



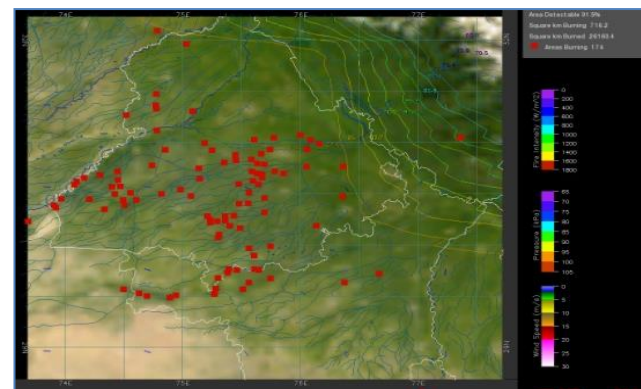
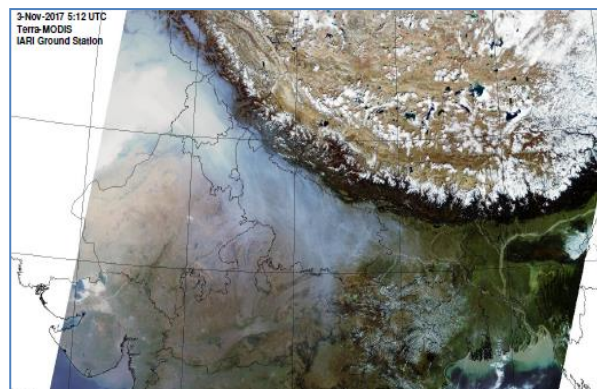
Bulletin No. 15

Events Date:
29-Sep-2022

Issued on:
29-Sep-2022



MONITORING PADDY RESIDUE BURNING IN INDIA USING SATELLITE REMOTE SENSING DURING 2022



Prepared by:

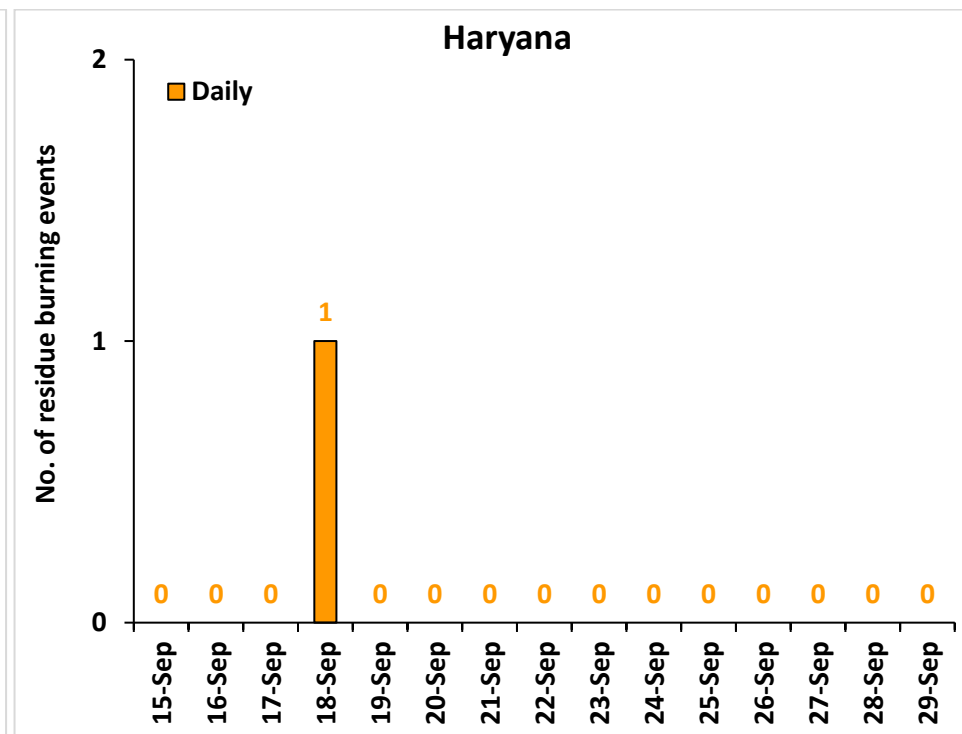
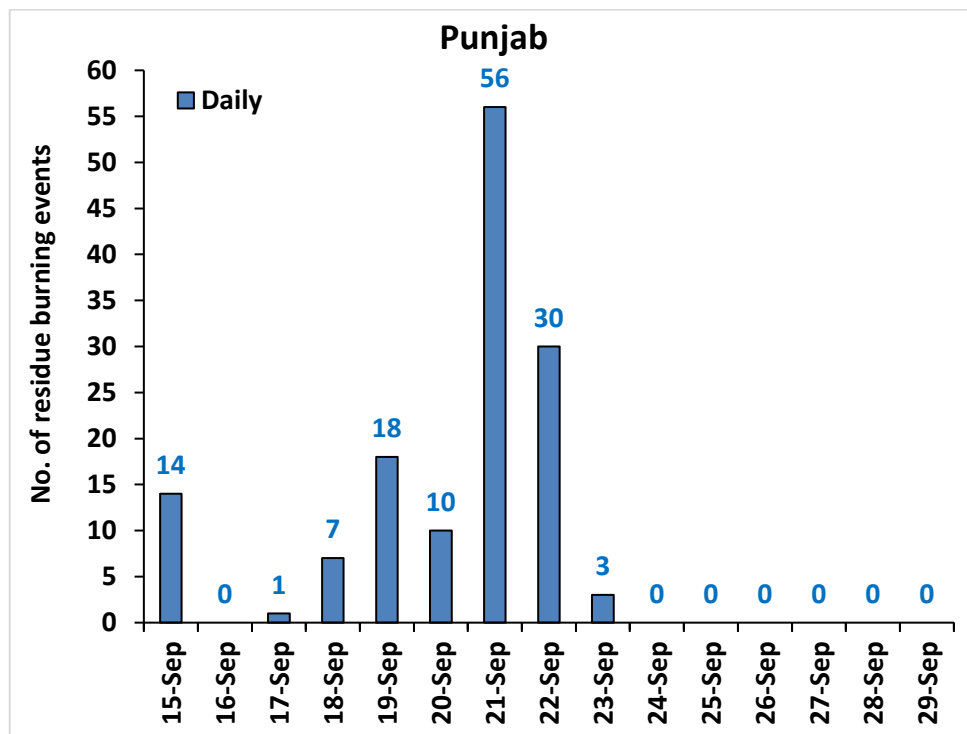
Consortium for Research on Agroecosystem Monitoring and Modeling from Space (CREAMS) Laboratory,
Division of Agricultural Physics, ICAR – Indian Agricultural Research Institute, New Delhi – 110012

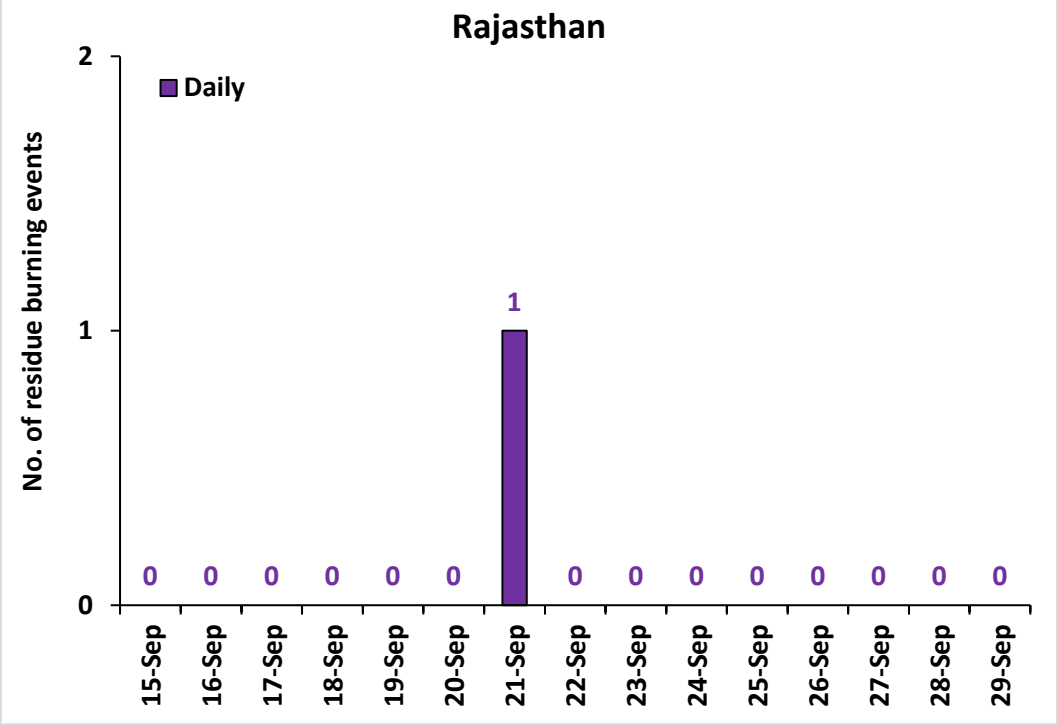
<http://creams.iari.res.in>

Highlights for 29-Sep-2022

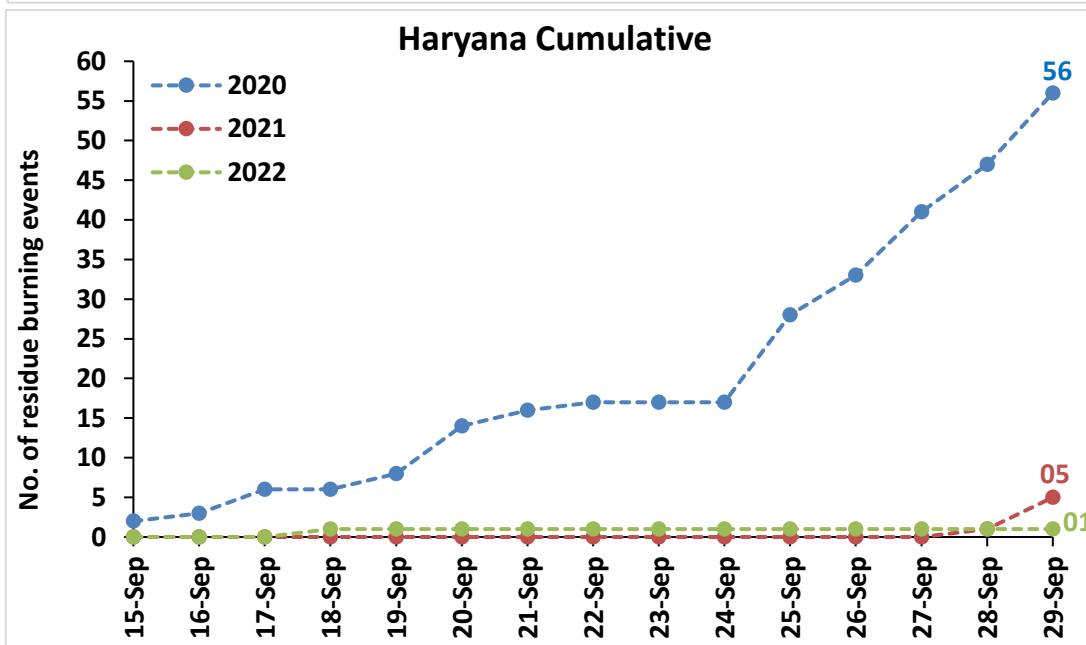
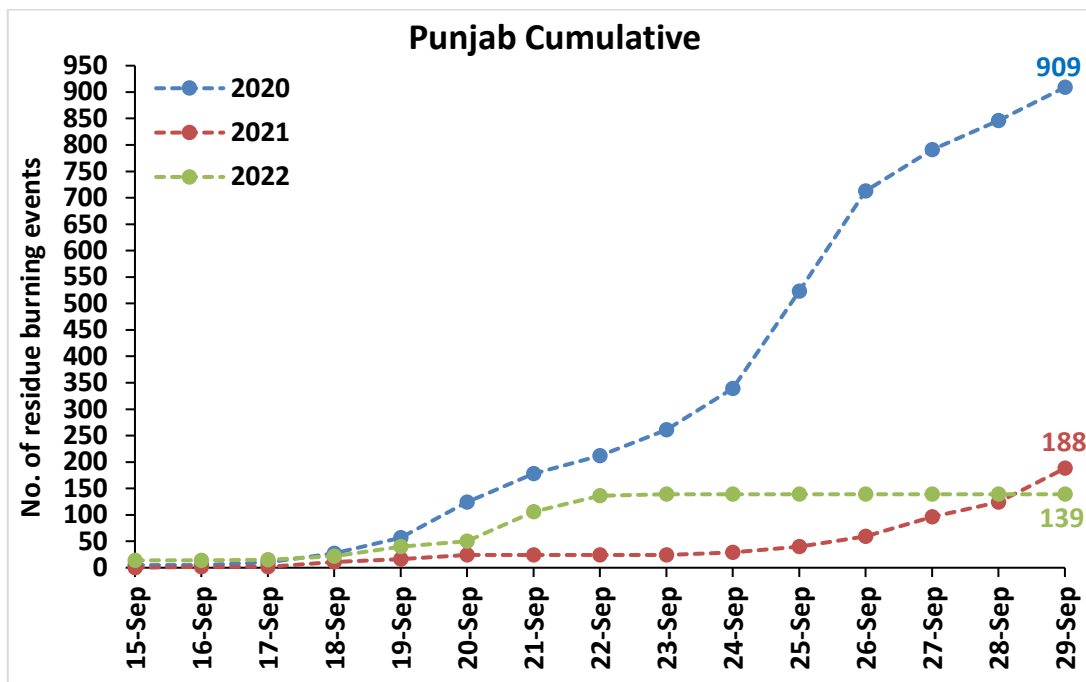
- The active fire events due to rice residue burning were monitored using satellite remote sensing, following the "Standard Protocol for Estimation of Crop Residue Burning Fire Events using Satellite Data".
- Satellites detected **00** residue burning events in the six study States on 29-Sep-2022.
- The state wise events detected on 29-Sep-2022 were **0** in Punjab, **0** in Haryana, **0** in UP, **0** in Delhi, **0** in Rajasthan and **0** in MP.
- Total **141** burning events were detected in the six states between 15-Sept-2022 and 29-Sep-2022, which are distributed as **139, 1, 0, 0, 1** and **0** in Punjab, Haryana, UP, Delhi, Rajasthan and MP, respectively.

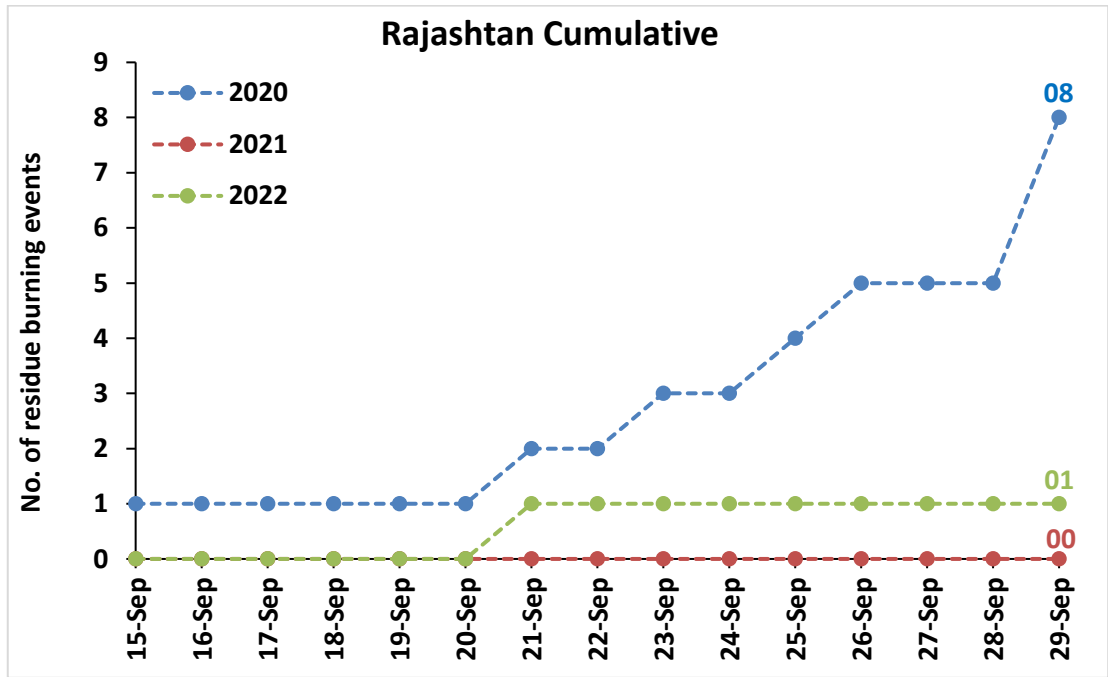
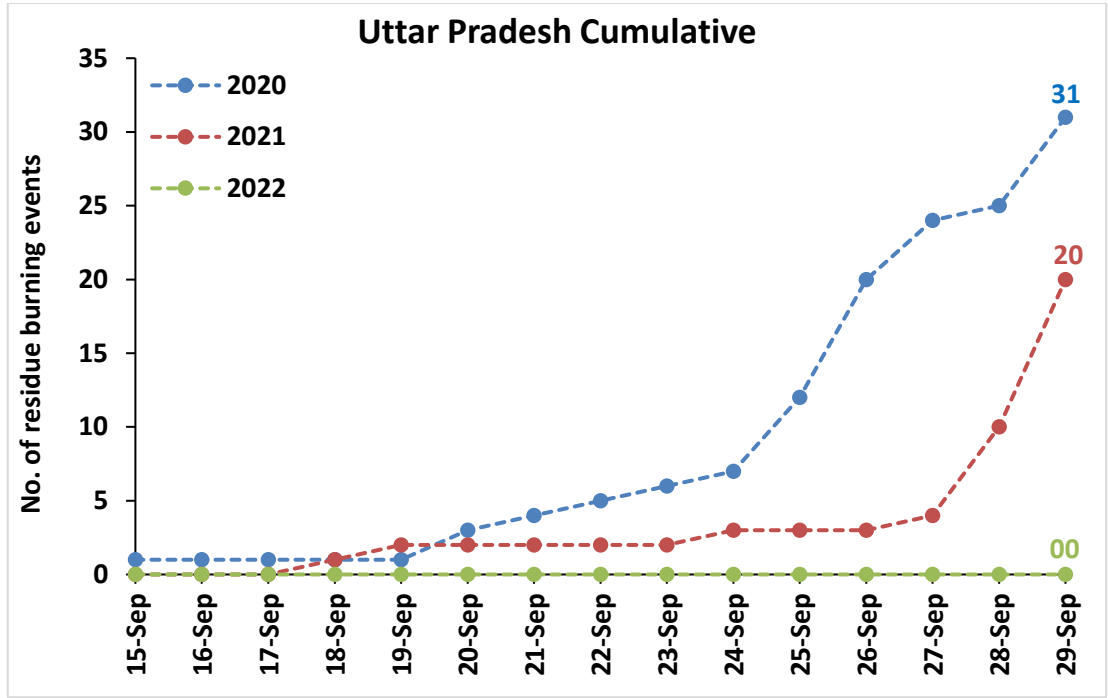
Temporal distribution of rice residue burning events for the study States in 2022

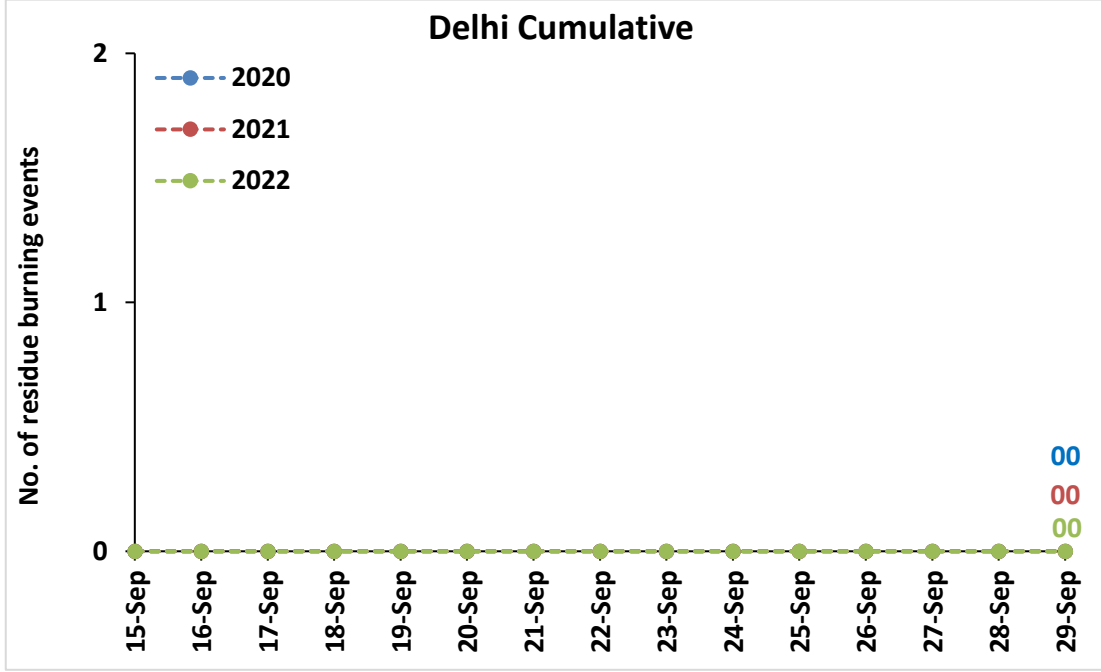
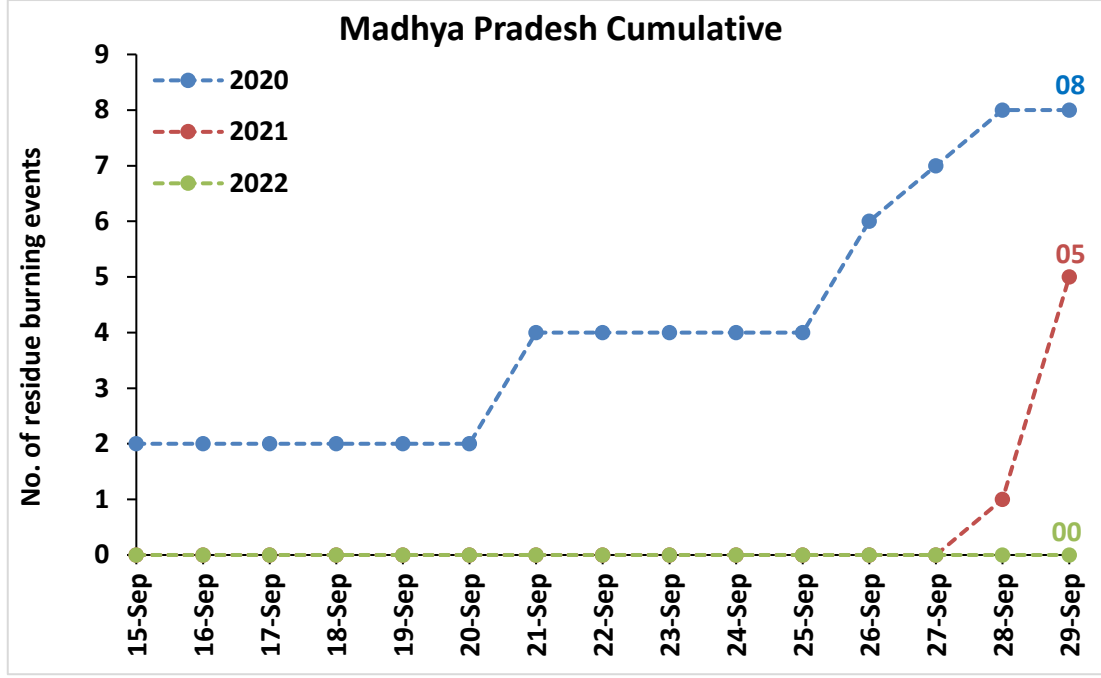




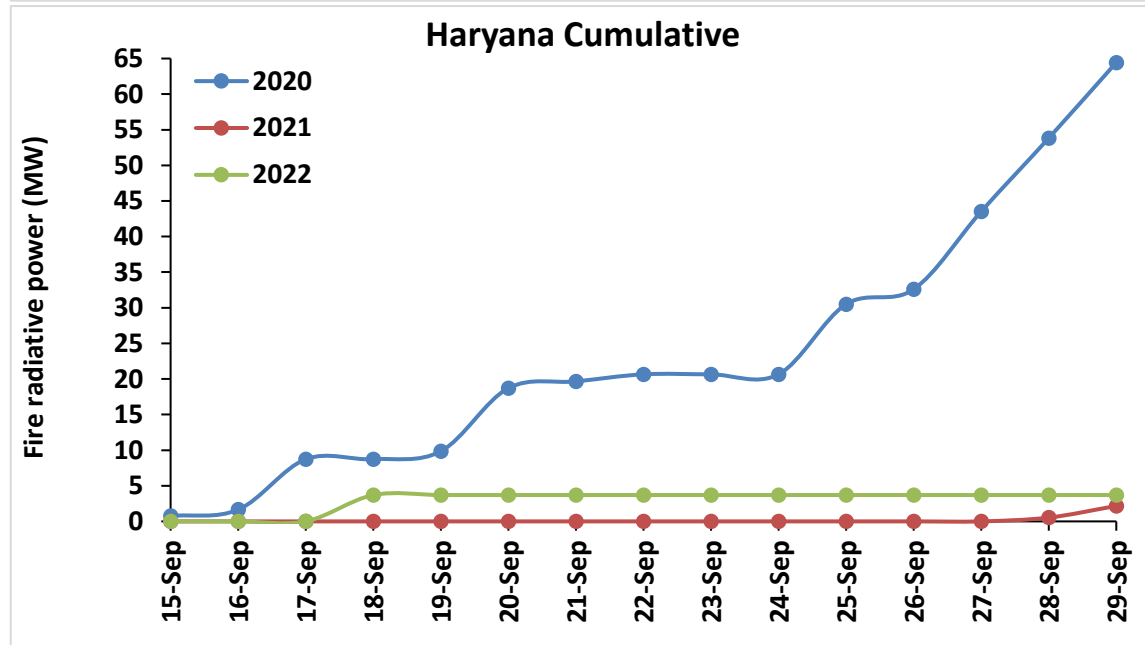
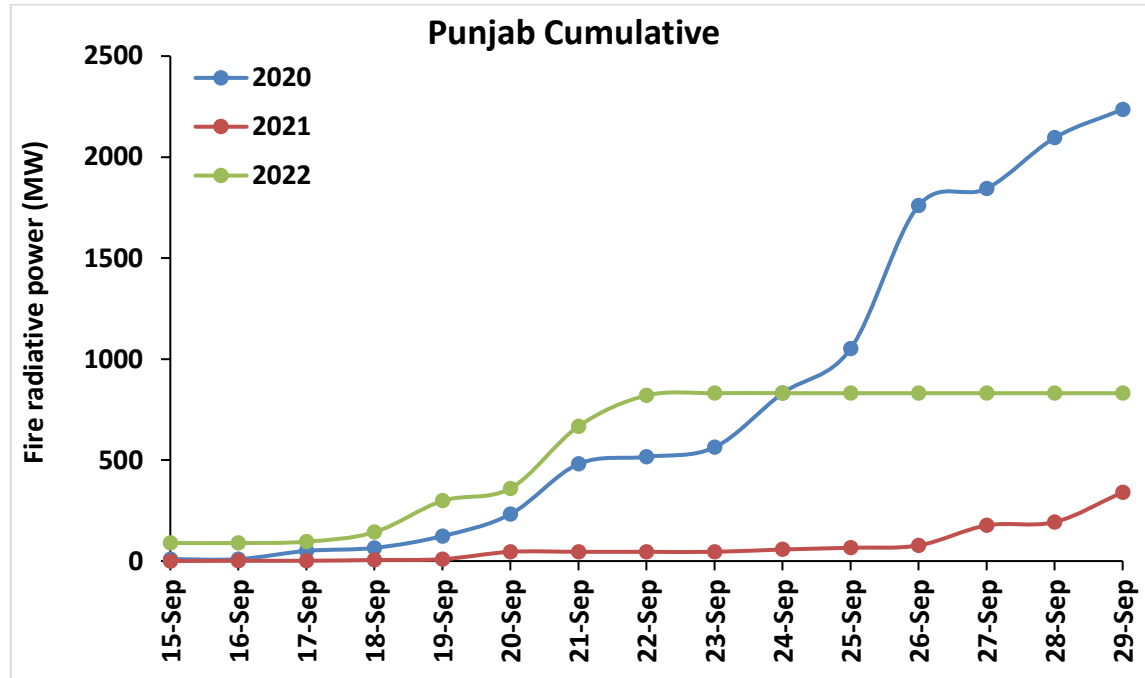
Comparison of residue burning events in current year (2022) with previous year (2020 and 2021) for the study States

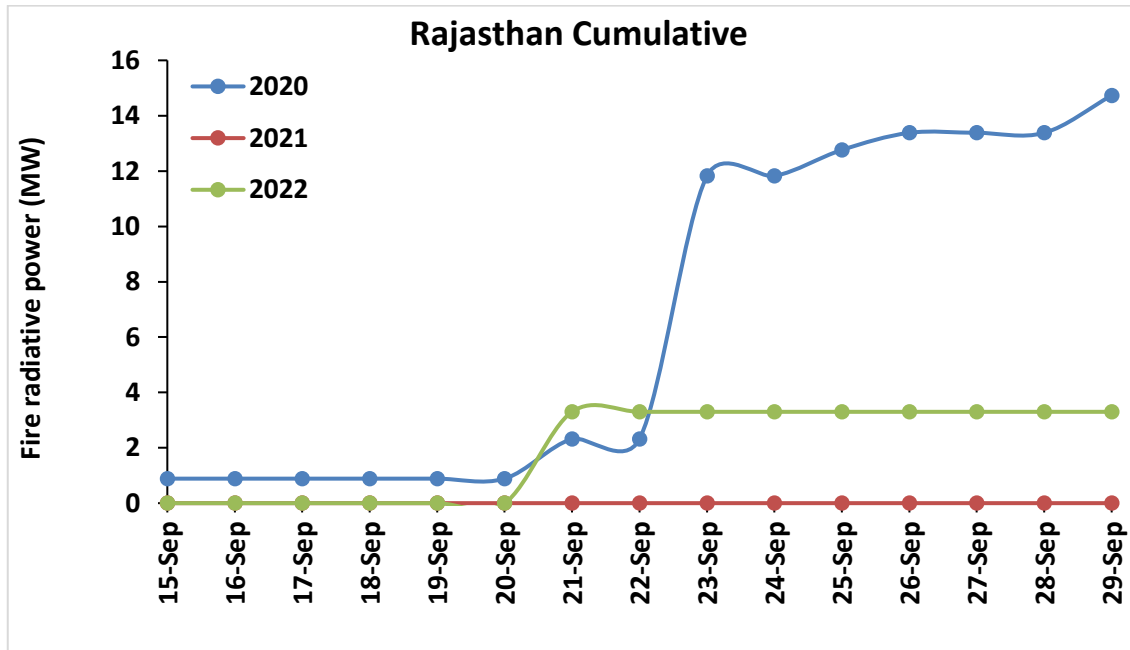
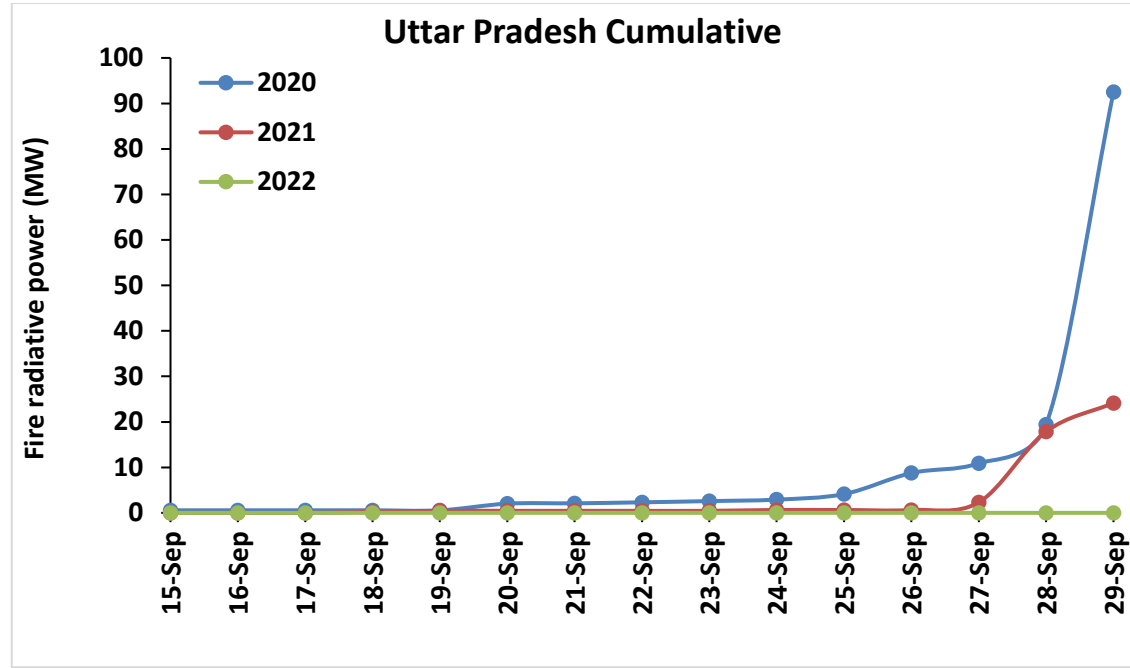


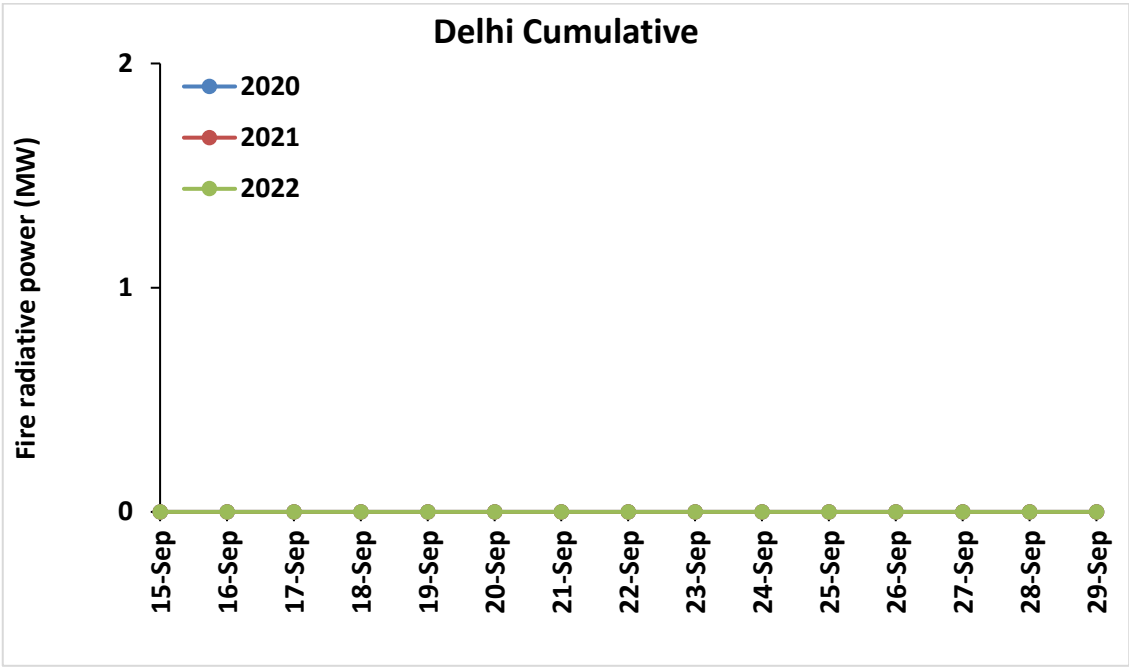
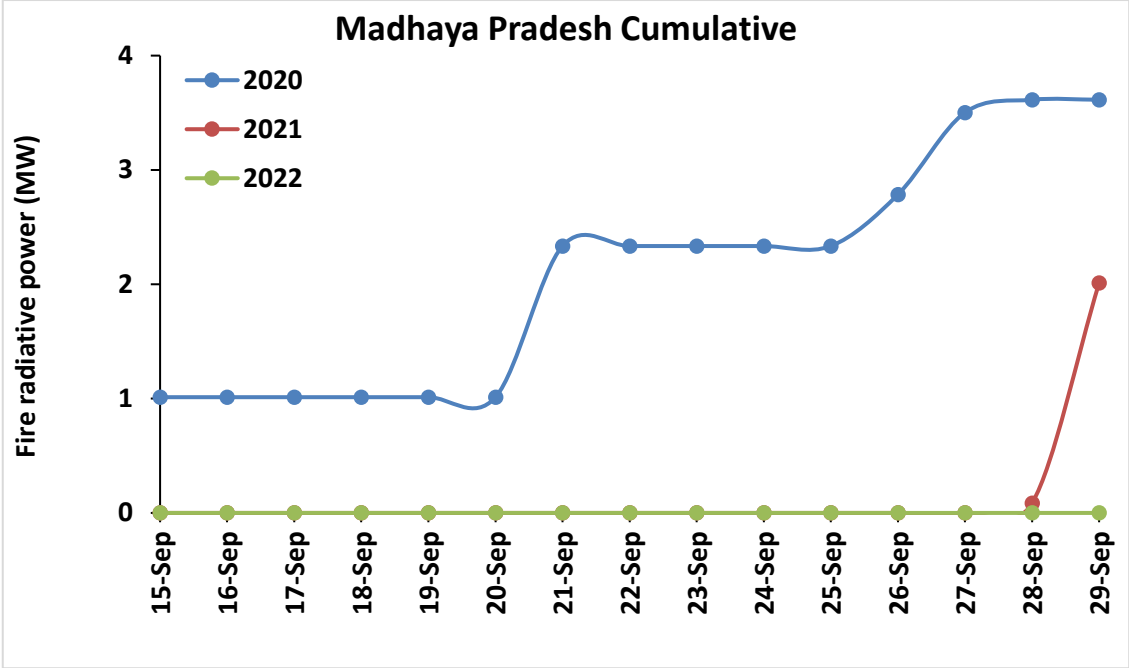




Comparison of residue burning fire power in current year (2022) with previous year (2021 and 2020) for the study States







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

(a) Punjab

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

(b) Haryana

District	15 Sep-29 Sep 2022		
	2020	2021	2022
AMBALA	6	0	0
BHIWANI	0	0	0
CHARKHI DADRI	0	0	0
FARIDABAD	0	0	0
FATEHABAD	5	0	0
GURGAON	0	0	0
HISAR	1	0	0
JHAJJAR	0	0	0
JIND	0	0	1
KAITHAL	9	0	0
KARNAL	20	2	0
KURUKSHETRA	9	2	0
MAHENDRAGARH	0	0	0
MEWAT	0	0	0
PALWAL	0	0	0
PANCHKULA	0	0	0
PANIPAT	3	0	0
REWARI	0	0	0
ROHTAK	0	0	0
SIRSA	1	0	0
SONIPAT	0	0	0
YAMUNANAGAR	2	1	0
Total	56	5	1

(c) Uttar Pradesh

District	15 Sep-29 Sep 2022										
	2020	2021	2022	GAUTAMBUDHNAGAR	0	0	0	MUZAFARNAGAR	0	0	0
AGRA	0	0	0	GAZIPUR	0	0	0	PILHIBHIT	1	0	0
ALIGARH	1	0	0	GHAZIABAD	1	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	2	0
AMETHI	0	0	0	HAMIRPUR	0	0	0	SAMBHAL	3	0	0
AMROHA	0	0	0	HAPUR	1	0	0	SANTKABIRNAGAR	0	0	0
AURAIYA	2	0	0	HARDOI	0	0	0	SANTRAVIDASNAGAR	0	0	0
AZAMGARH	0	0	0	HATHRAS	0	0	0	SHAHJAHANPUR	3	15	0
BADAUN	0	0	0	JALAUN	0	0	0	SHAMLI	6	0	0
BAGHPAT	1	0	0	JAUNPUR	0	0	0	SHARANPUR	3	0	0
BAHRAICH	0	0	0	JHANSI	2	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	2	0	0
BASTI	0	0	0	KHERI	0	0	0	VARANASI	0	0	0
BIJNOR	1	0	0	KUSHINAGAR	0	0	0	Total	31	20	0
BULANDSAHAR	0	0	0	LALITPUR	0	1	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	1	0	0	MAINPURI	0	0	0				
ETAWAH	0	0	0	MATHURA	0	1	0				
FAIZABAD	0	0	0	MAU	0	0	0				
FARRUKHABAD	0	0	0	MEERUT	2	0	0				
FATEHPUR	0	0	0	MIRZAPUR	0	0	0				
FIROZABAD	0	0	0	MORADABAD	0	0	0				

(d) Delhi

District	15 Sep-29 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-29 Sep 2022		
	2020	2021	2022
AJMER	0	0	0
ALWAR	0	0	0
BANSWARA	0	0	0
BARAN	2	0	0
BARMER	2	0	0
BHARATPUR	0	0	0
BHILWARA	1	0	0
BIKANER	0	0	0
BUNDI	0	0	1
CHITTAURGARH	0	0	0
CHURU	0	0	0
DAUSA	0	0	0
DHOLPUR	0	0	0
DUNGARPUR	0	0	0
GANGANAGAR	1	0	0
HANUMANGARH	0	0	0
JAIPUR	0	0	0
JAISELMER	1	0	0
JALOR	0	0	0
JHALAWAR	0	0	0
JHUNJHUNUN	0	0	0
JODHPUR	1	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	8	0	1

(f) Madhya Pradesh

District	15 Sep-29 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	2	2	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	2	1	0	VIDESHA	0	1	0
GWALIOR	2	0	0	WEST NIMAR	0	0	0
HARDA	2	1	0	Total	8	5	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- 29 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
20-Sep	67	8	10	6	0	0	2	0	0	0	0	0	0	0	0	0	0	0
21-Sep	54	0	56	2	0	0	1	0	0	0	0	0	1	0	1	2	0	0
22-Sep	34	0	30	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
23-Sep	49	0	3	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0
24-Sep	78	5	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
25-Sep	184	11	0	11	0	0	5	0	0	0	0	0	1	0	0	0	0	0
26-Sep	190	19	0	5	0	0	8	0	0	0	0	0	1	0	0	2	0	0
27-Sep	78	37	0	8	0	0	4	1	0	0	0	0	0	0	0	1	0	0
28-Sep	55	28	0	6	1	0	1	6	0	0	0	0	0	0	0	1	1	0
29-Sep	63	64	0	9	4	0	6	10	0	0	0	0	3	0	0	0	4	0
Total	909	188	139	56	5	1	31	20	0	0	0	0	8	0	1	8	5	0

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)

and on IARI CREAMS website (<http://creams.iari.res.in/cms2/index.php>)
