

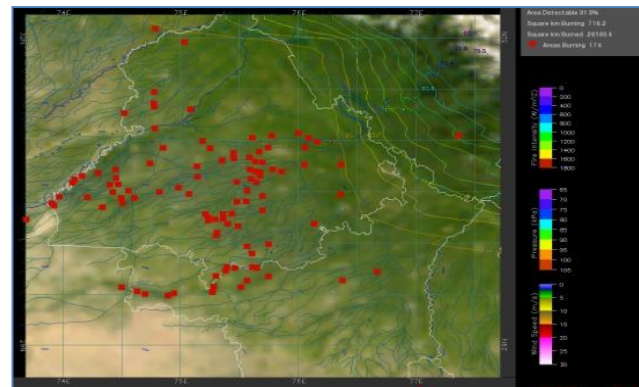
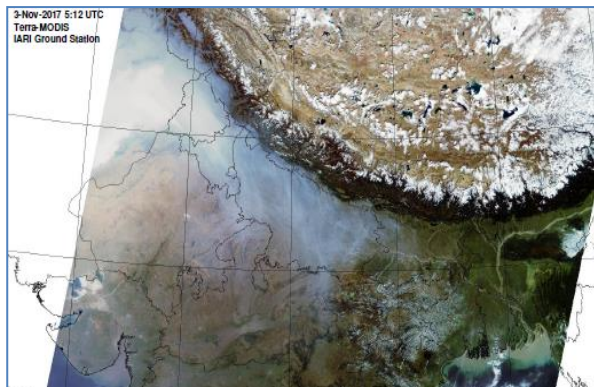


MONITORING PADDY RESIDUE BURNING IN INDIA USING SATELLITE REMOTE SENSING DURING 2022

**Bulletin
No. 04**

**Events Date:
18-Sep-2022**

**Issued on:
18-Sep-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**

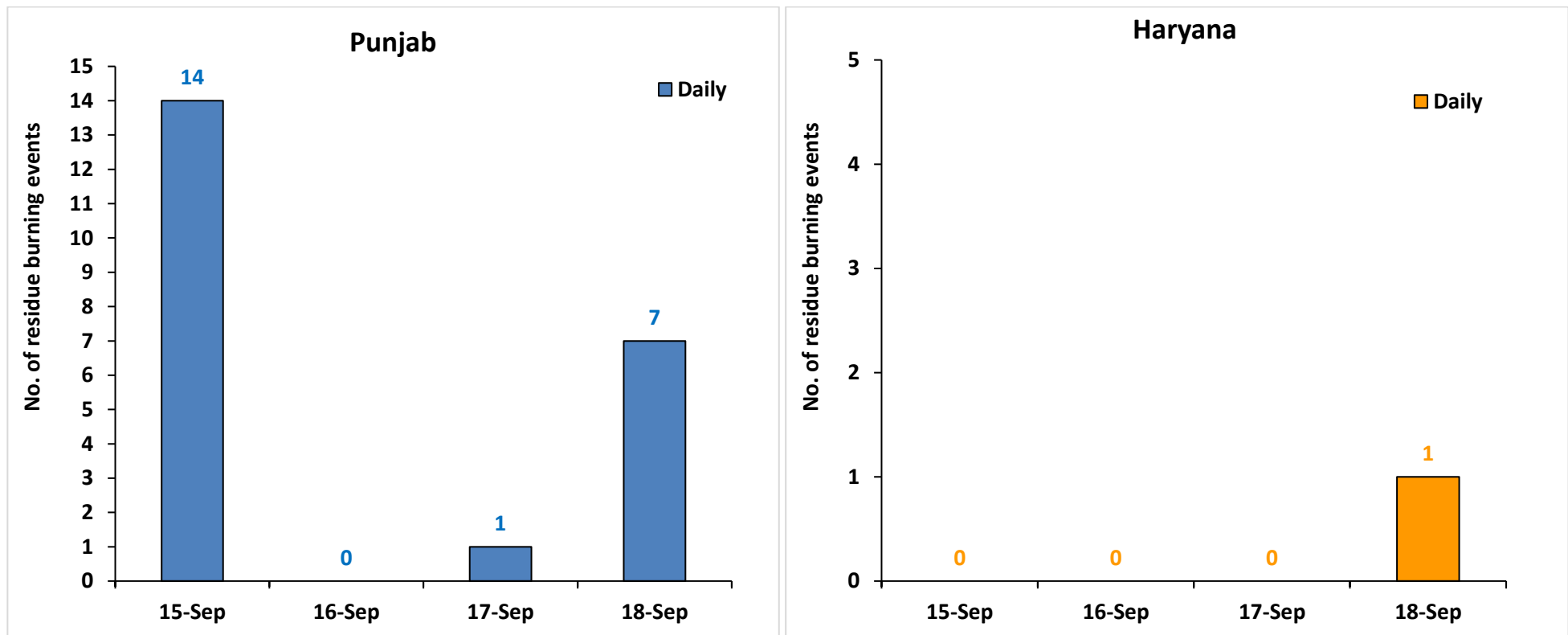
<http://creams.iari.res.in>



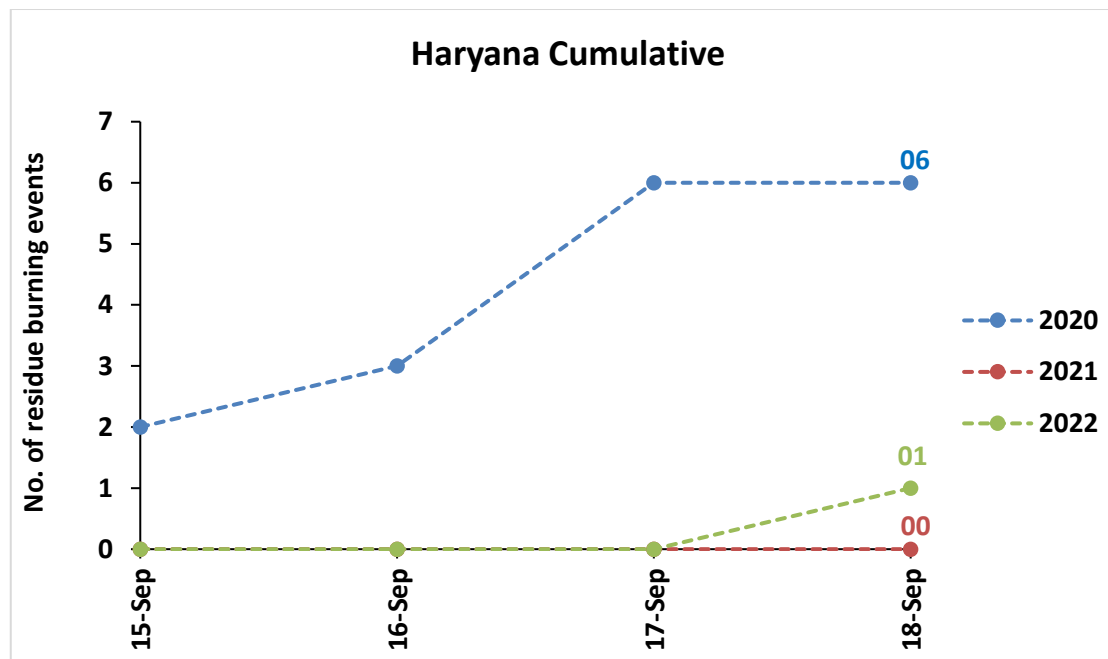
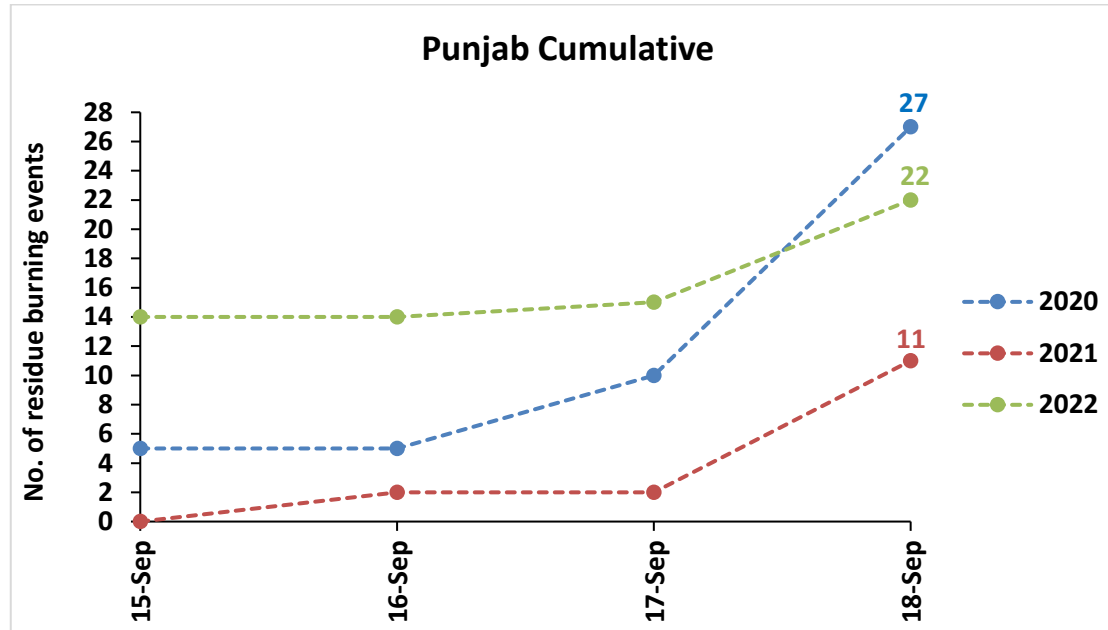
Highlights for 18-Sep-2022

- 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 **8** residue burning events in the six study States on 18-Sep-2022.
- The state wise events detected on 18-Sep-2022 were **7** in Punjab, **1** 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 clouds over Uttar Pradesh and Madhya Pradesh states.

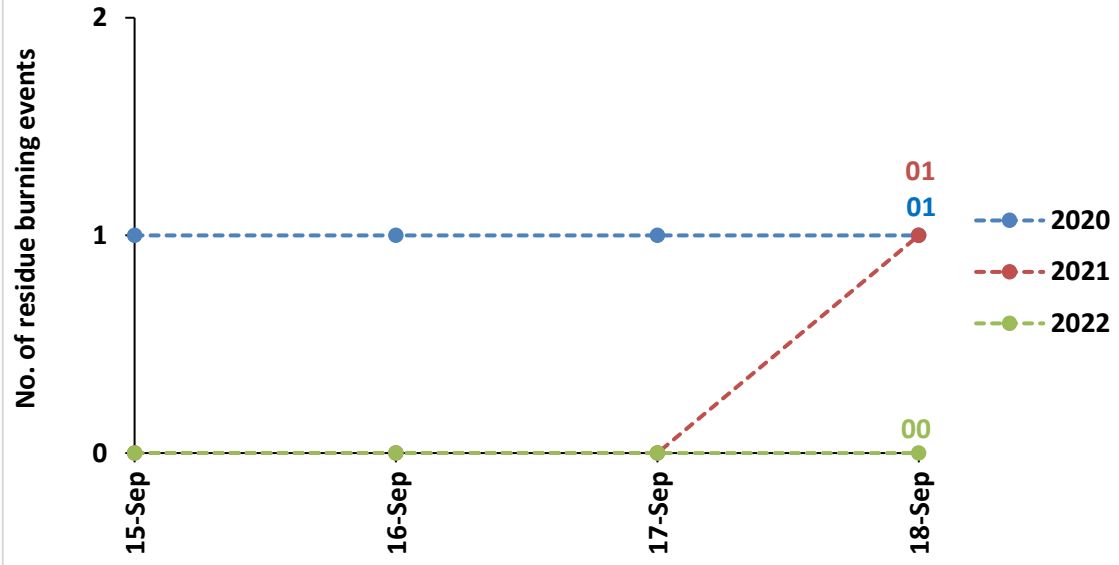
Temporal distribution of rice residue burning events for the study States in 2022



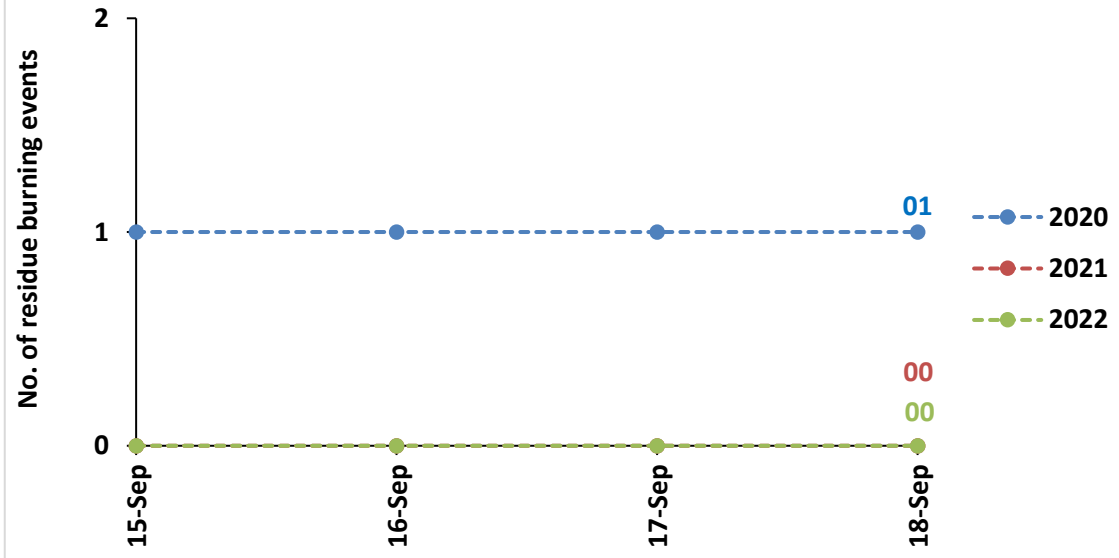
Comparison of residue burning events in current year (2022) with previous year (2020 and 2021) for the study States



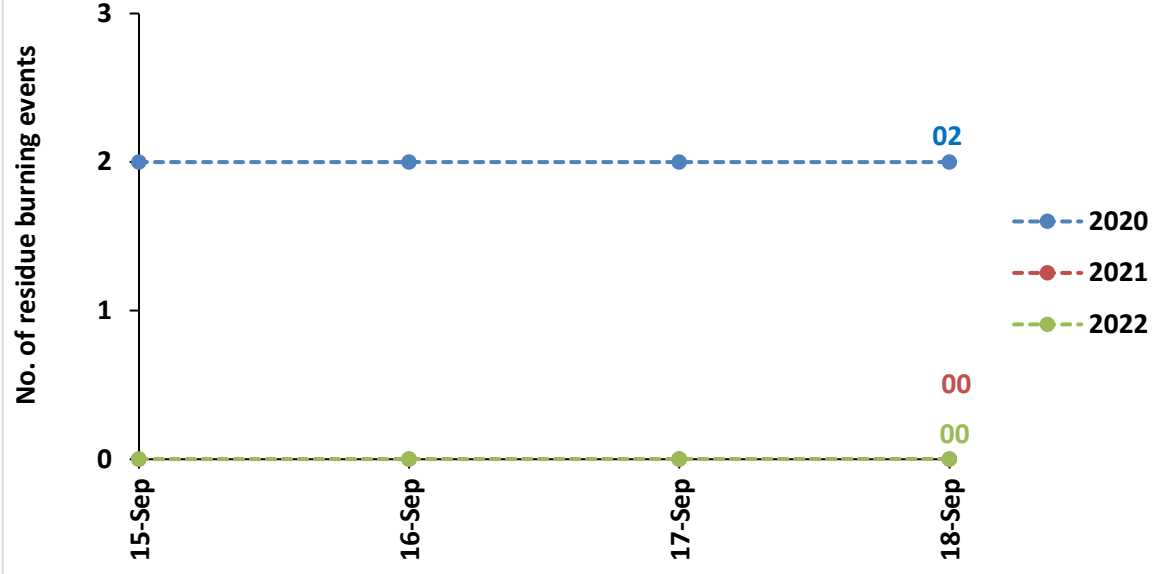
Uttar Pradesh Cumulative



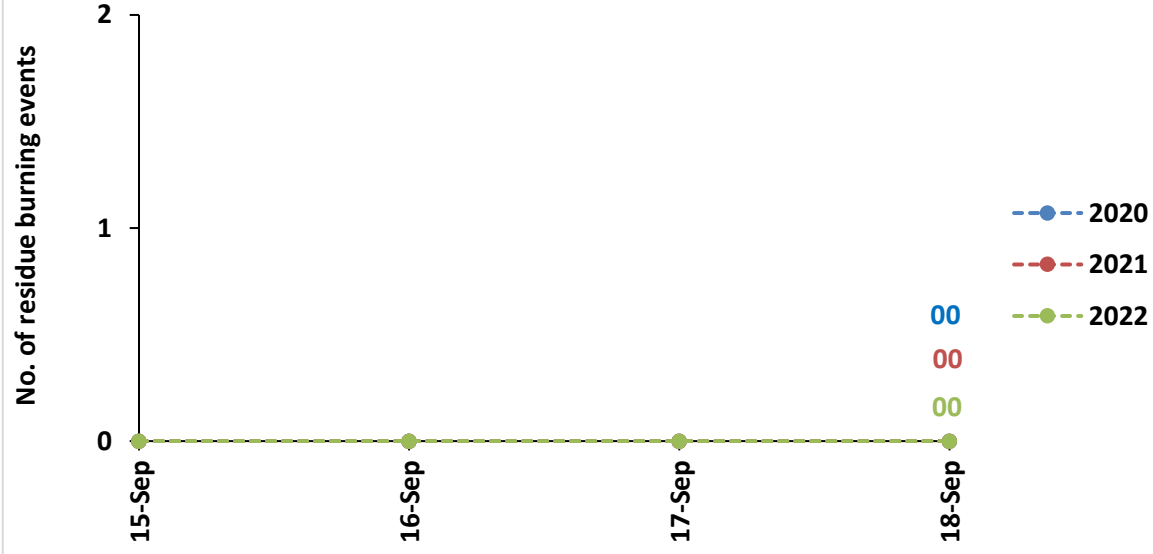
Rajashtan Cumulative



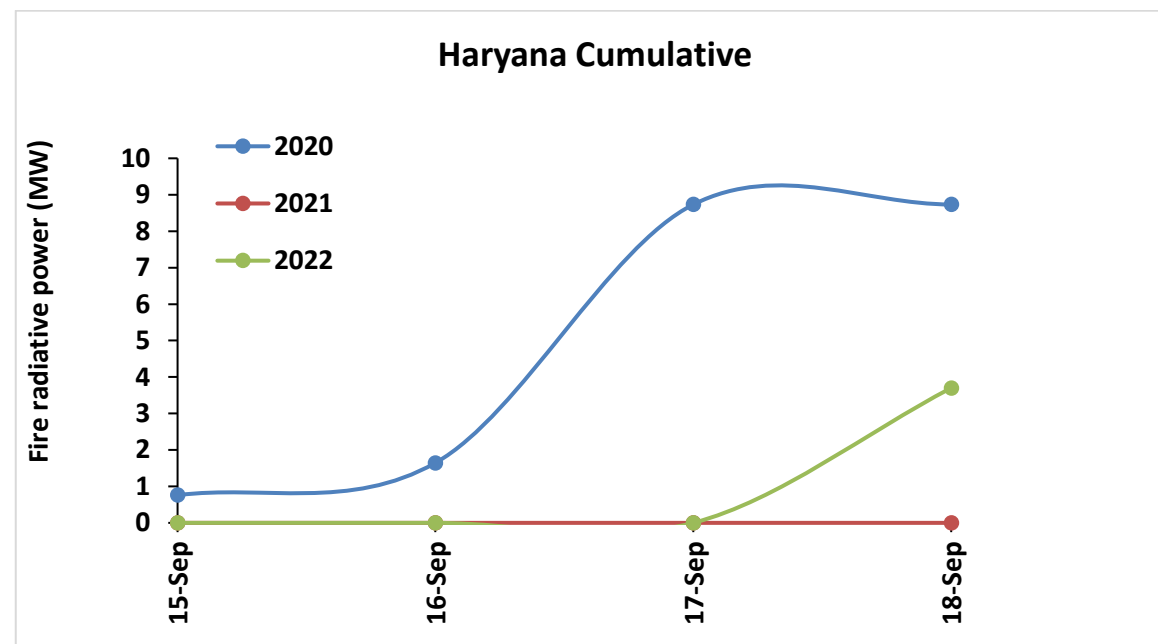
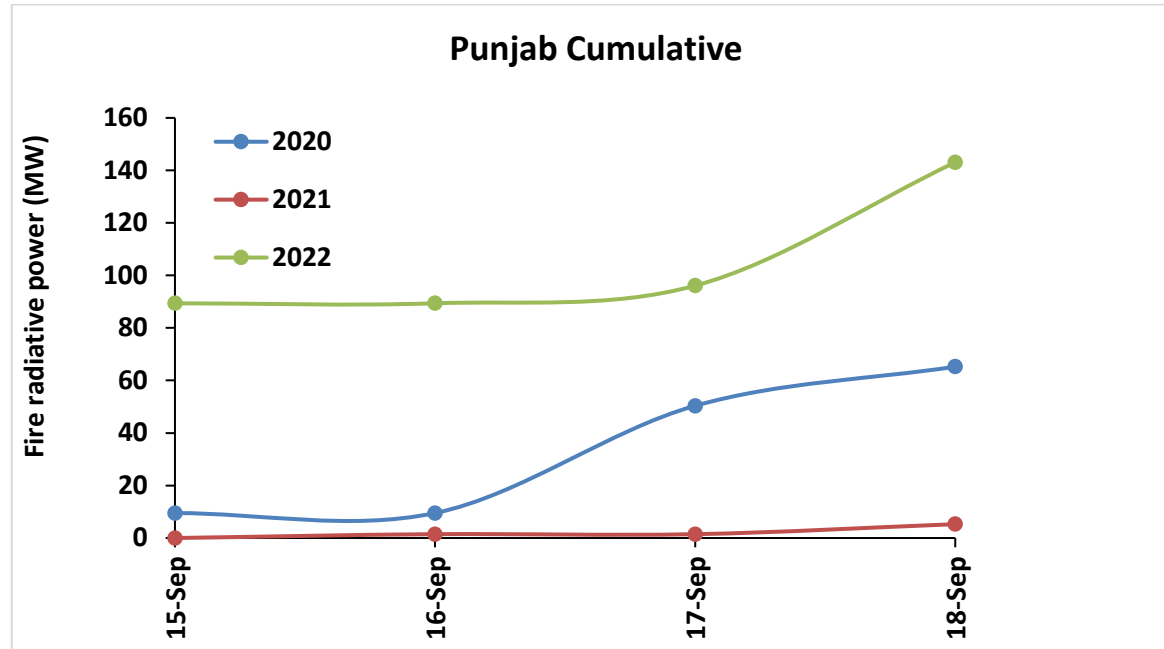
Madhya Pradesh Cumulative



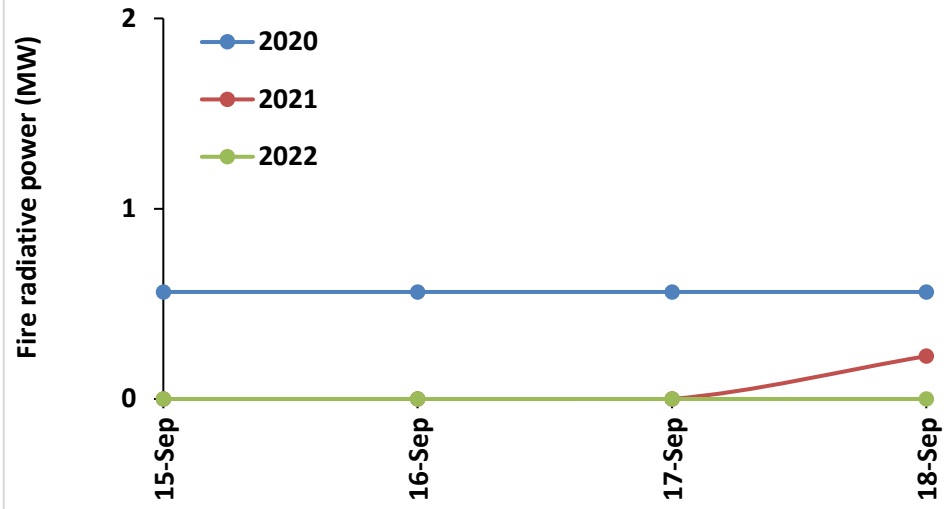
Delhi Cumulative



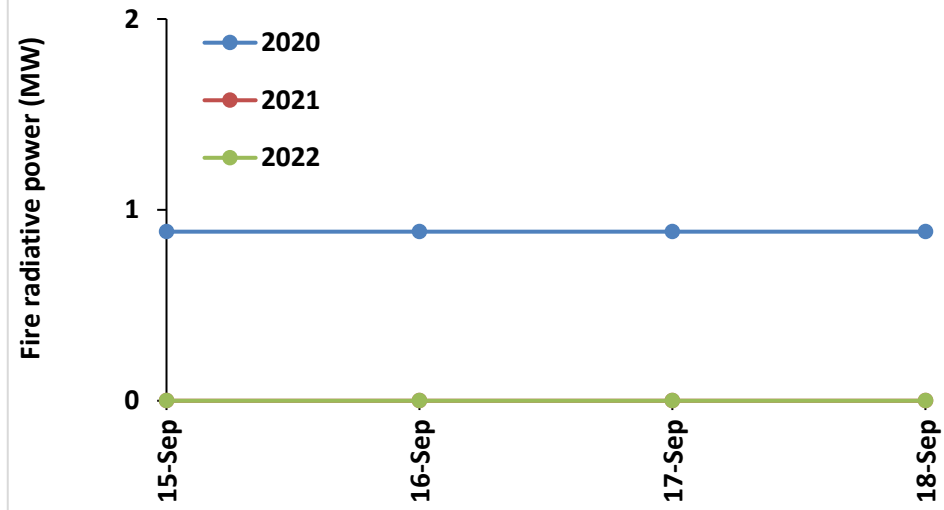
Comparison of residue burning fire power in current year (2022) with previous year (2021 and 2020) for the study States



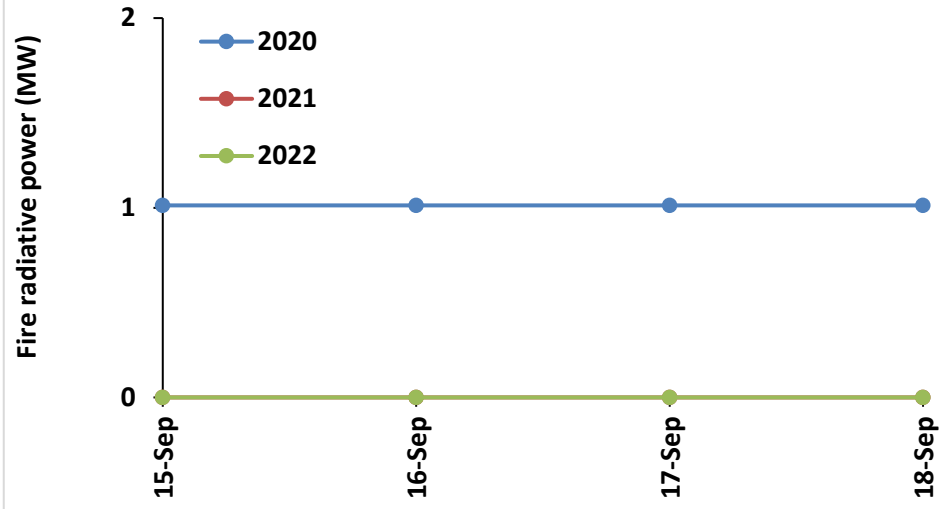
Uttar Pradesh Cumulative



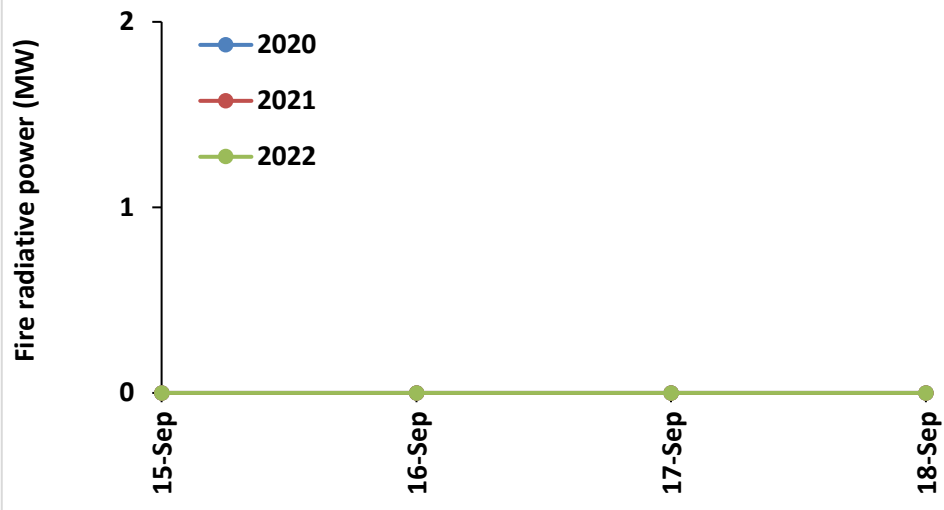
Rajasthan Cumulative



Madhaya Pradesh Cumulative

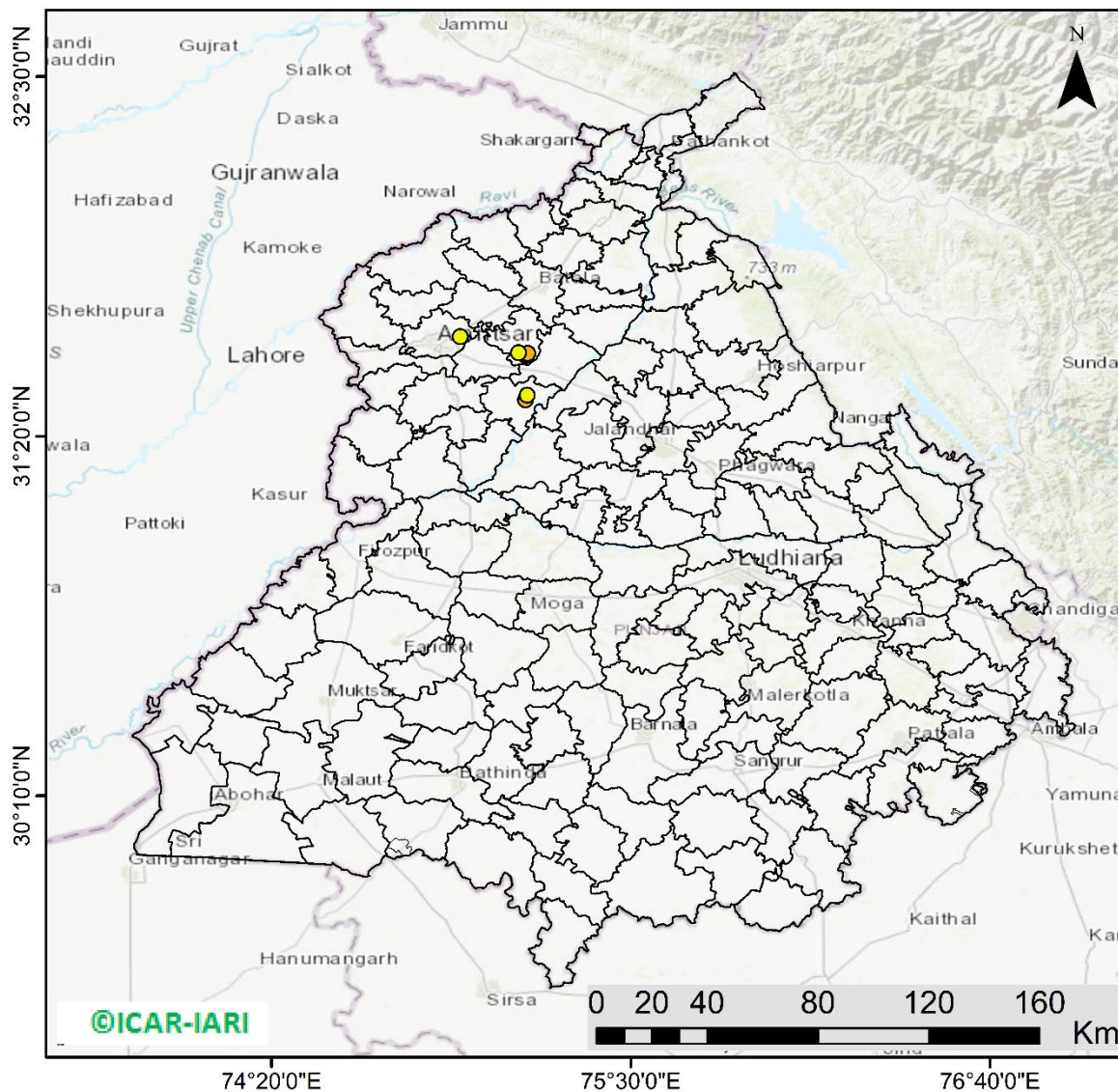


Delhi Cumulative



Punjab

RICE RESIDUE BURNING IN PUNJAB



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

Fire Intensity (W/m²)

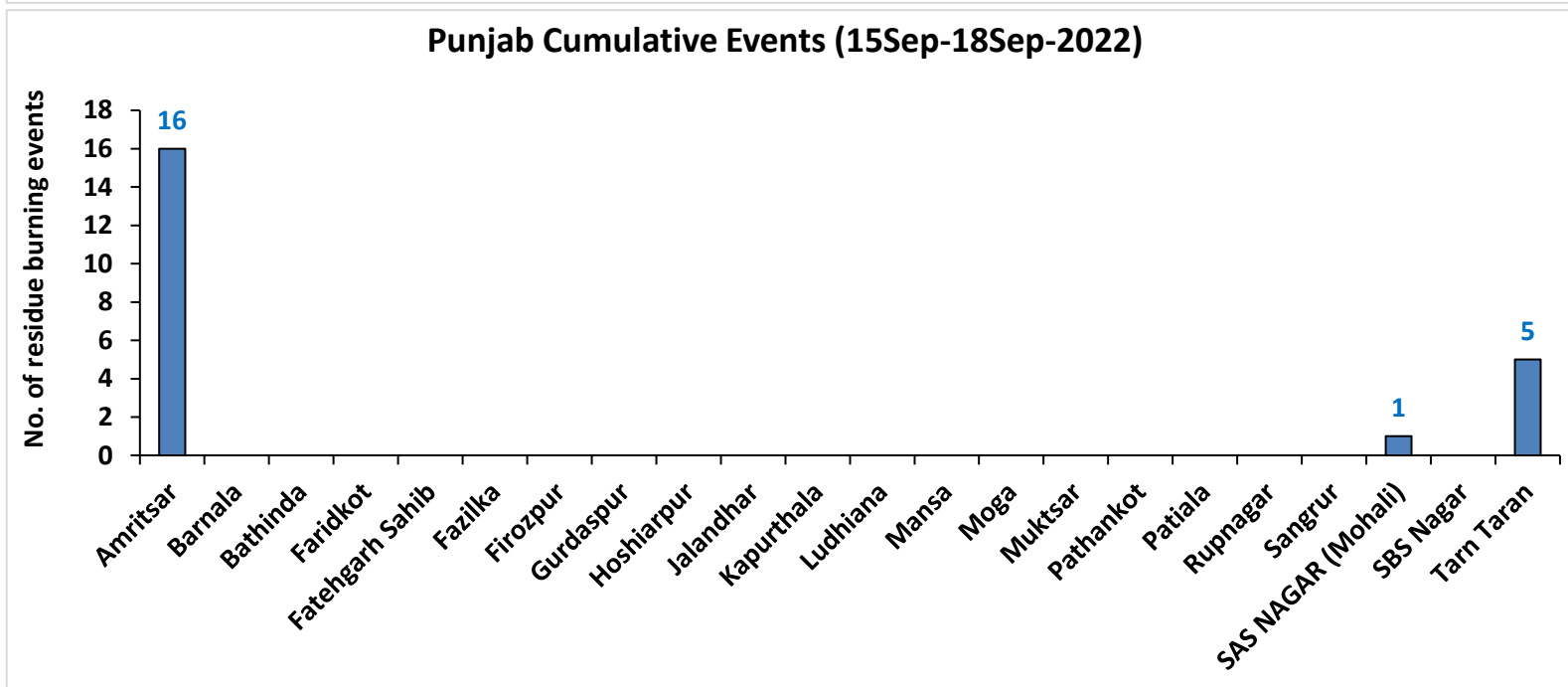
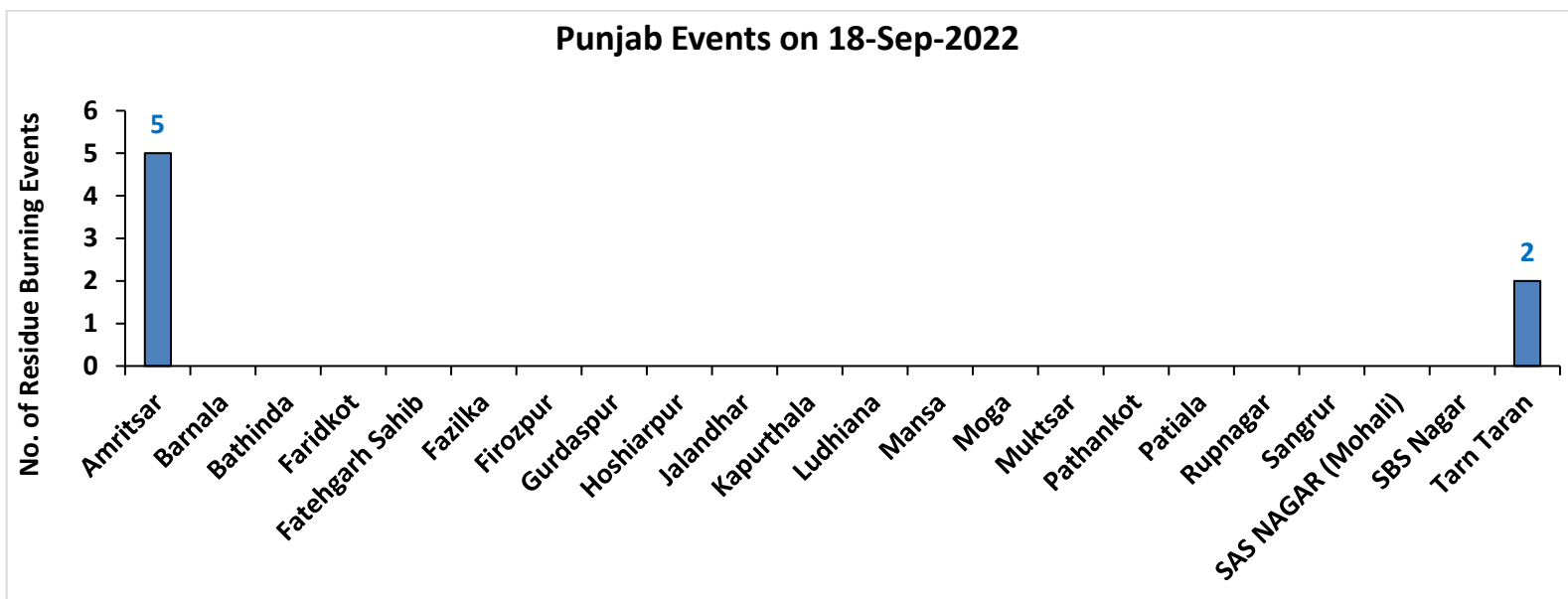
-  0 - 5
-  6 - 10
-  11 - 15
-  16 - 20
-  >20

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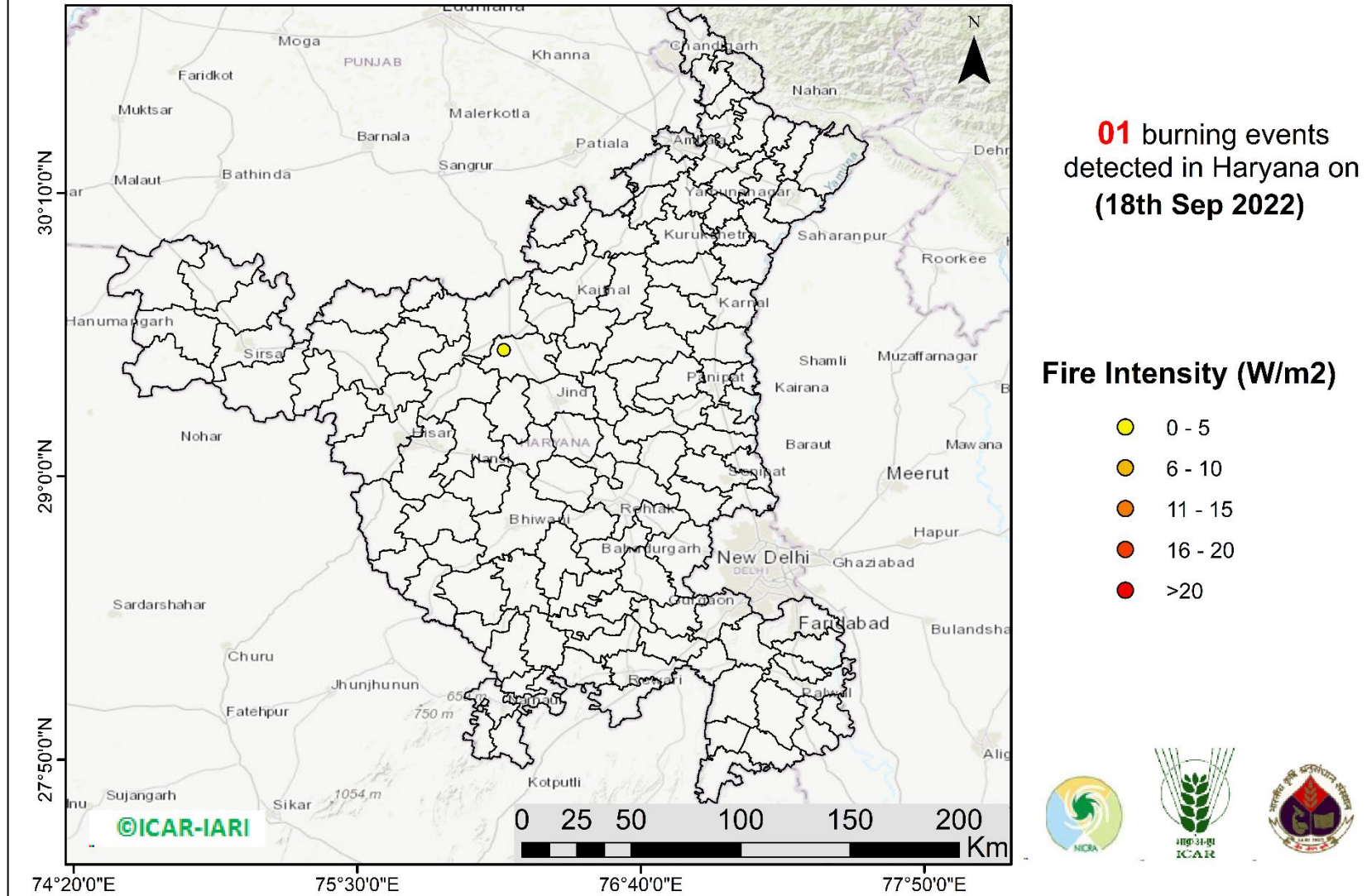
<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

District-wise cumulative number of residues burning events in Punjab (15Sep- 18Sep-2022)



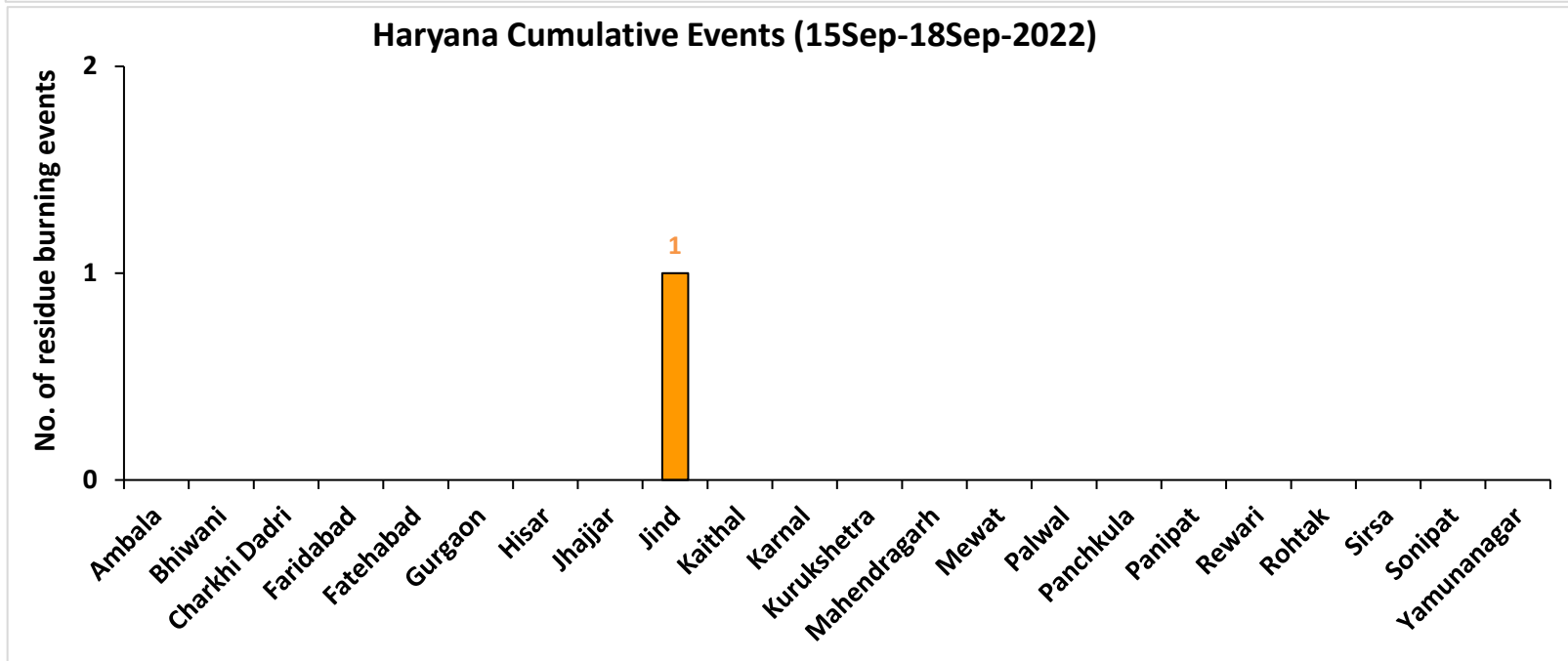
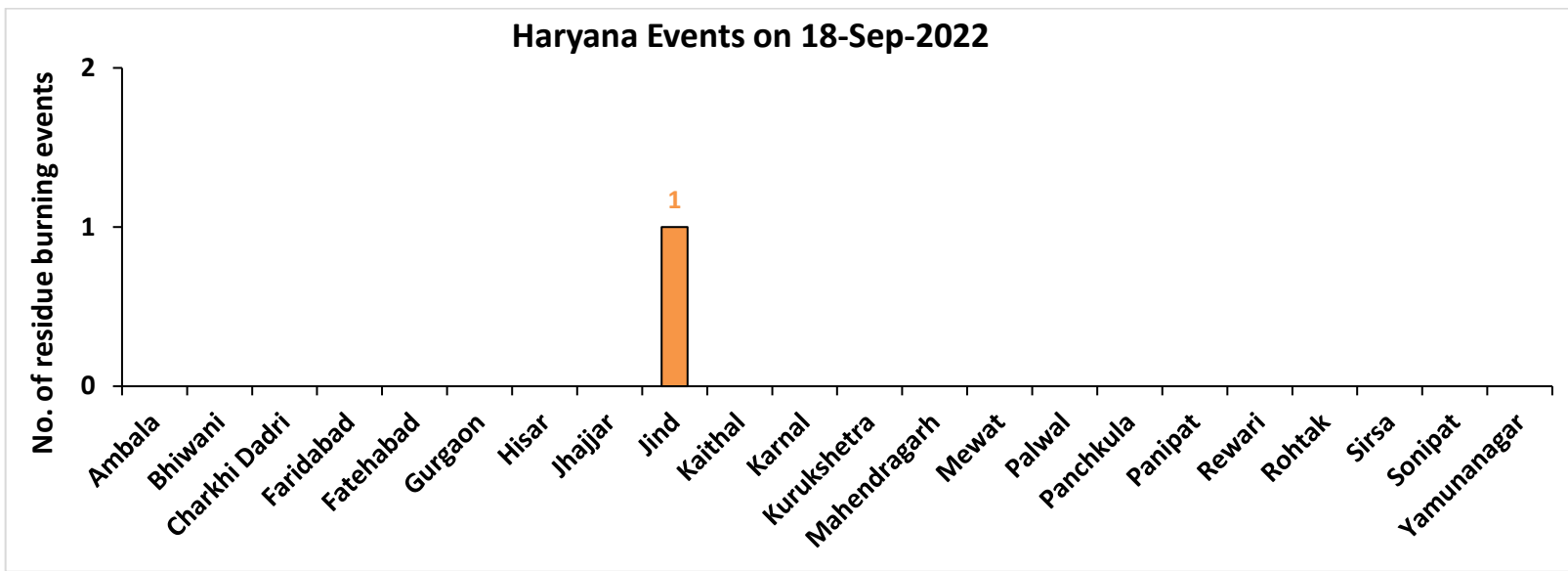
Haryana

RICE RESIDUE BURNING IN HARYANA



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

District-wise cumulative number of residues burning events in Haryana (15Sep- 18Sep-2022)



District-wise cumulative number of residues burning events detected in 2020 ,2021 and 2022
(Period: 15 September-18 September)

(a) Punjab

District	15 Sep-18 Sep 2022		
	2020	2021	2022
Amritsar	27	9	16
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	0	0	0
Moga	0	0	0
Muktsar	0	0	0
Pathankot	0	0	0
Patiala	0	1	0
Rupnagar	0	0	0
Sangrur	0	0	0
SAS NAGAR (Mohali)	0	0	1
SBS Nagar	0	0	0
Tarn Taran	0	0	5
Total	27	11	22

(b) Haryana

District	15 Sep-18 Sep 2022		
	2020	2021	2022
AMBALA	0	0	0
BHIWANI	0	0	0
CHARKHI DADRI	0	0	0
FARIDABAD	0	0	0
FATEHABAD	0	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	6	0	1

(c) Uttar Pradesh

District	15 Sep-18 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	0	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	1	0
BULANSAHAR	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-18 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-18 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
NAGPUR	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-18 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- 18 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
Total	27	11	22	6	0	1	1	1	0	0	0	0	1	0	0	2	0	0

Details of residue burning events in Punjab on 18-Sep-2022

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m²)
1	AMRITSAR	TARSIKKA	S-NPP	31.59420	75.15890	14:25:31	D	6.80
2	AMRITSAR	TARSIKKA	S-NPP	31.59780	75.16260	14:25:31	D	12.50
3	AMRITSAR	TARSIKKA	S-NPP	31.60120	75.16530	14:25:31	D	6.80
4	AMRITSAR	TARSIKKA	S-NPP	31.60330	75.13570	14:25:31	D	4.80
5	AMRITSAR	VERKA	S-NPP	31.65540	74.94610	12:45:56	D	4.00
6	TARN TARAN	KHADUR SAHIB	S-NPP	31.45060	75.15820	12:45:56	D	9.30
7	TARN TARAN	KHADUR SAHIB	S-NPP	31.46580	75.16360	12:45:56	D	2.80

Details of residue burning events in Haryana on 18-Sep-2022

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m²)
1	JIND	UCHANA	S-NPP	29.51950	76.10320	12:45:56	D	3.70

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)
