHOKNAGAR	0	0	0	RATLAM	0	0	0
BALAGHAT	0	0	0	REWA	0	0	0
BARWANI	0	0	0	SAGAR	0	0	0
BETUL	0	0	0	SATNA	0	0	0
BHIND	0	0	0	SEHORE	0	0	0
BHOPAL	0	0	0	SEONI	0	0	0
BURHANPUR	0	0	0	SHAHDOL	0	0	0
CHHATARPUR	0	0	0	SHAJAPUR	0	0	0
CHHINDWARA	0	0	0	SHEOPUR	0	0	0
DAMOH	0	0	0	SHIVPURI	0	0	0
DATIA	0	0	0	SIDHI	0	0	0
DEWAS	0	0	0	SINGRAULI	0	0	0
DHAR	0	0	0	TIKAMGARH	0	0	0
DINDORI	0	0	0	UJJAIN	0	0	0
EAST NIMAR	0	0	0	UMARIA	0	0	0
GUNA	0	0	0	VIDESHA	0	0	0
GWALIOR	0	0	0	WEST NIMAR	0	0	0
HARDA	2	0	0	Total	2	0	0
HOSHANGABAD	0	0	0				
INDORE	0	0	0				
JABALPUR	0	0	0				
JHABUA	0	0	0				
KATNI	0	0	0				
MANDLA	0	0	0				
MANDSAUR	0	0	0				
MORENA	0	0	0				
NARSHIMAPURA	0	0	0				
NIMACH	0	0	0				

State-wise and date-wise number of paddy residue burning events detected in 2020, 2021 and 2022
(Period: 15 September- 19 September 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
Total	57	16	40	8	0	1	1	2	0	0	0	0	1	0	0	2	0	0

Details of residue burning events in Punjab on 19-Sep-2022

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m ²)
1	AMRITSAR	ATTARI	S-NPP	31.59300	74.76230	14:07:18	D	10.40
2	AMRITSAR	ATTARI	AQUA	31.58400	74.76200	13:41:19	D	10.80
3	AMRITSAR	JANDIALA GURU	S-NPP	31.62200	75.05300	14:07:18	D	23.10
4	AMRITSAR	JANDIALA GURU	AQUA	31.59800	75.09200	13:41:19	D	6.20
5	AMRITSAR	MAJITHA	S-NPP	31.69310	74.99840	14:07:18	D	4.10
6	AMRITSAR	MAJITHA	S-NPP	31.69820	74.99790	14:07:18	D	4.10
7	AMRITSAR	MAJITHA	S-NPP	31.73910	74.95110	14:07:18	D	6.50
8	AMRITSAR	TARSIKKA	S-NPP	31.61330	75.13440	14:07:18	D	4.20
9	AMRITSAR	TARSIKKA	S-NPP	31.62630	75.05310	14:07:18	D	7.20
10	AMRITSAR	TARSIKKA	S-NPP	31.72830	75.11970	14:07:18	D	2.50
11	AMRITSAR	TARSIKKA	AQUA	31.61800	75.16400	13:41:19	D	6.30
12	AMRITSAR	VERKA	S-NPP	31.64500	74.96260	14:07:18	D	5.00
13	AMRITSAR	VERKA	S-NPP	31.64980	74.96240	14:07:18	D	16.80
14	AMRITSAR	VERKA	S-NPP	31.65000	74.96200	14:07:18	D	5.00
15	AMRITSAR	VERKA	AQUA	31.67500	74.99100	13:41:19	D	6.40
16	SBS NAGAR	SAROYA	S-NPP	31.16170	76.25900	14:07:18	D	8.00
17	TARN TARAN	KHADUR SAHIB	S-NPP	31.50030	75.04020	14:07:18	D	18.90
18	TARN TARAN	TARN TARAN	S-NPP	31.49150	74.99390	14:07:18	D	9.70

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)
