



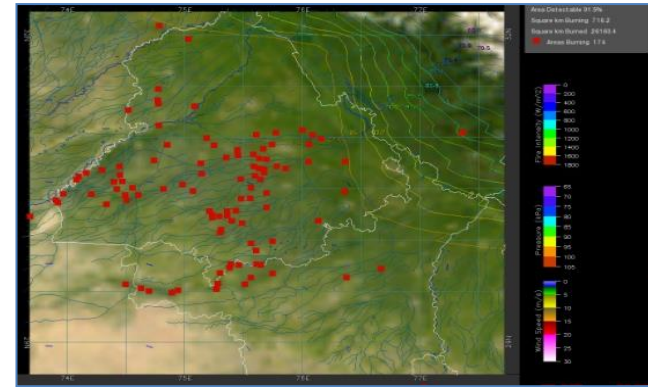
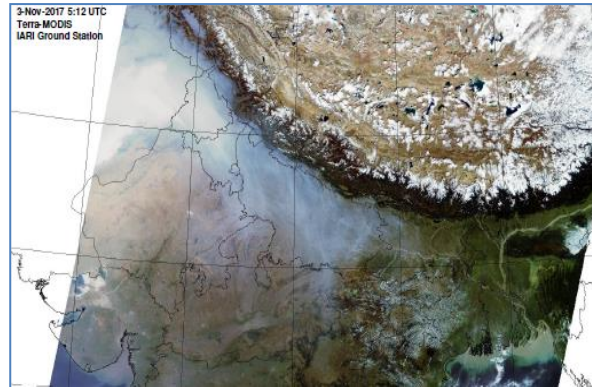
**Bulletin  
No. 09**

**Events Date:  
23-Sep-2022**

**Issued on:  
23-Sep-2022**



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



**Prepared by:**

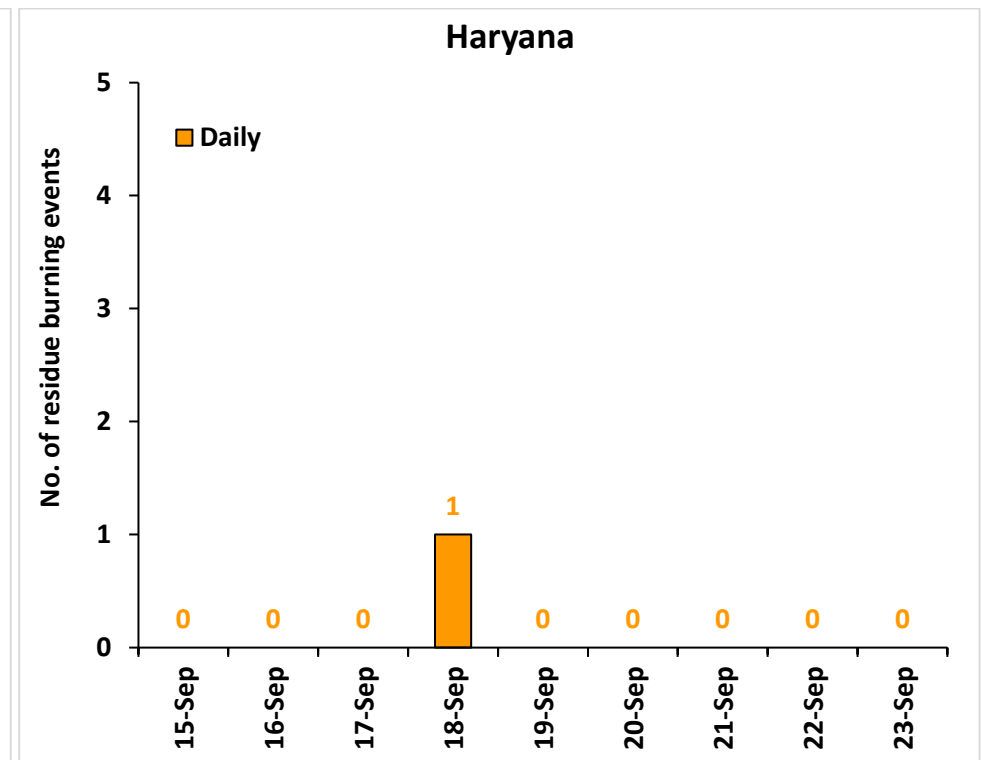
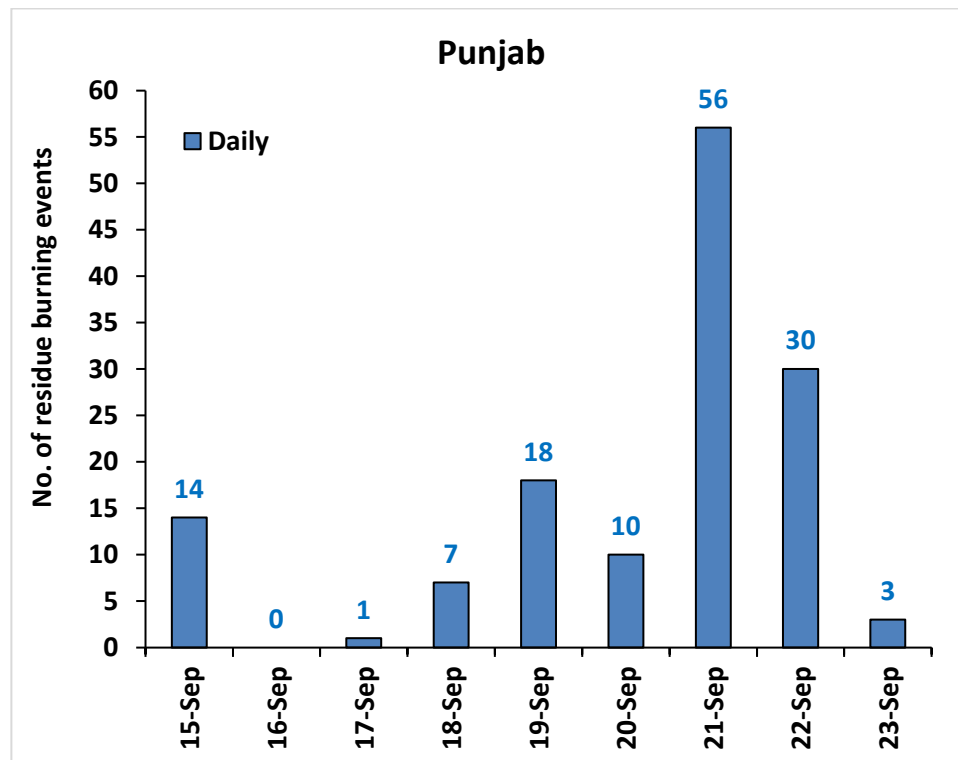
**Consortium for Research on Agroecosystem Monitoring and Modeling from Space (CREAMS) Laboratory,  
Division of Agricultural Physics, ICAR – Indian Agricultural Research Institute, New Delhi – 110012**

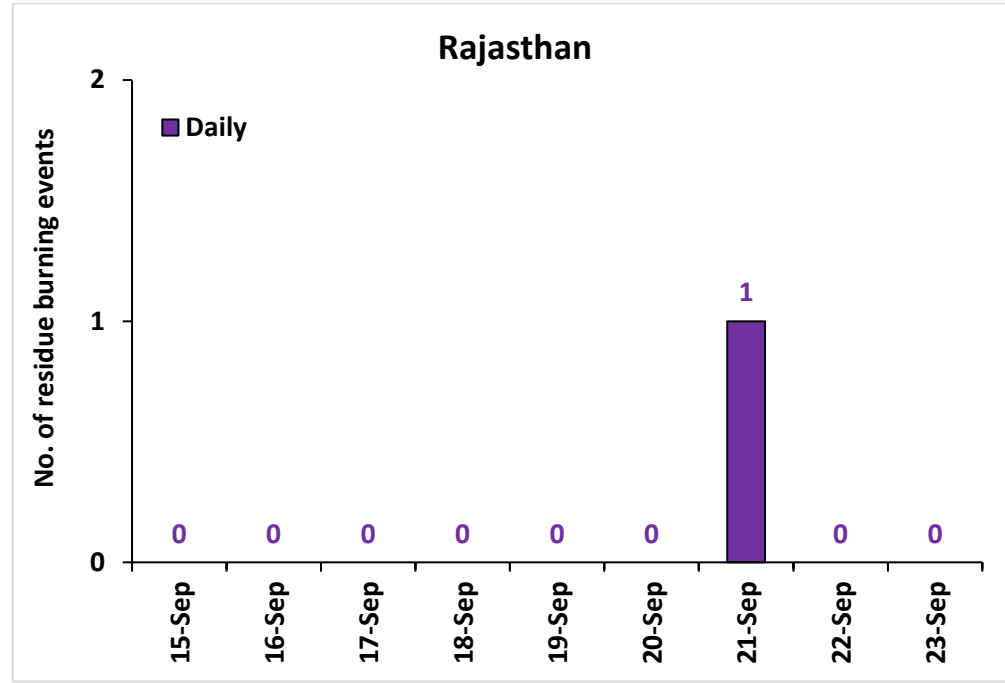
**<http://creams.iari.res.in>**

## Highlights for 23-Sep-2022

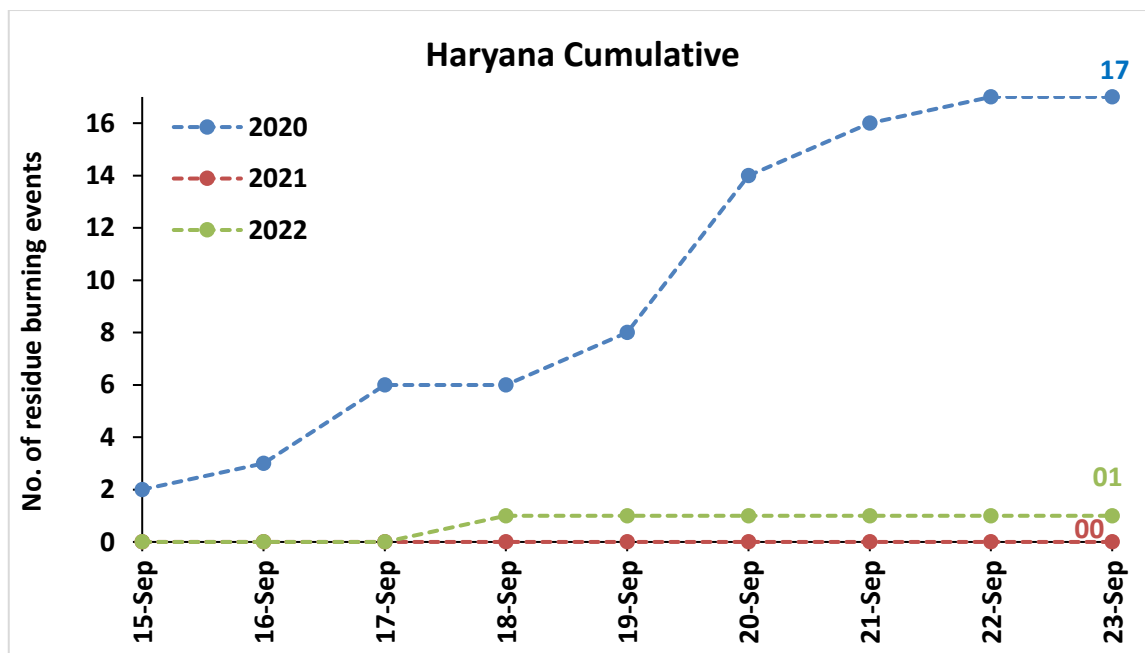
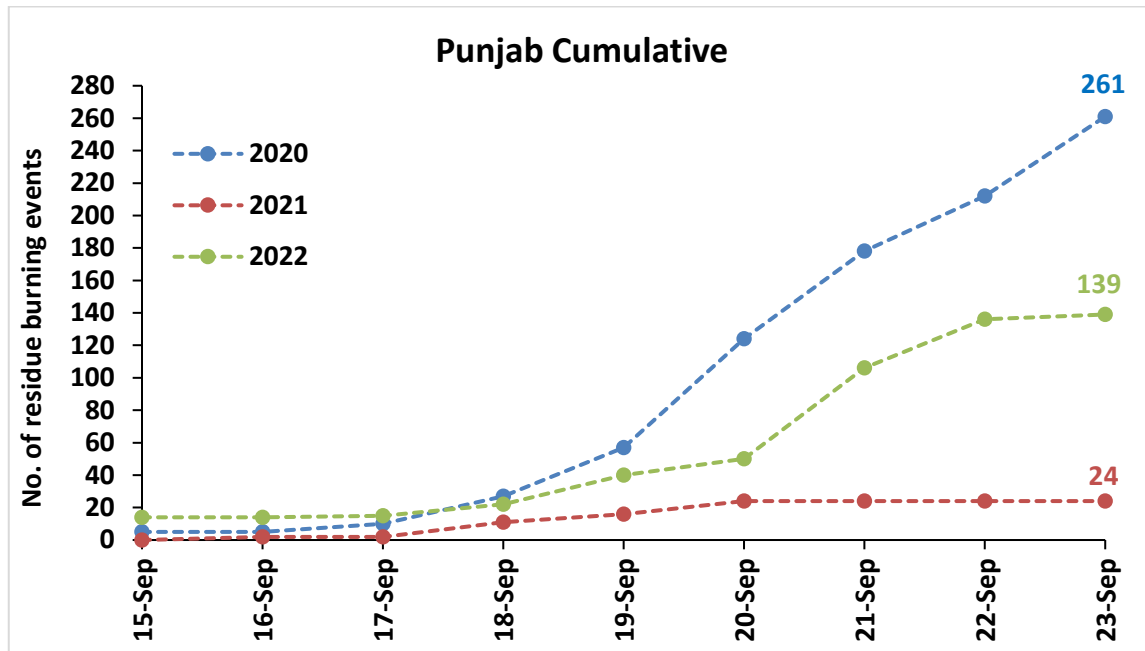
- The active fire events due to rice residue burning were monitored using satellite remote sensing, following the "Standard Protocol for Estimation of Crop Residue Burning Fire Events using Satellite Data" as per CAQM.
- Satellites detected **03** residue burning events in the six study States on 23-Sep-2022.
- The state wise events detected on 23-Sep-2022 were **3** 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 thick clouds over all the six study states.

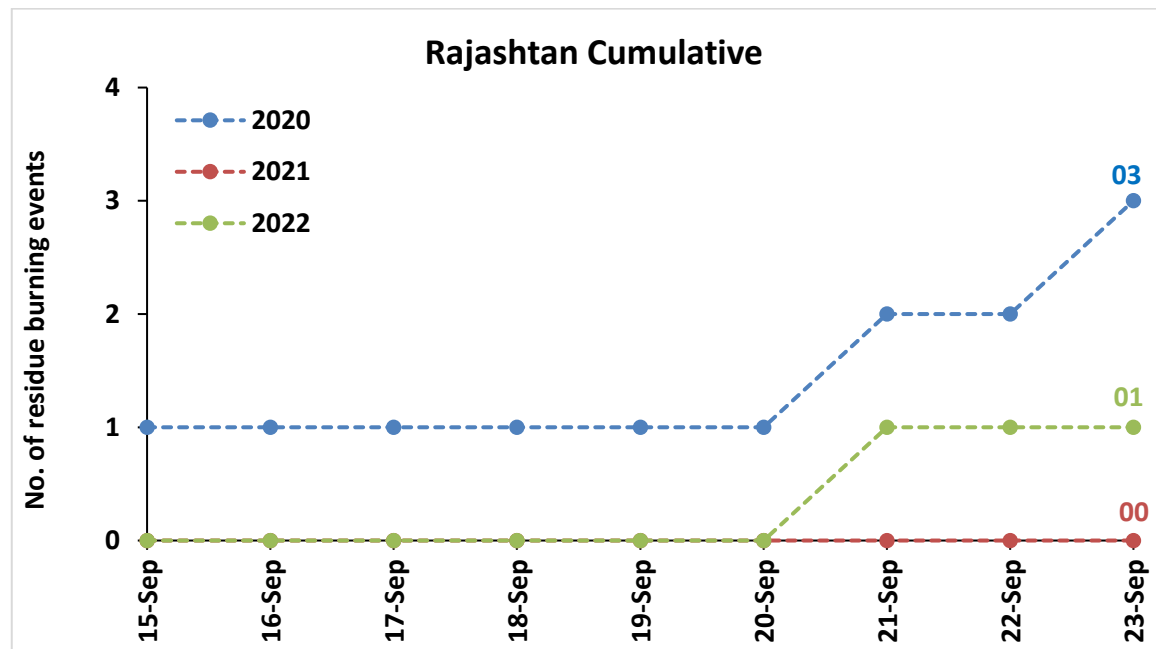
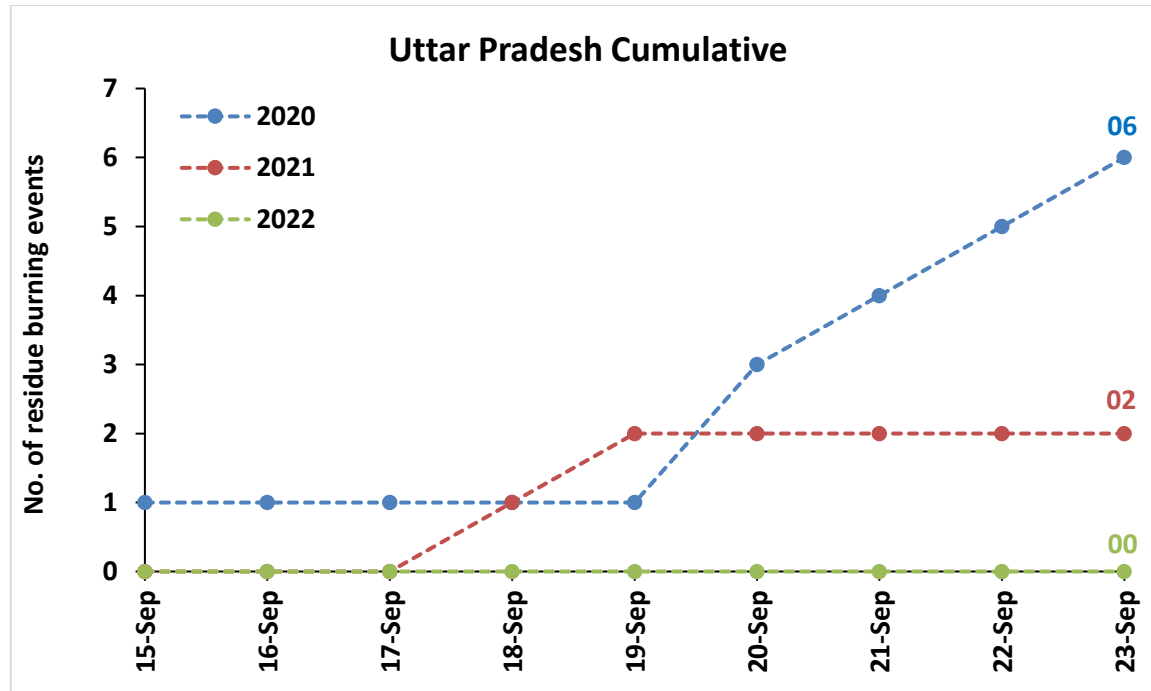
### Temporal distribution of rice residue burning events for the study States in 2022

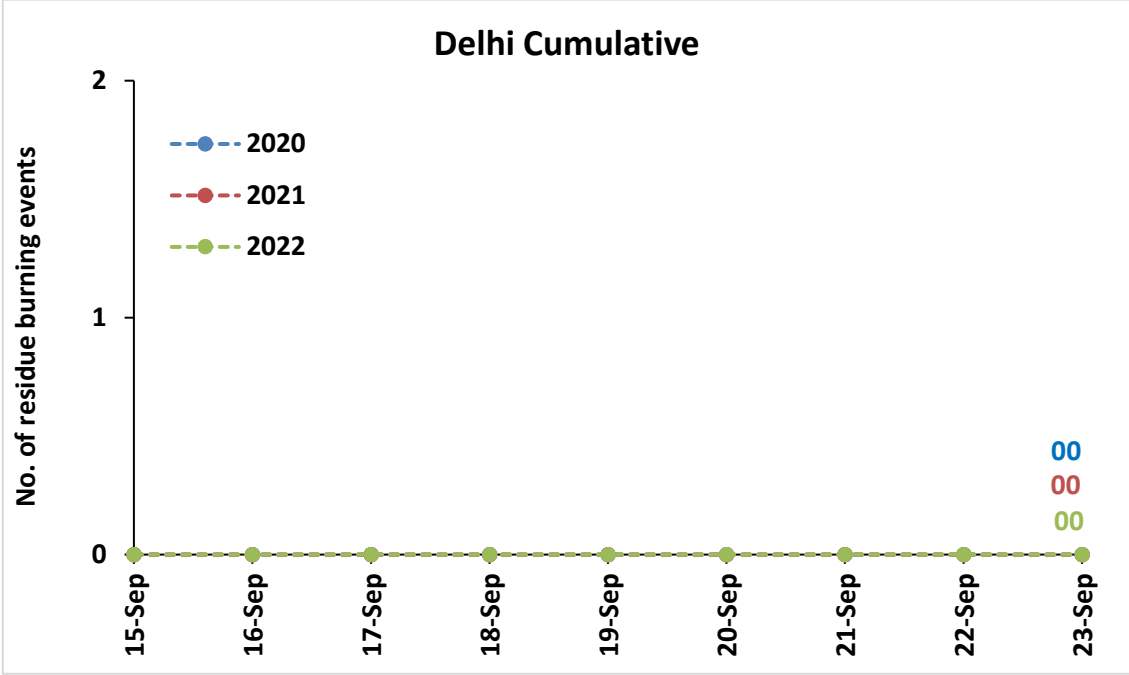
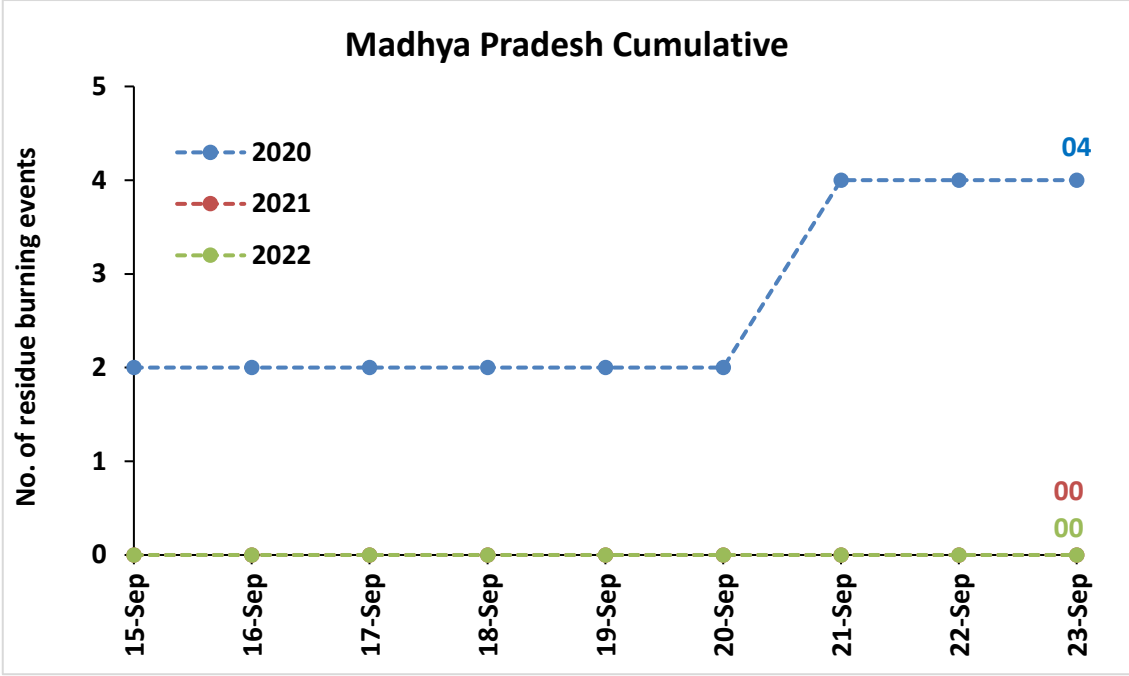




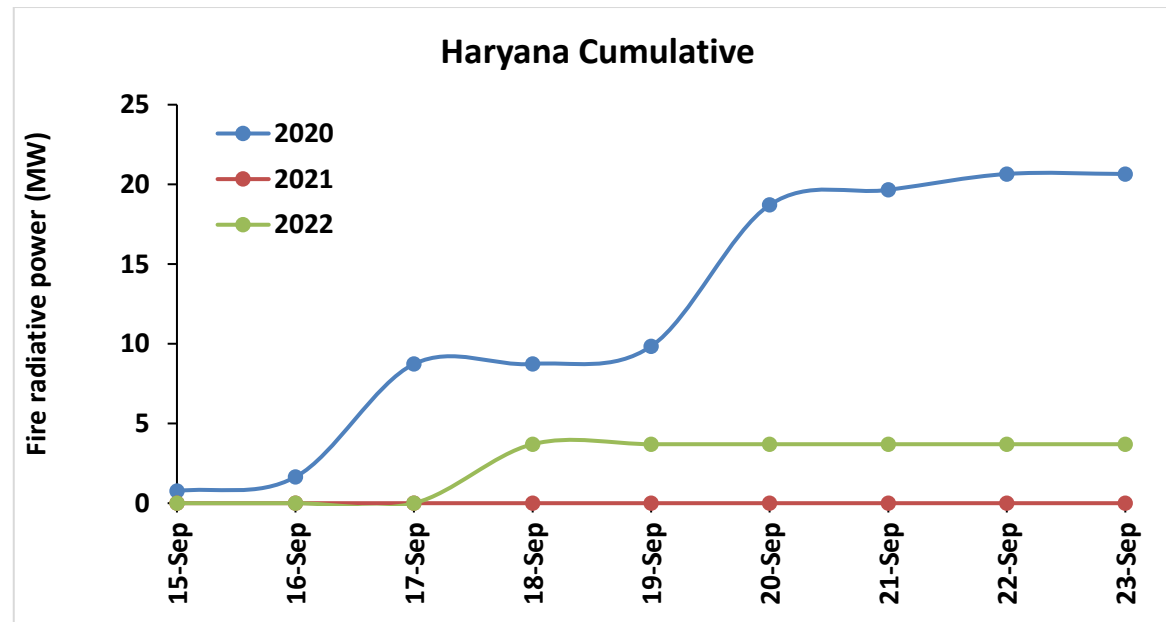
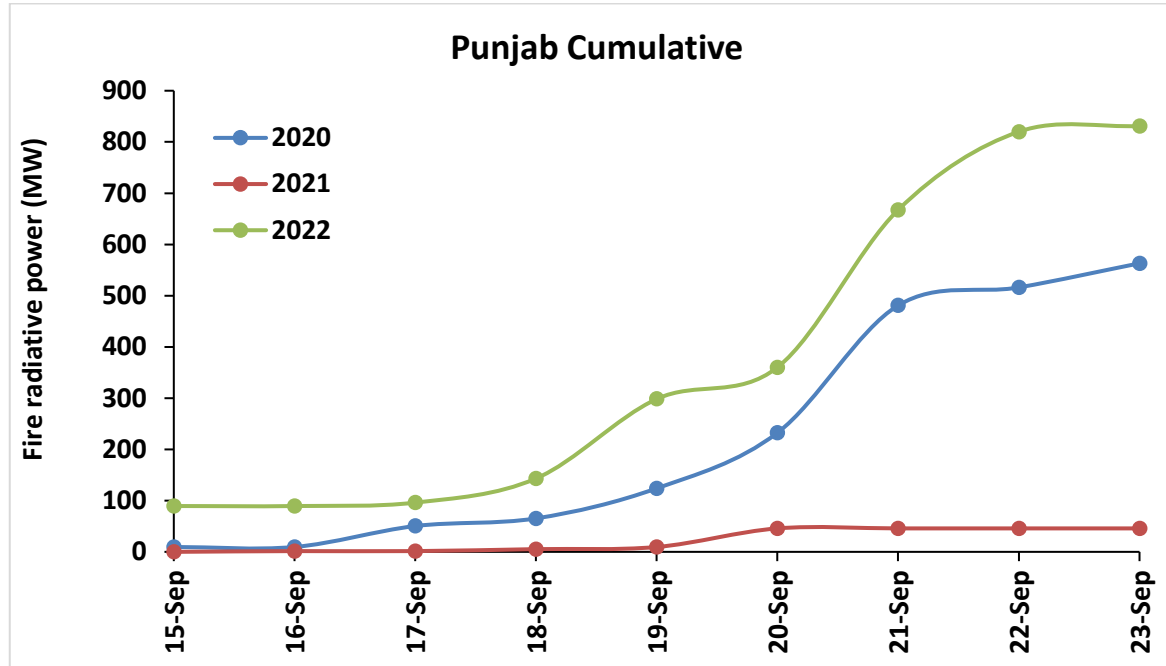
**Comparison of residue burning events in current year (2022) with previous year (2020 and 2021) for the study States**



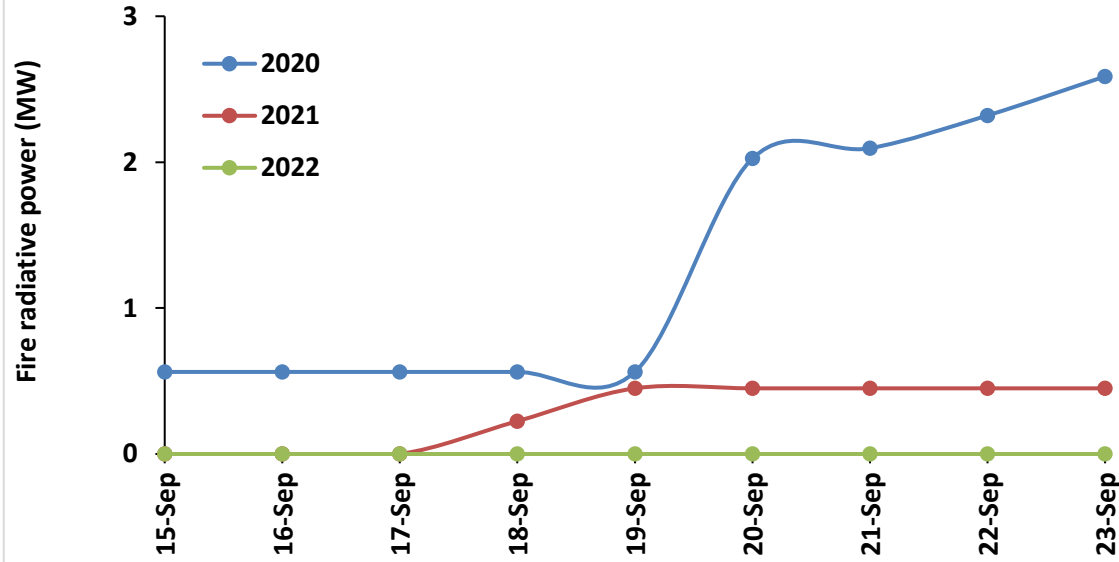




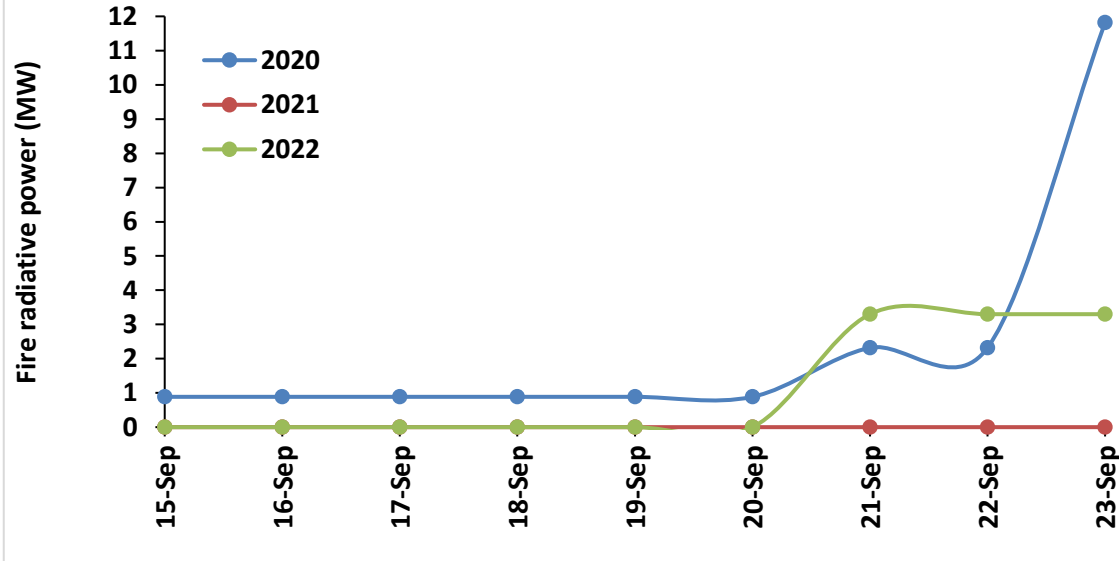
**Comparison of residue burning fire power in current year (2022) with previous year (2021 and 2020) for the study States**



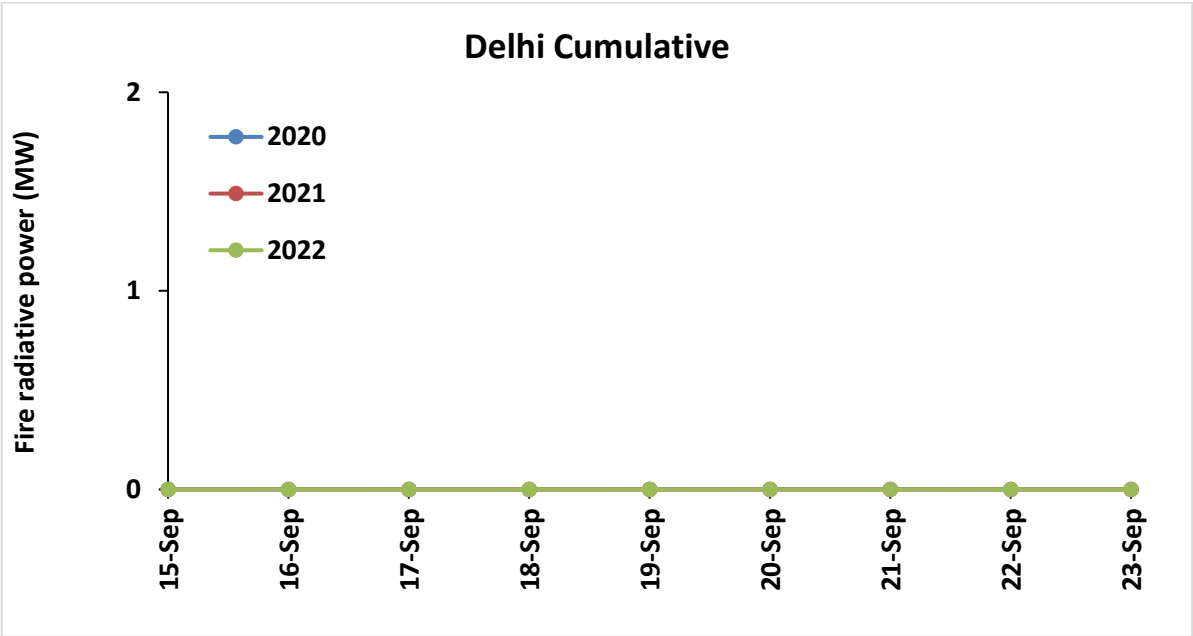
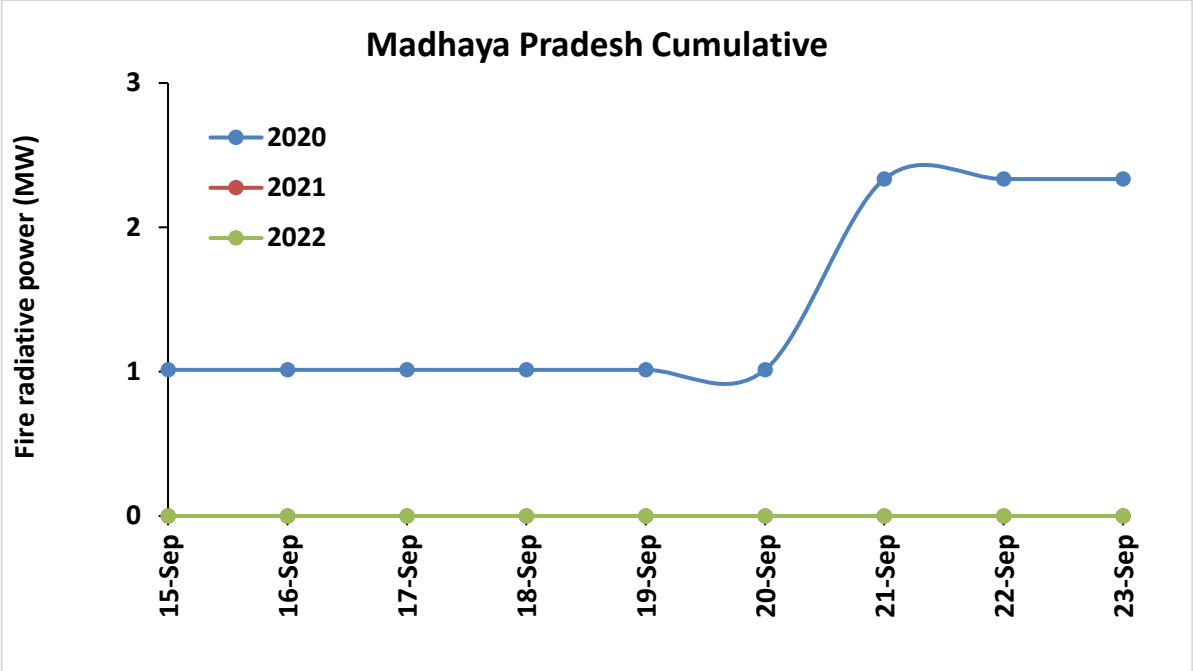
### Uttar Pradesh Cumulative



### Rajasthan Cumulative

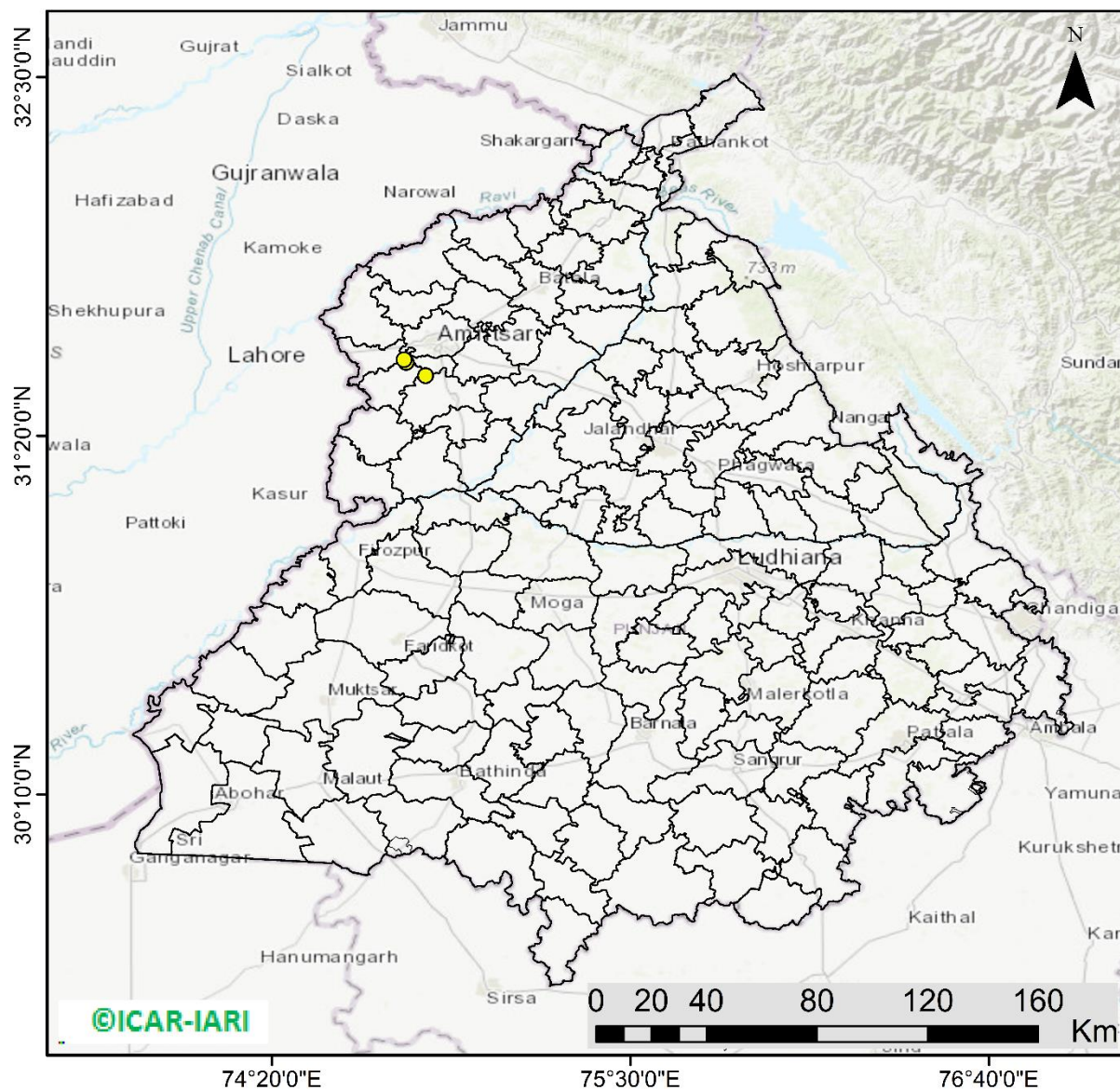






# Punjab

## RICE RESIDUE BURNING IN PUNJAB



**03** burning events detected in Punjab during (23rd Sep 2022)

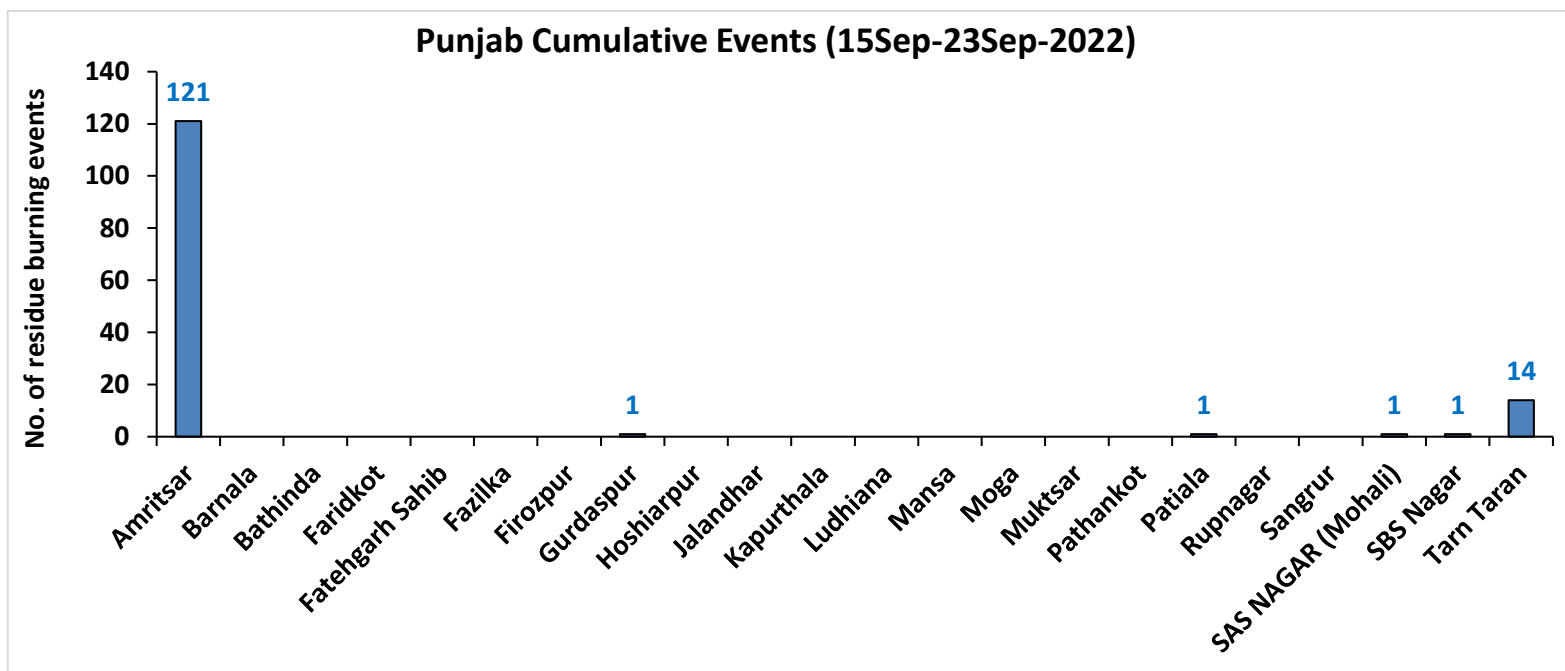
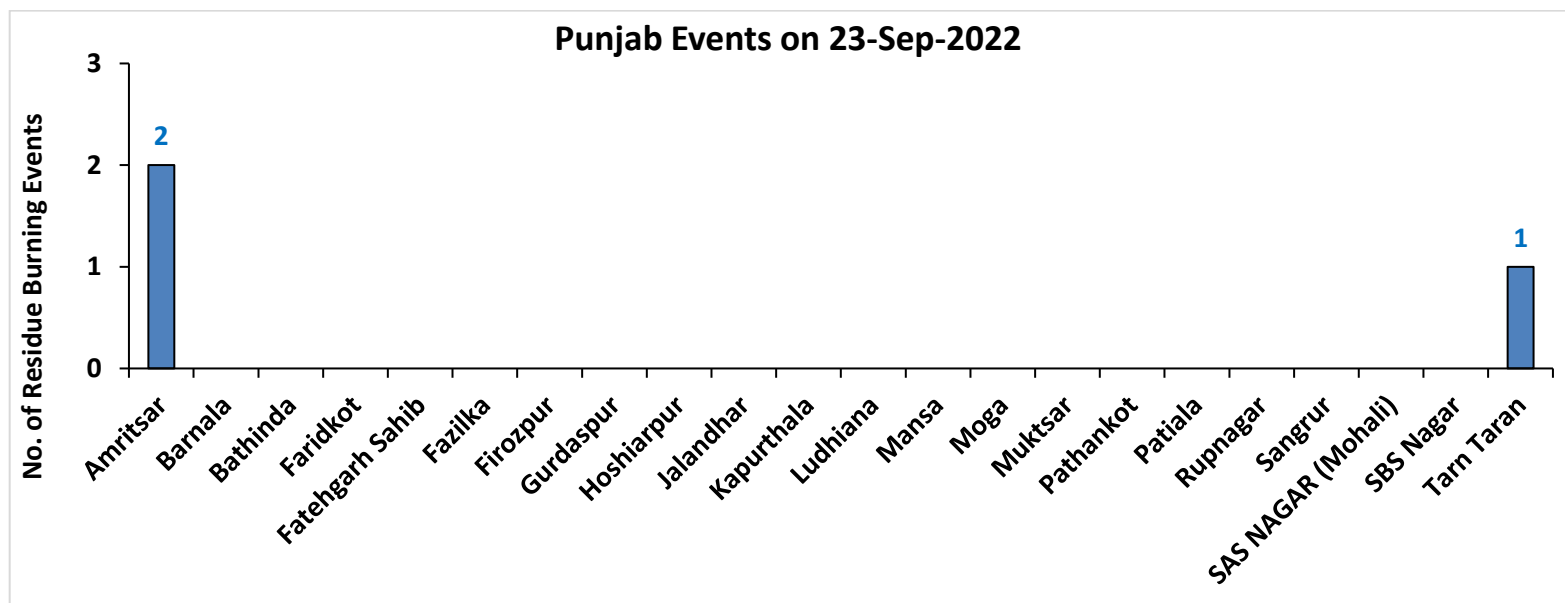
### Fire Intensity (W/m<sup>2</sup>)

-  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- 23Sep-2022)



**District-wise cumulative number of residues burning events detected in 2020 ,2021 and 2022**  
**(Period: 15 September-23 September)**

**(a) Punjab**

District	15 Sep-23 Sep 2022		
	2020	2021	2022
Amritsar	231	19	121
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	1	0	1
Hoshiarpur	0	0	0
Jalandhar	0	0	0
Kapurthala	2	0	0
Ludhiana	3	0	0
Mansa	1	0	0
Moga	2	0	0
Muktsar	1	0	0
Pathankot	0	0	0
Patiala	0	3	1
Rupnagar	0	0	0
Sangrur	0	0	0
SAS NAGAR (Mohali)	3	0	1
SBS Nagar	0	0	1
Tarn Taran	17	1	14
<b>Total</b>	<b>261</b>	<b>24</b>	<b>139</b>

**(b) Haryana**

District	15 Sep-23 Sep 2022		
	2020	2021	2022
AMBALA	3	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	9	0	0
KURUKSHETRA	2	0	0
MAHENDRAGARH	0	0	0
MEWAT	0	0	0
PALWAL	0	0	0
PANCHKULA	0	0	0
PANIPAT	1	0	0
REWARI	0	0	0
ROHTAK	0	0	0
SIRSA	1	0	0
SONIPAT	0	0	0
YAMUNANAGAR	0	0	0
<b>Total</b>	<b>17</b>	<b>0</b>	<b>1</b>

(c) Uttar Pradesh

District	15 Sep-23 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	1	0	0
AMROHA	0	0	0	HAPUR	1	0	0	SANTKABIRNAGAR	0	0	0
AURAIYA	1	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	1	0	0
BAGHPAT	1	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	<b>Total</b>	<b>6</b>	<b>2</b>	<b>0</b>
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-23 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
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>

**(e) Rajasthan**

District	15 Sep-23 Sep 2022		
	2020	2021	2022
AJMER	0	0	0
ALWAR	0	0	0
BANSWARA	0	0	0
BARAN	0	0	0
BARMER	1	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	0	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	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
<b>Total</b>	<b>3</b>	<b>0</b>	<b>1</b>

(f) Madhya Pradesh

District	15 Sep-23 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	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	<b>Total</b>	<b>4</b>	<b>0</b>	<b>0</b>
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- 23 September 2022)**

<b>Number of Paddy Residue Burning Events Detected</b>																		
	<b>Punjab</b>			<b>Haryana</b>			<b>Uttar Pradesh</b>			<b>Delhi</b>			<b>Rajasthan</b>			<b>Madhya Pradesh</b>		
	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
<b>15-Sep</b>	5	0	14	2	0	0	1	0	0	0	0	0	1	0	0	2	0	0
<b>16-Sep</b>	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>17-Sep</b>	5	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>18-Sep</b>	17	9	7	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
<b>19-Sep</b>	30	5	18	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0
<b>20-Sep</b>	67	8	10	6	0	0	2	0	0	0	0	0	0	0	0	0	0	0
<b>21-Sep</b>	54	0	56	2	0	0	1	0	0	0	0	0	1	0	1	2	0	0
<b>22-Sep</b>	34	0	30	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
<b>23-Sep</b>	49	0	3	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0
<b>Total</b>	<b>261</b>	<b>24</b>	<b>139</b>	<b>17</b>	<b>0</b>	<b>1</b>	<b>6</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>1</b>	<b>4</b>	<b>0</b>	<b>0</b>

**Details of residue burning events in Punjab on 23-Sep-2022**

<b>S. No.</b>	<b>District</b>	<b>Tehsil / Block</b>	<b>Satellite</b>	<b>Latitude</b>	<b>Longitude</b>	<b>ACQ_TIME</b>	<b>Day / Night</b>	<b>Fire Power (W/m2)</b>
1	AMRITSAR	ATTARI	S-NPP	31.57160	74.77020	12:51:37	D	4.60
2	AMRITSAR	ATTARI	S-NPP	31.58070	74.76370	12:51:37	D	4.50
3	TARN TARAN	GANDIWIND TATLA	S-NPP	31.52860	74.83380	12:51:37	D	2.20



**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)

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