



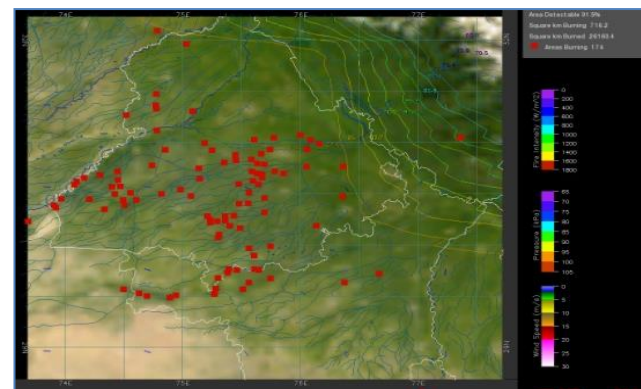
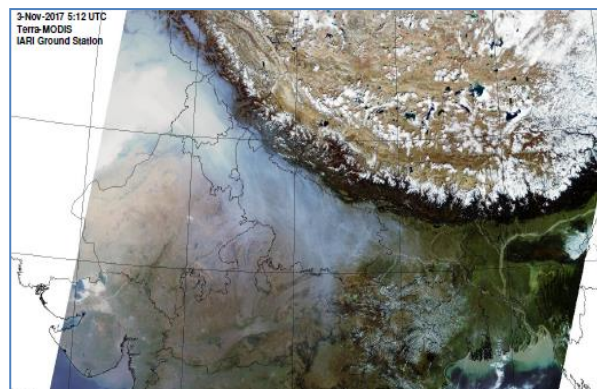
## Bulletin No. 14

Events Date:  
28-Sep-2021

Issued on:  
28-Sep-2021



# MONITORING PADDY RESIDUE BURNING IN INDIA USING SATELLITE REMOTE SENSING DURING 2021

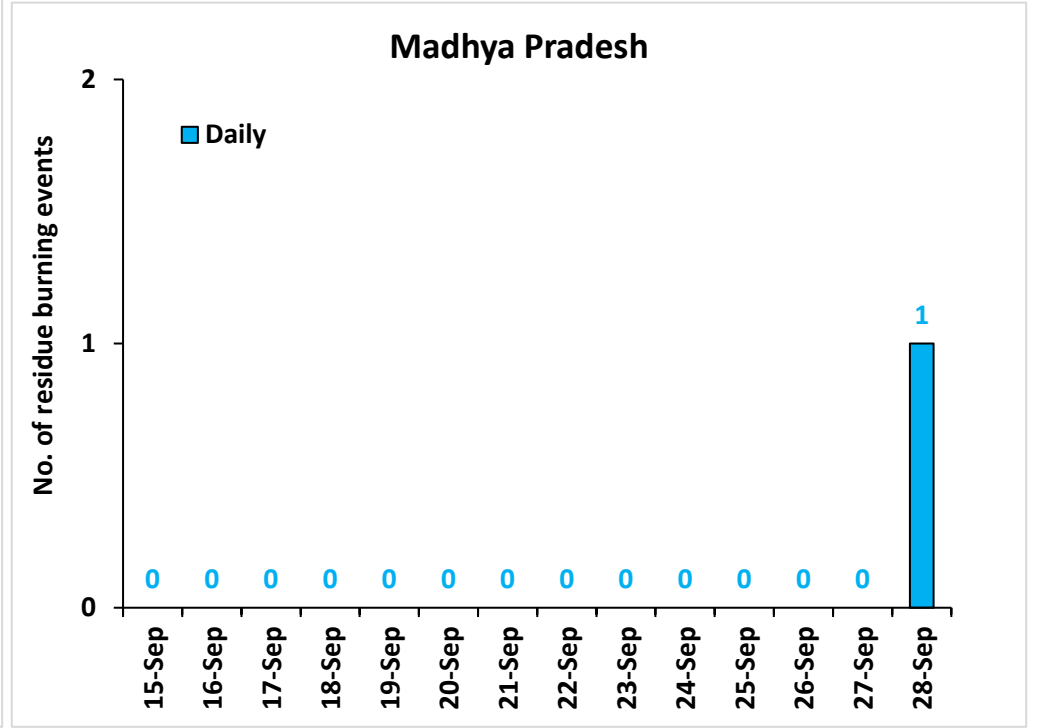
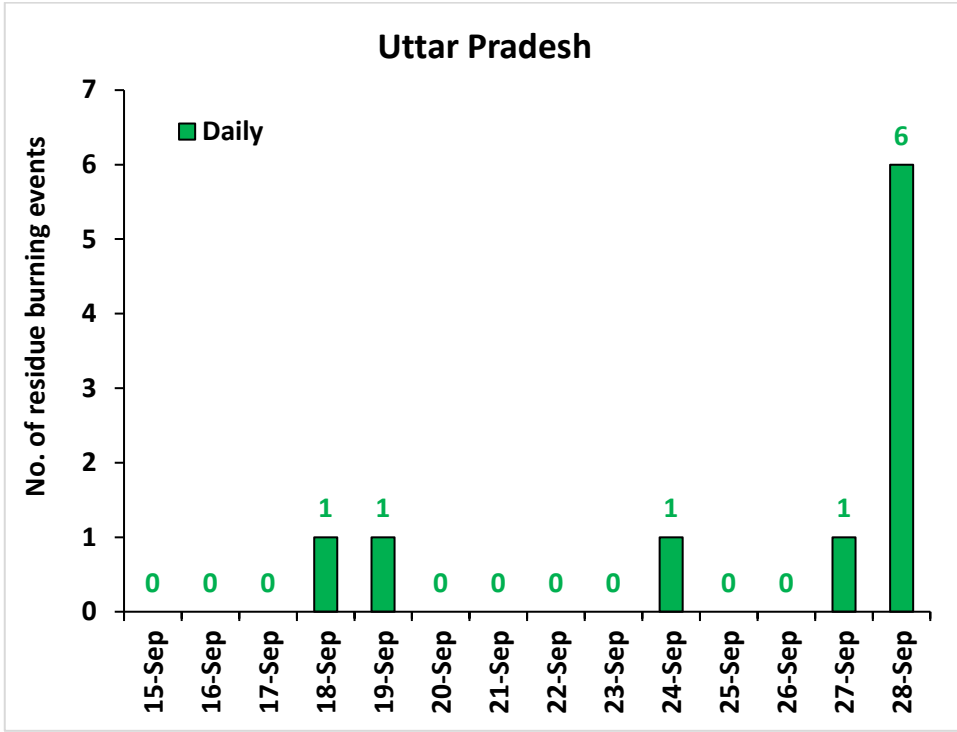


Prepared by:

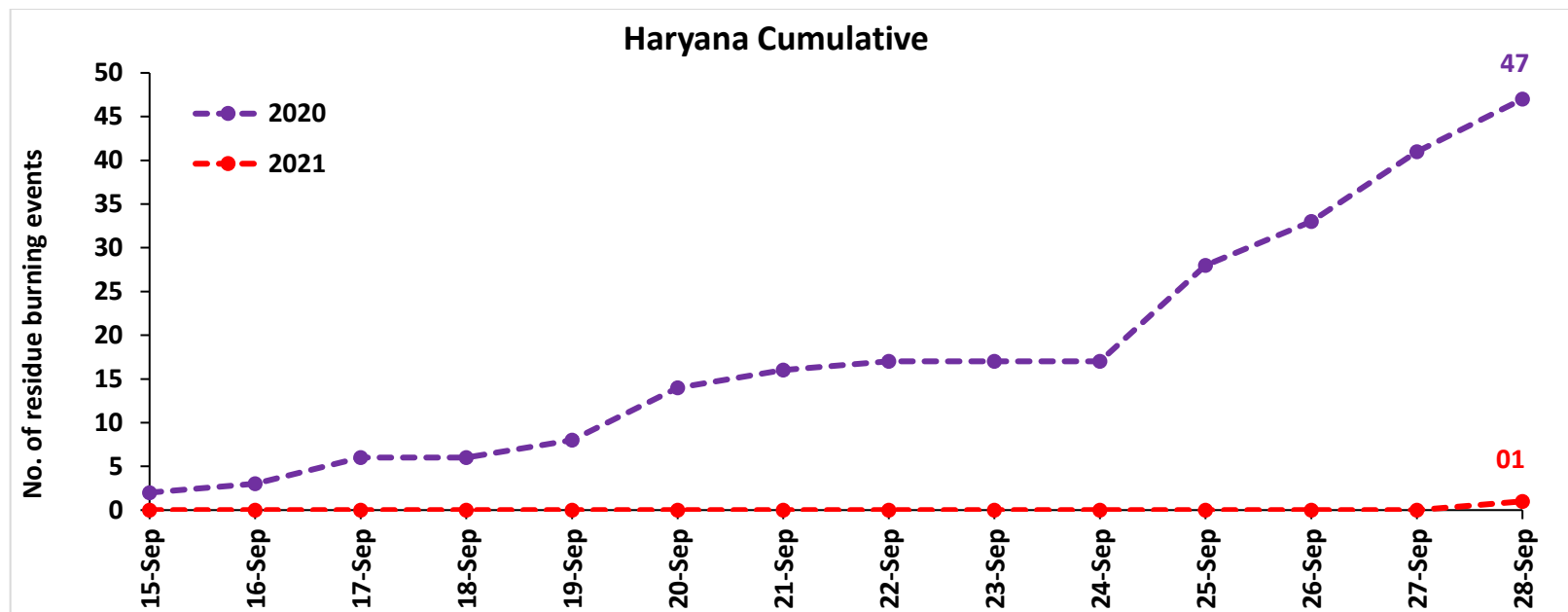
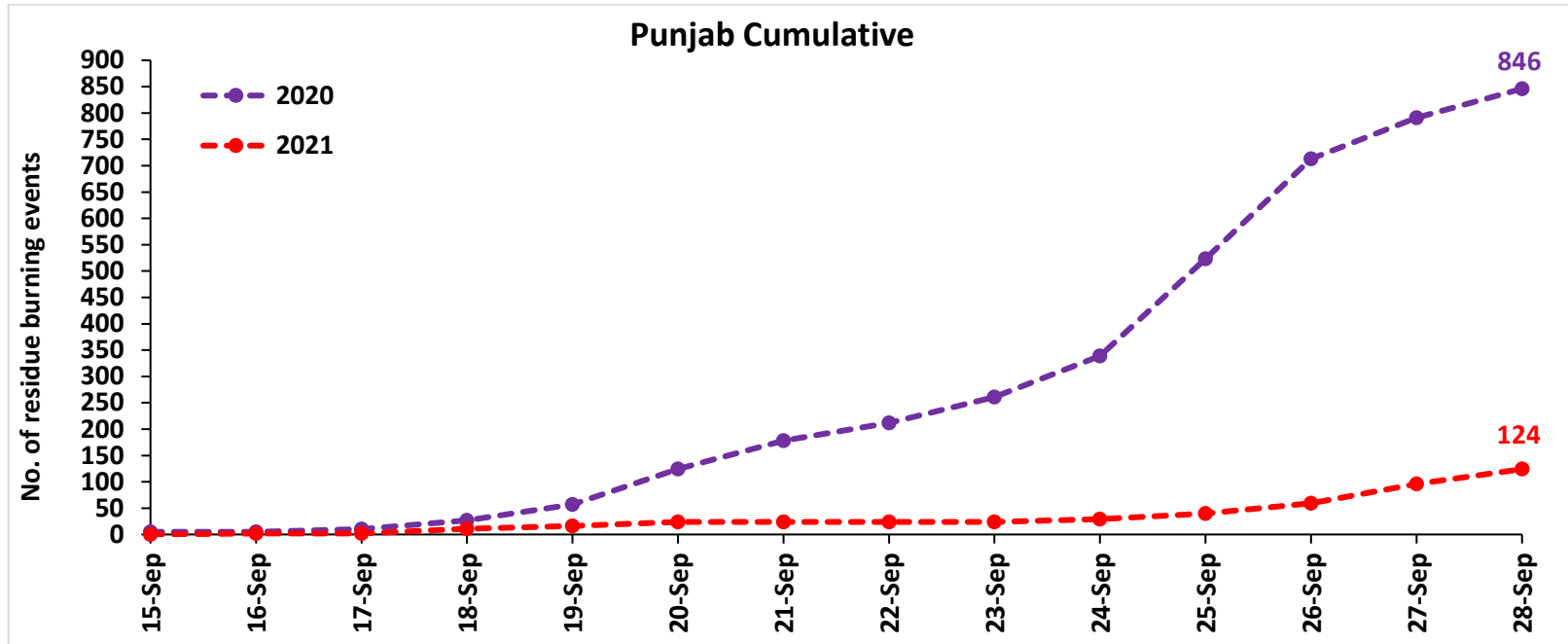
Consortium for Research on Agroecosystem Monitoring and Modeling from Space (CREAMS) Laboratory,  
Division of Agricultural Physics, ICAR – Indian Agricultural Research Institute, New Delhi – 110012

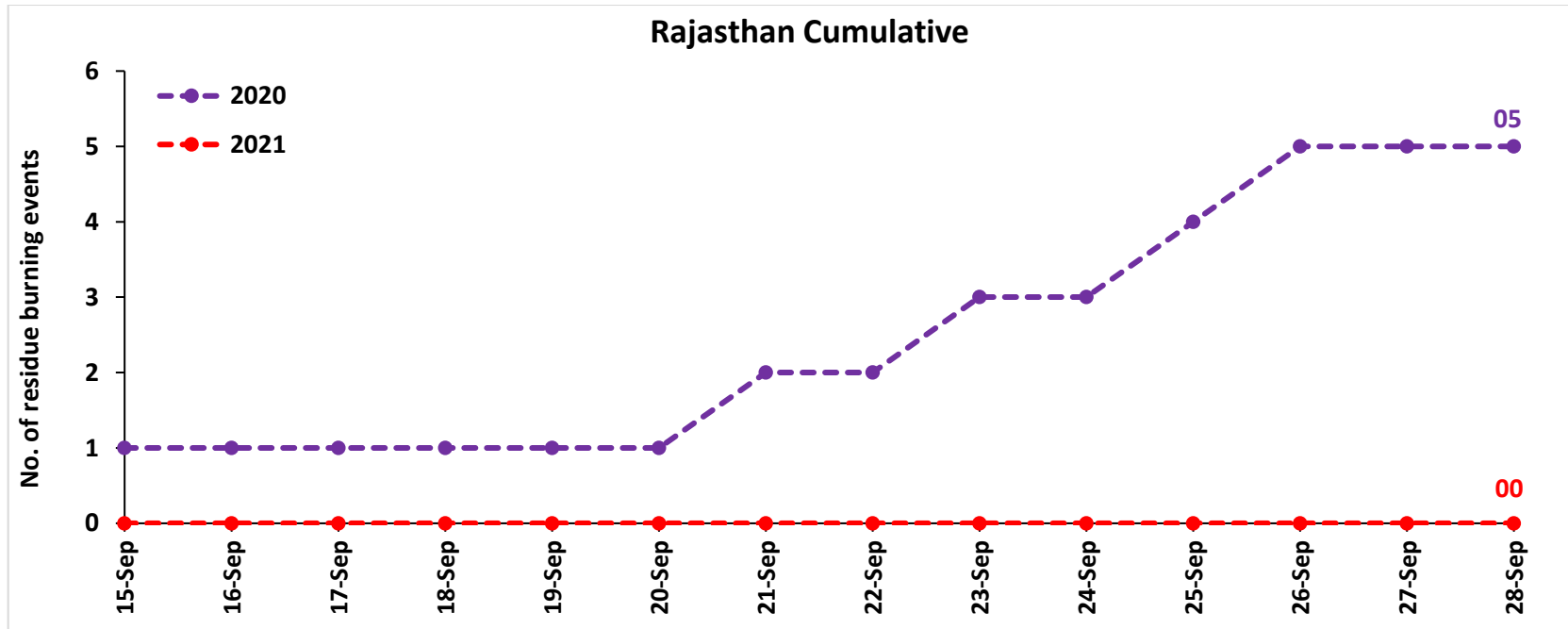
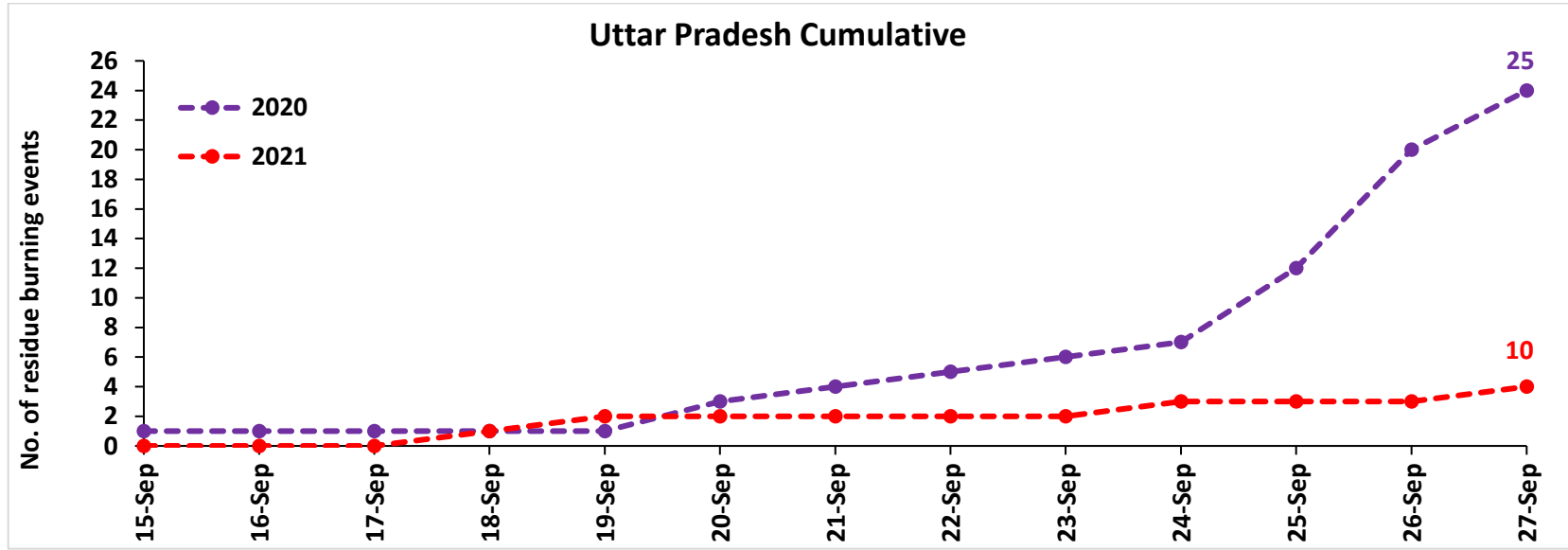
<http://creams.iari.res.in>



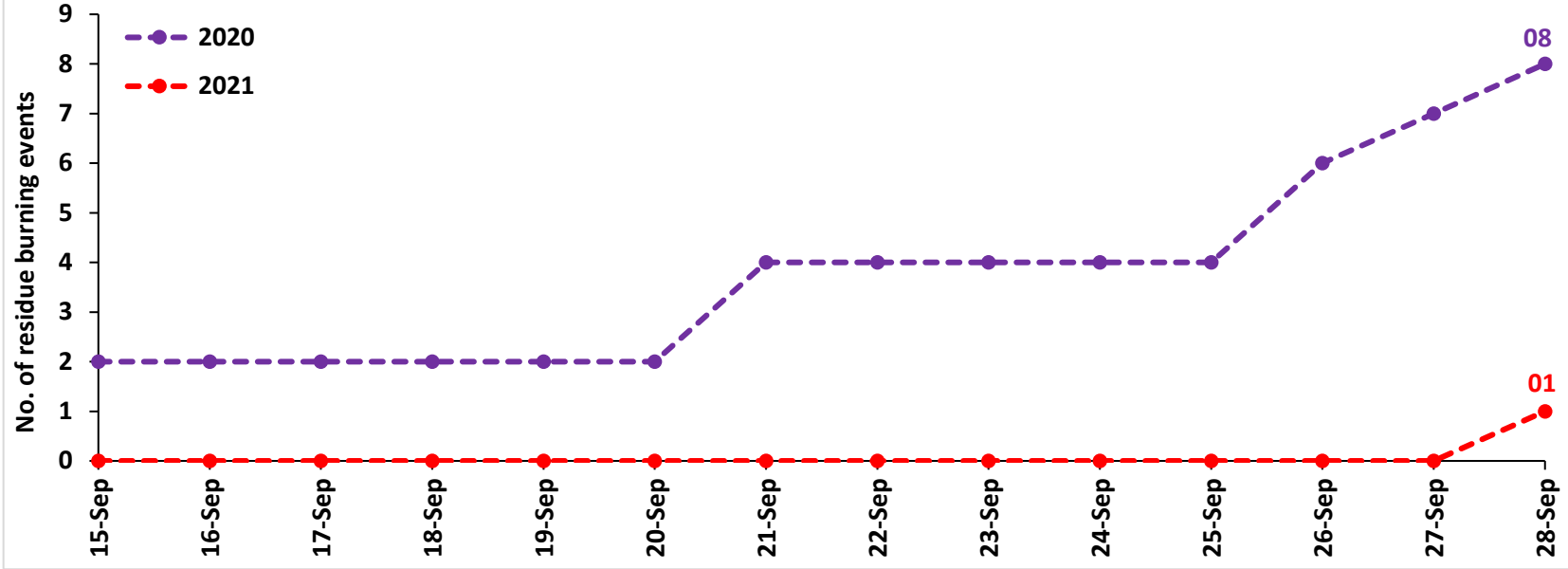


**Comparison of residue burning events in current year (2021) with previous year (2020) for the study States**



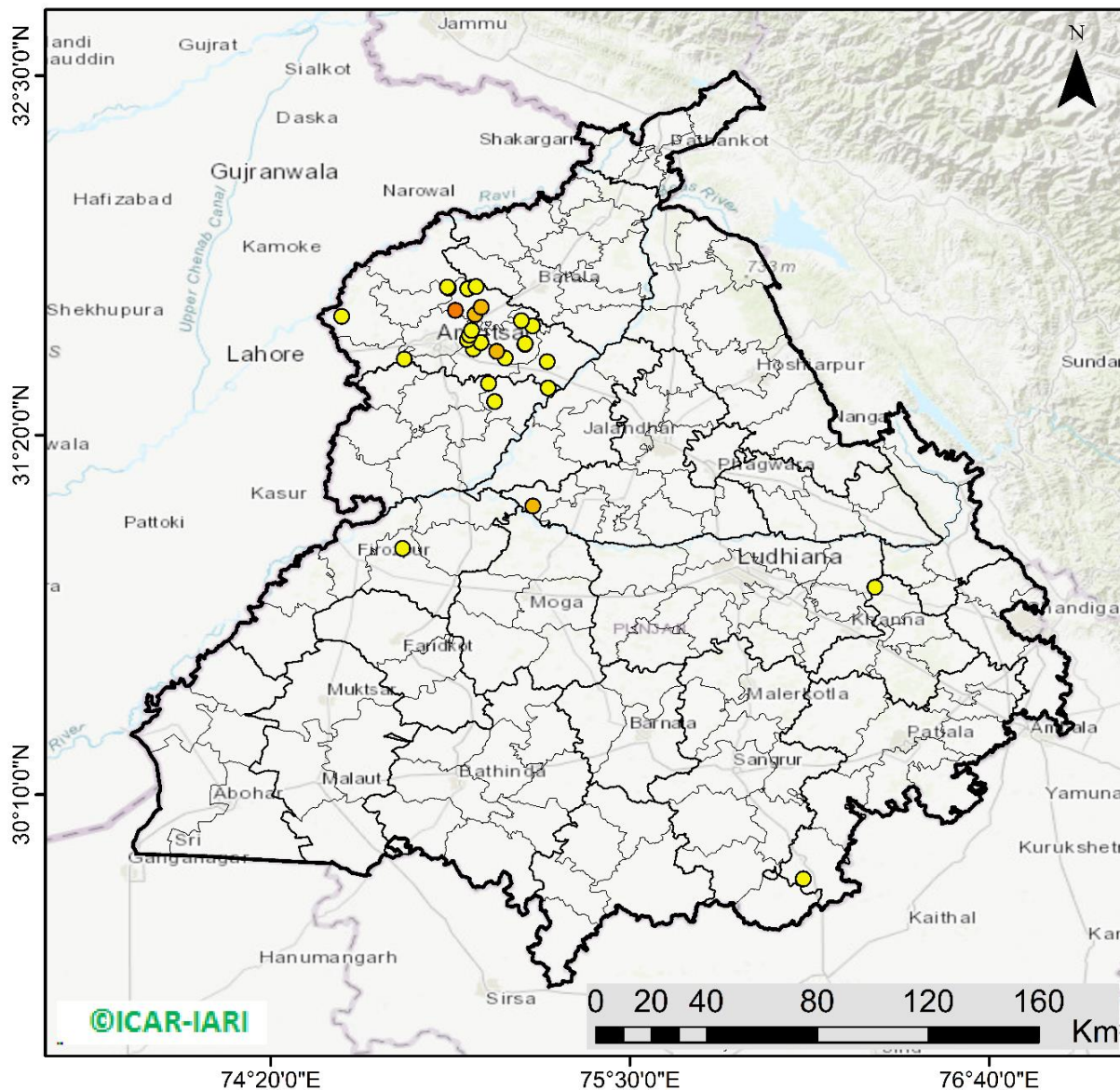


### Madhya Pradesh Cumulative



# Punjab

## RICE RESIDUE BURNING IN PUNJAB



**28** burning events detected in Punjab on 28th September 2021

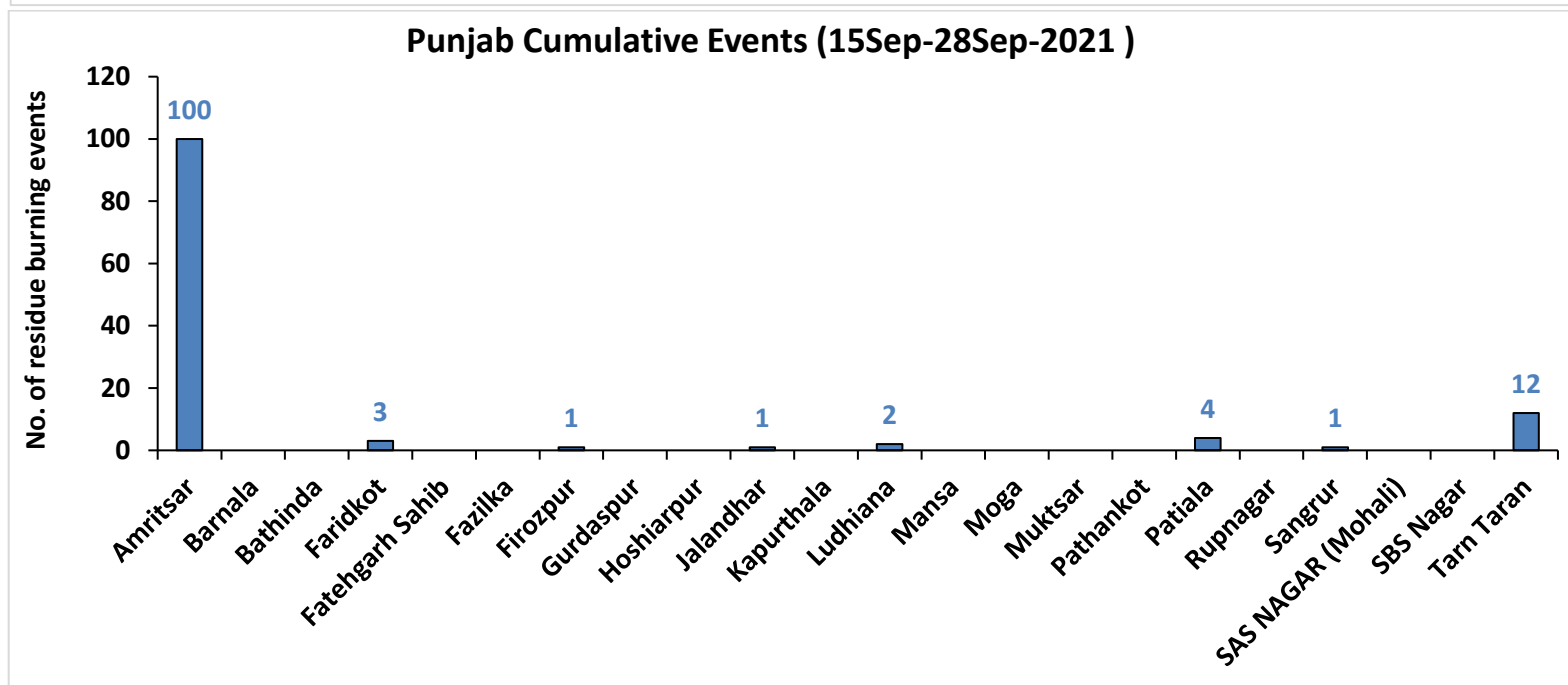
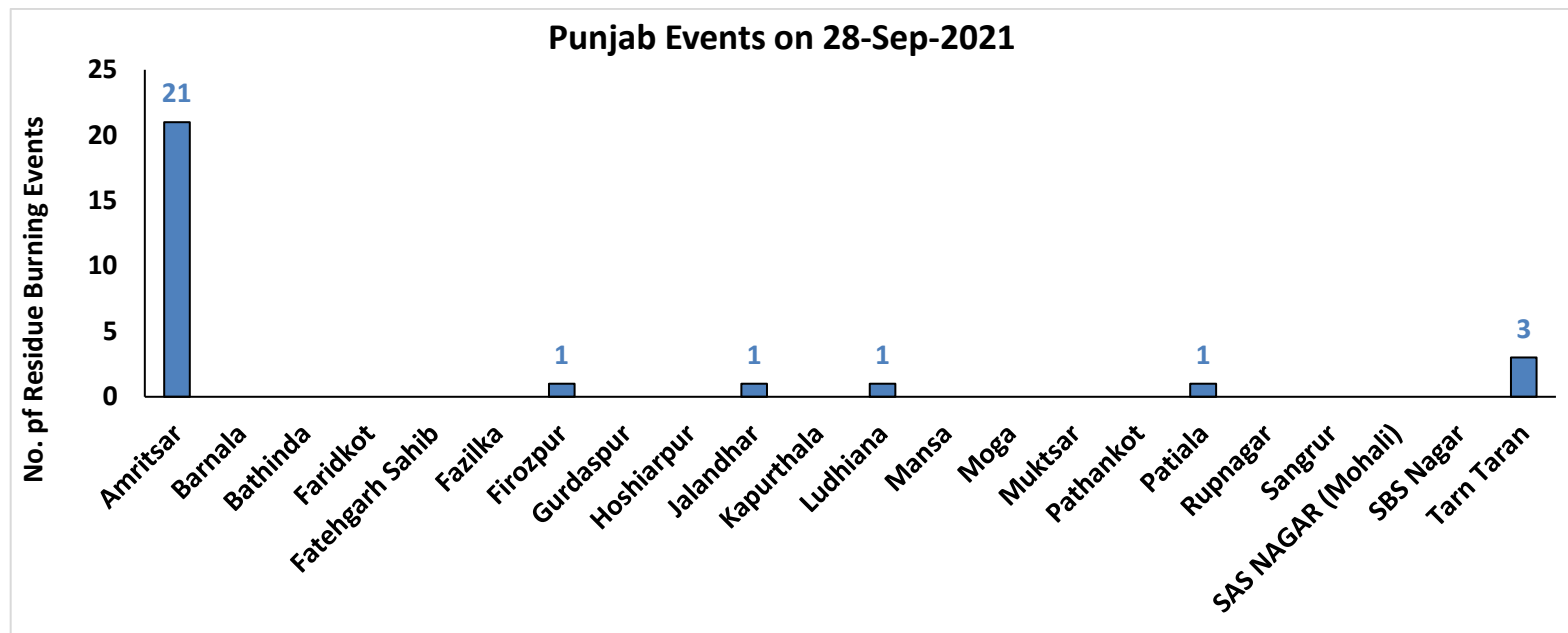
### Fire Intensity (W/m<sup>2</sup>)

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



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

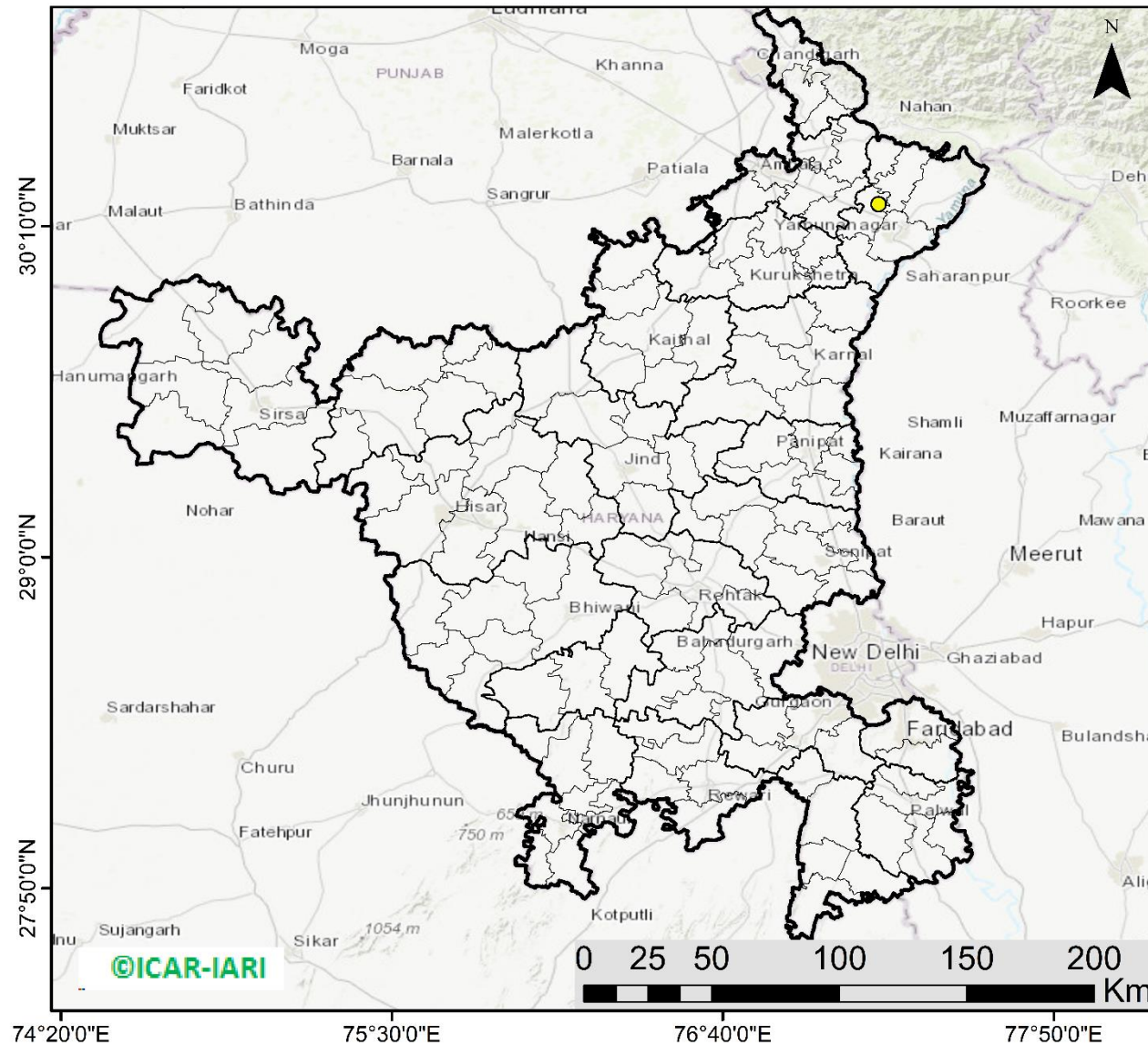
## District-wise cumulative number of residues burning events in Punjab (15-28 Sep-2021)





# Haryana

## RICE RESIDUE BURNING IN HARYANA



**01** burning events detected in Haryana on 28th September 2021

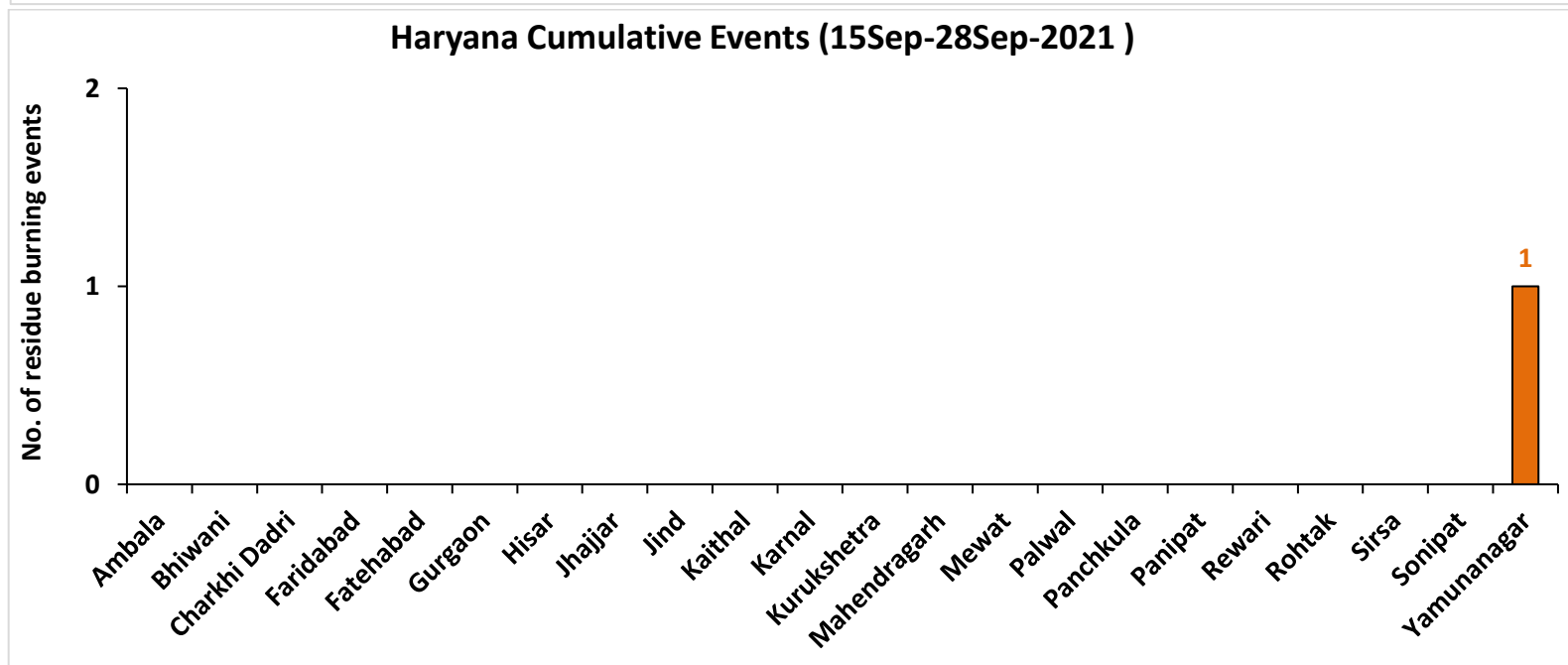
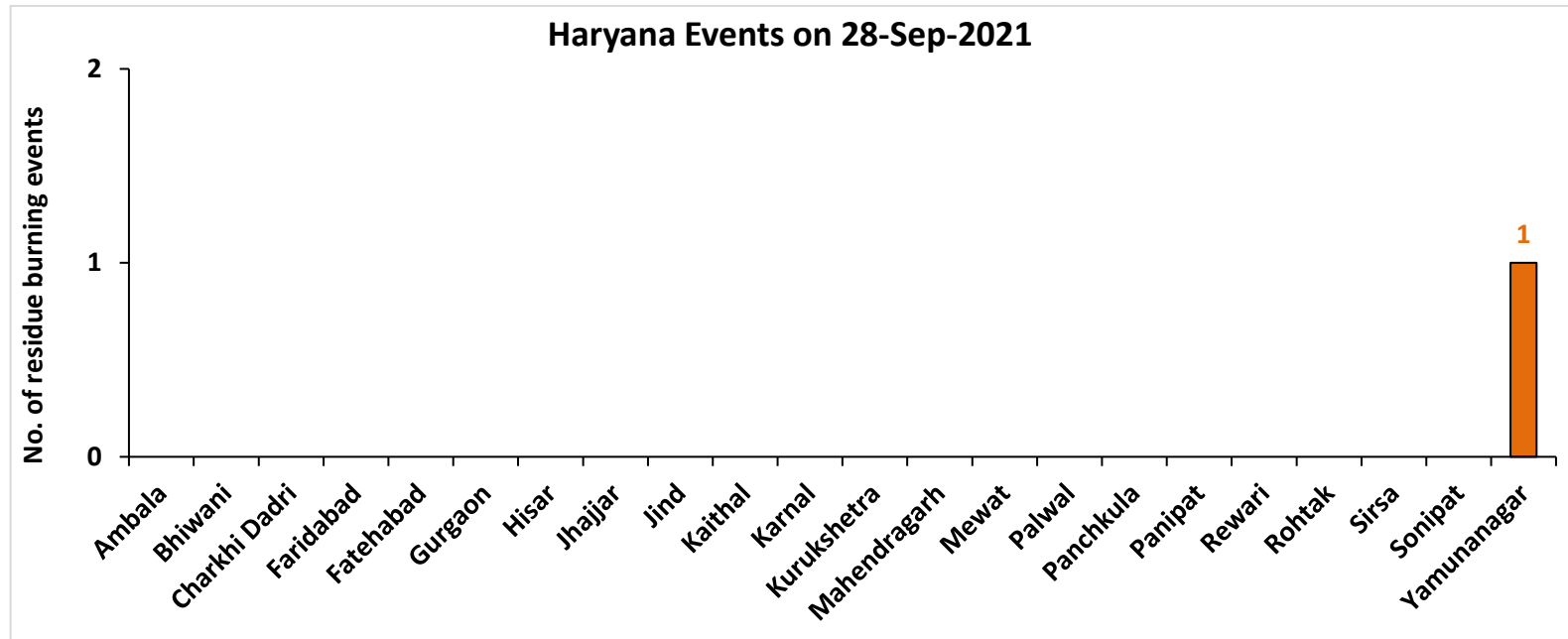
### Fire Intensity (W/m<sup>2</sup>)

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



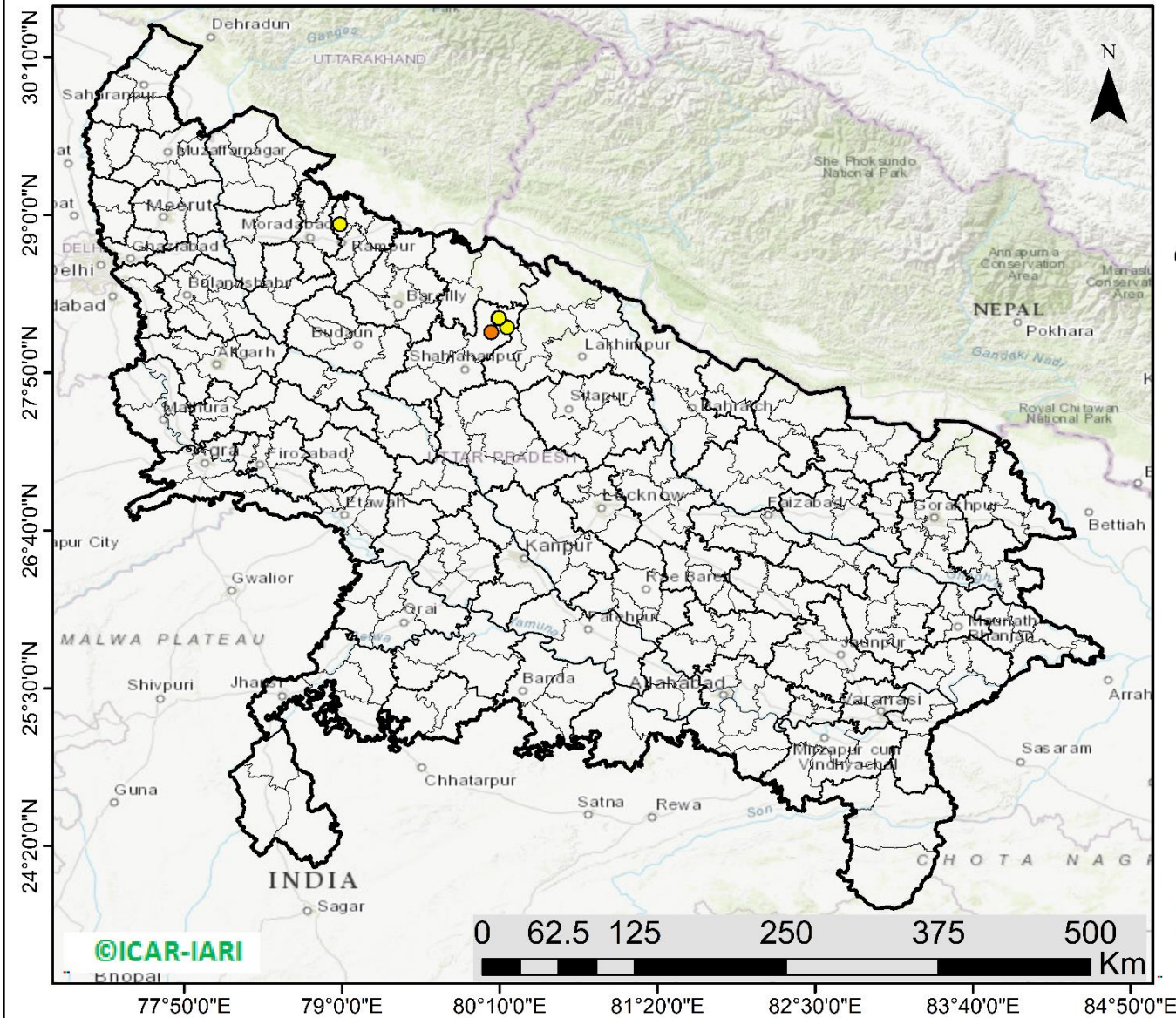
<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

## District-wise cumulative number of residues burning events in Haryana (15-28 Sep-2021)



Uttar Pradesh

RICE RESIDUE BURNING IN UTTAR PRADESH



**06** burning events detected in Uttar Pradesh on **28th September 2021**

Fire Intensity (W/m2)

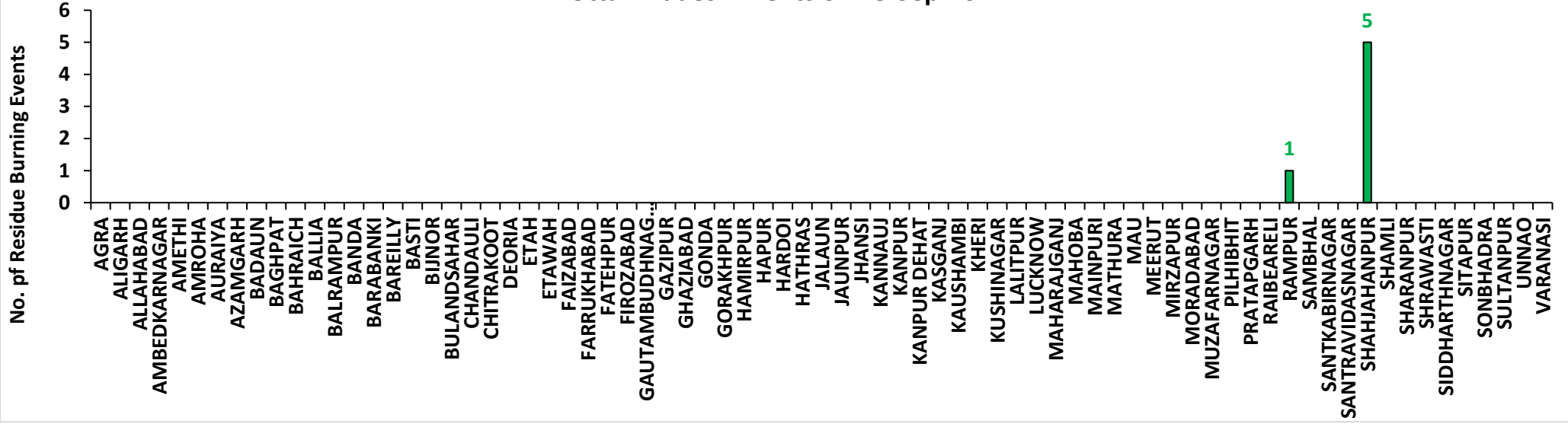
- 0 - 5
- 6 - 10
- 11 - 15
- 16 - 20
- >20



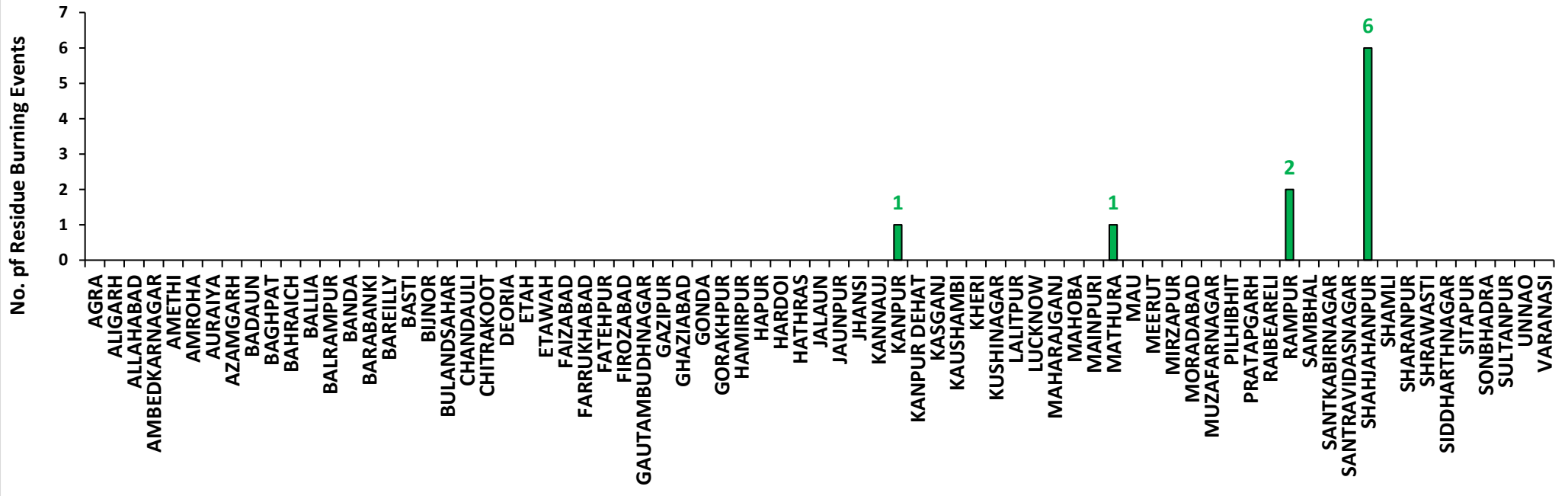
<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

## District-wise cumulative number of residues burning events in Uttar Pradesh (15-28 Sep-2021)

### Uttar Pradesh Events on 28-Sep-2021

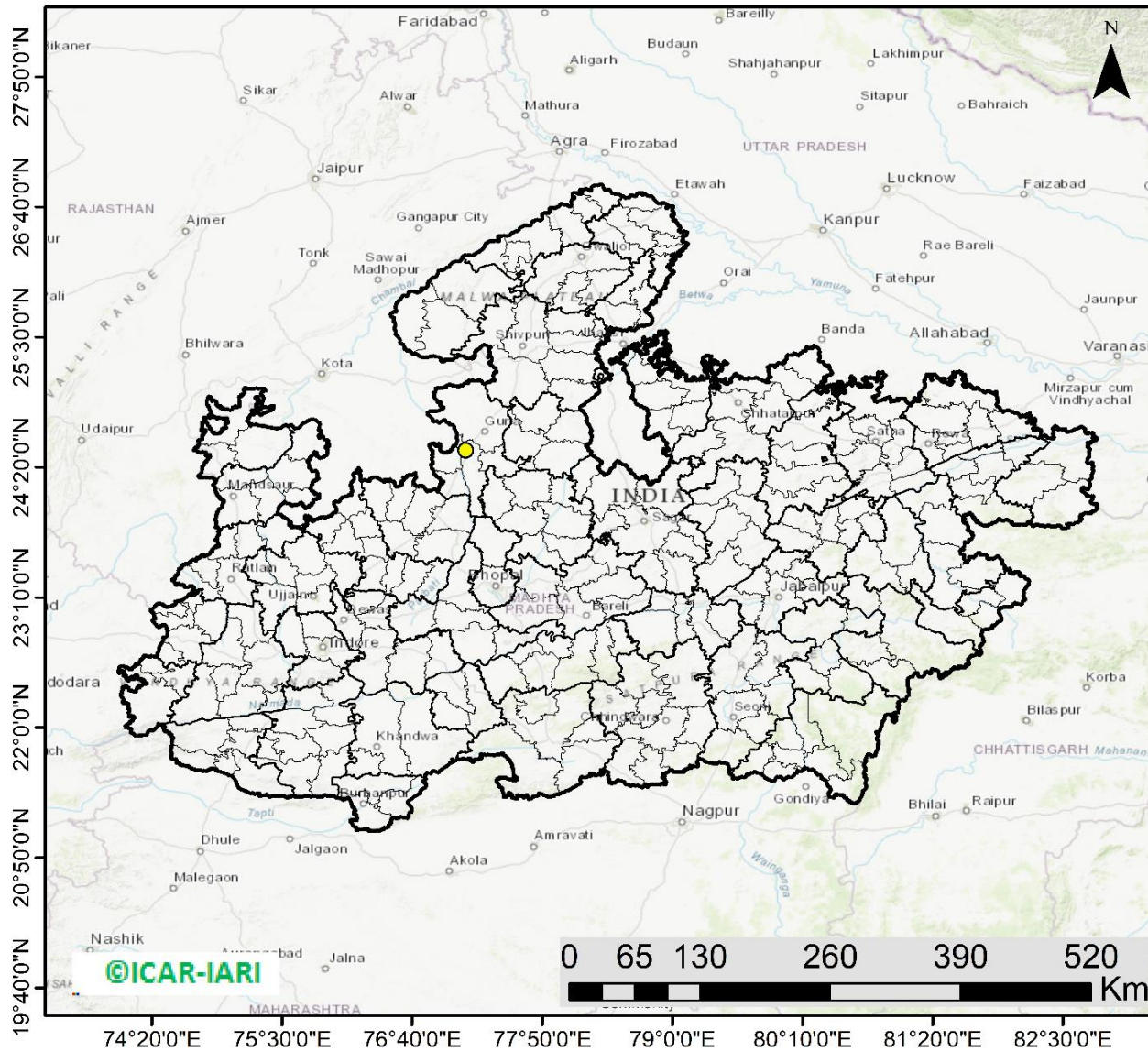


### Uttar Pradesh Cumulative Events (15Sep-28Sep-2021 )



# Madhya Pradesh

## RICE RESIDUE BURNING IN MADHYA PRADESH



**01** burning events detected in MP on 28th September 2020

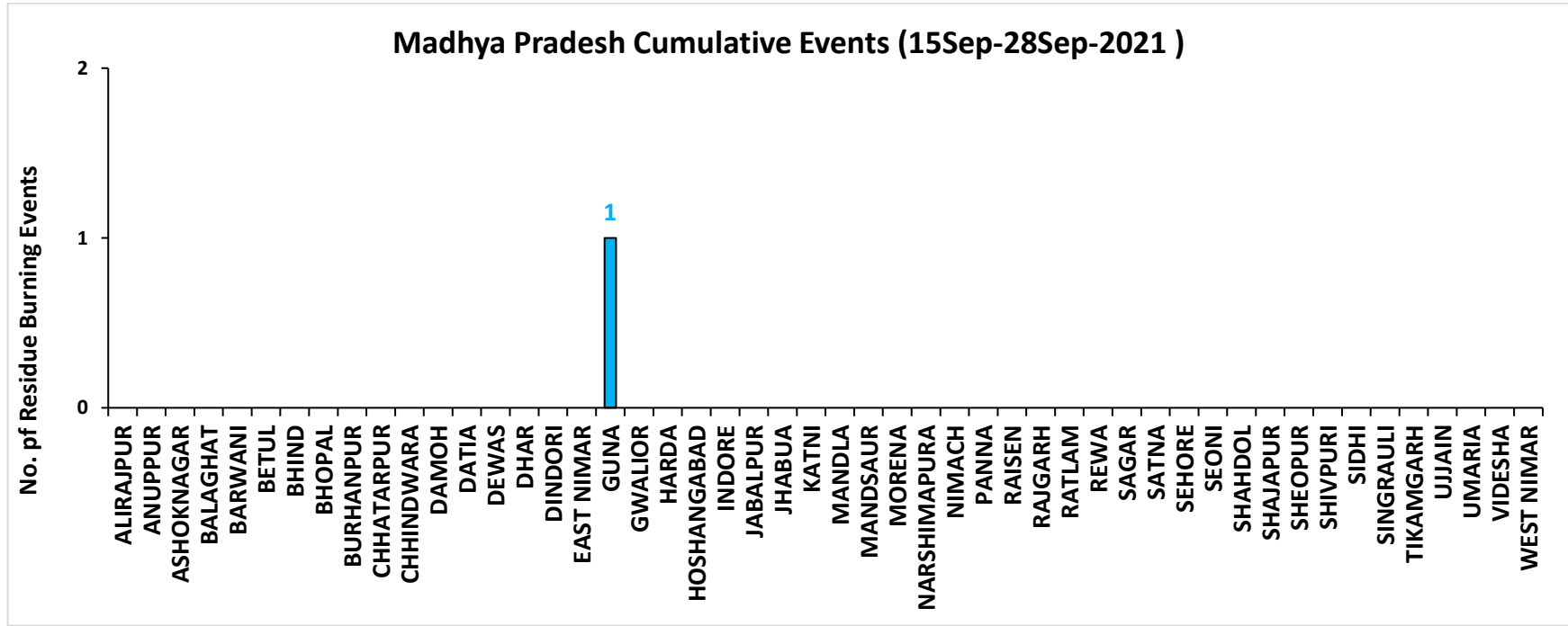
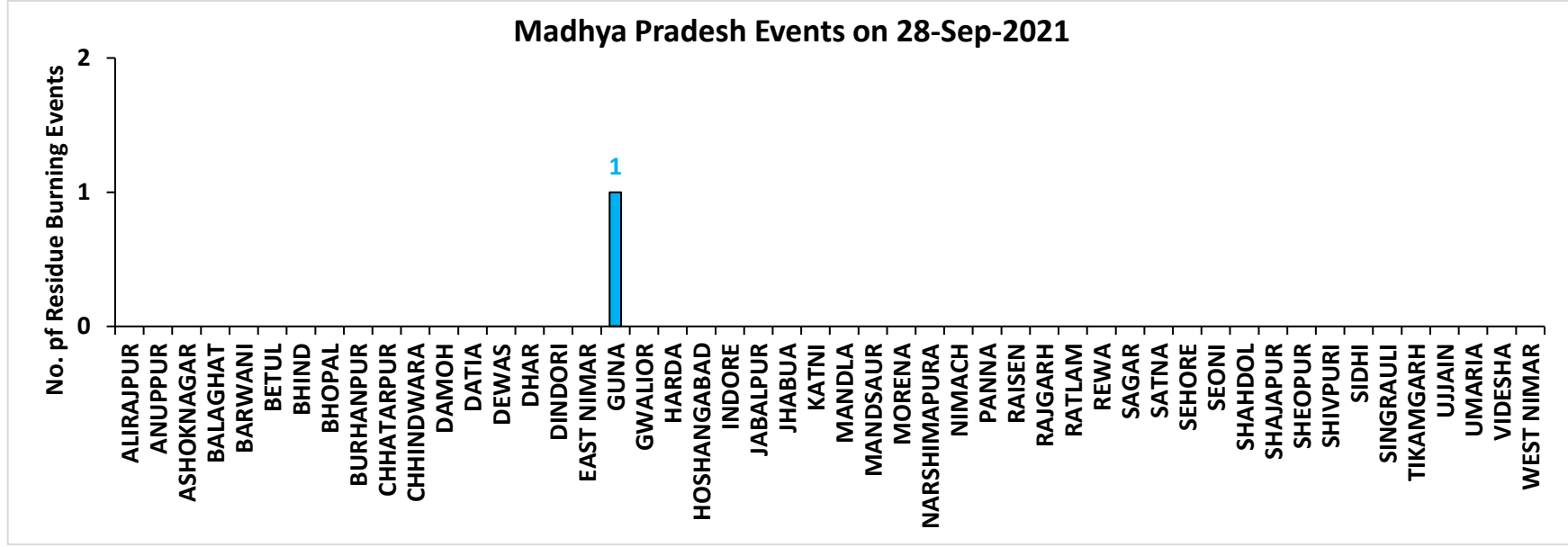
### Fire Intensity (W/m<sup>2</sup>)

- 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 Madhya Pradesh (15-Sep-2021)



**District-wise cumulative number of residues burning events detected in 2020 and 2021**  
**(Period: 15-28 September)**

**(a) Punjab**

District	15 Sep - 28 Sep	
	2020	2021
AMRITSAR	646	100
BARNALA	1	0
BATHINDA	0	0
FARIDKOT	1	3
FATEHGARH SAHIB	0	0
FAZILKA	0	0
FIROZPUR	2	1
GURDASPUR	21	0
HOSHIARPUR	1	0
JALANDHAR	2	1
KAPURTHALA	8	0
LUDHIANA	12	2
MANSA	1	0
MOGA	4	0
MUKTSAR	1	0
PATHANKOT	0	0
PATIALA	19	4
RUPNAGAR	0	0
SANGRUR	3	1
SAS NAGAR (MOHALI)	5	0
SBS NAGAR	0	0
TARN TARAN	119	12
<b>TOTAL</b>	<b>846</b>	<b>124</b>

**(b) Haryana**

District	15 Sep - 28 Sep	
	2020	2021
AMBALA	4	0
BHIWANI	0	0
CHARKHI DADRI	0	0
FARIDABAD	0	0
FATEHABAD	4	0
GURGAON	0	0
HISAR	1	0
JHAJJAR	0	0
JIND	0	0
KAITHAL	5	0
KARNAL	20	0
KURUKSHETRA	8	0
MAHENDRAGARH	0	0
MEWAT	0	0
PALWAL	0	0
PANCHKULA	0	0
PANIPAT	3	0
REWARI	0	0
ROHTAK	0	0
SIRSA	1	0
SONIPAT	0	0
YAMUNANAGAR	1	1
<b>Total</b>	<b>47</b>	<b>1</b>

(c) Uttar Pradesh

District	15 Sep - 28 Sep							
	2020	2021	GAUTAMBUDHNAGAR	0	0	MUZAFARNAGAR	0	0
AGRA	0	0	GAZIPUR	0	0	PILHIBHIT	1	0
ALIGARH	1	0	GHAZIABAD	1	0	PRATAPGARH	0	0
ALLAHABAD	0	0	GONDA	0	0	RAIBEARELI	1	0
AMBEDKARNAGAR	0	0	GORAKHPUR	0	0	RAMPUR	0	2
AMETHI	0	0	HAMIRPUR	0	0	SAMBHAL	3	0
AMROHA	0	0	HAPUR	1	0	SANTKABIRNAGAR	0	0
AURAIYA	1	0	HARDOI	0	0	SANTRAVIDASNAGAR	0	0
AZAMGARH	0	0	HATHRAS	0	0	SHAHJAHANPUR	2	6
BADAUN	0	0	JALAUN	0	0	SHAMLI	6	0
BAGHPAT	1	0	JAUNPUR	0	0	SHARANPUR	1	0
BAHRAICH	0	0	JHANSI	2	0	SHRAWASTI	0	0
BALLIA	0	0	KANNAUJ	0	0	SIDDHARTHANAGAR	0	0
BALRAMPUR	0	0	KANPUR	0	1	SITAPUR	0	0
BANDA	0	0	KANPUR DEHAT	0	0	SONBHADRA	0	0
BARABANKI	0	0	KASGANJ	0	0	SULTANPUR	0	0
BAREILLY	0	0	KAUSHAMBI	0	0	UNNAO	0	0
BASTI	0	0	KHERI	0	0	VARANASI	0	0
BIJNOR	1	0	KUSHINAGAR	0	0	<b>Total</b>	<b>25</b>	<b>10</b>
BULANDSAHAR	0	0	LALITPUR	0	0			
CHANDAULI	0	0	LUCKNOW	0	0			
CHITRAKOOT	0	0	MAHARAJGANJ	0	0			
DEORIA	0	0	MAHOPA	0	0			
ETAH	1	0	MAINPURI	0	0			
ETAWAH	0	0	MATHURA	0	1			
FAIZABAD	0	0	MAU	0	0			
FARRUKHABAD	0	0	MEERUT	2	0			
FATEHPUR	0	0	MIRZAPUR	0	0			
FIROZABAD	0	0	MORADABAD	0	0			



(d) Madhya Pradesh

District	15 Sep - 28 Sep				
	2020	2021			
			PANNA	0	0
ALIRAJPUR	0	0	RAISEN	0	0
ANUPPUR	0	0	RAJGARH	0	0
ASHOKNAGAR	0	0	RATLAM	0	0
BALAGHAT	0	0	REWA	0	0
BARWANI	0	0	SAGAR	2	0
BETUL	0	0	SATNA	0	0
BHIND	0	0	SEHORE	0	0
BHOPAL	0	0	SEONI	0	0
BURHANPUR	0	0	SHAHDOL	0	0
CHHATARPUR	0	0	SHAJAPUR	0	0
CHHINDWARA	0	0	SHEOPUR	0	0
DAMOH	0	0	SHIVPURI	0	0
DATIA	0	0	SIDHI	0	0
DEWAS	0	0	SINGRAULI	0	0
DHAR	0	0	TIKAMGARH	0	0
DINDORI	0	0	UJJAIN	0	0
EAST NIMAR	0	0	UMARIA	0	0
GUNA	2	1	VIDESHA	0	0
GWALIOR	2	0	WEST NIMAR	0	0
HARDA	2	0	Total	8	1
HOSHANGABAD	0	0			
INDORE	0	0			
JABALPUR	0	0			
JHABUA	0	0			
KATNI	0	0			
MANDLA	0	0			
MANDSAUR	0	0			
MORENA	0	0			
NARSHIMAPURA	0	0			
NIMACH	0	0			

**State-wise and date-wise number of paddy residue burning events detected in 2020 and 2021**  
**(Period: 15 - 28 September)**

<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>2020</b>	<b>2021</b>	<b>2020</b>	<b>2021</b>	<b>2020</b>	<b>2021</b>	<b>2020</b>	<b>2021</b>	<b>2020</b>	<b>2021</b>
<b>15-Sep</b>	5	0	2	0	1	0	0	0	1	0	2	0
<b>16-Sep</b>	0	2	1	0	0	0	0	0	0	0	0	0
<b>17-Sep</b>	5	0	3	0	0	0	0	0	0	0	0	0
<b>18-Sep</b>	17	9	0	0	0	1	0	0	0	0	0	0
<b>19-Sep</b>	30	5	2	0	0	1	0	0	0	0	0	0
<b>20-Sep</b>	67	8	6	0	2	0	0	0	0	0	0	0
<b>21-Sep</b>	54	0	2	0	1	0	0	0	1	0	2	0
<b>22-Sep</b>	34	0	1	0	1	0	0	0	0	0	0	0
<b>23-Sep</b>	49	0	0	0	1	0	0	0	1	0	0	0
<b>24-Sep</b>	78	5	0	0	1	1	0	0	0	0	0	0
<b>25-Sep</b>	184	11	11	0	5	0	0	0	1	0	0	0
<b>26-Sep</b>	190	19	5	0	8	0	0	0	1	0	2	0
<b>27-Sep</b>	78	37	8	0	4	1	0	0	0	0	1	0
<b>28-Sep</b>	55	28	6	1	1	6	0	0	0	0	1	1
<b>Total</b>	<b>846</b>	<b>124</b>	<b>47</b>	<b>1</b>	<b>25</b>	<b>10</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>8</b>	<b>1</b>

### Details of residue burning events in Punjab on 28-Sep-2021

S. No.	District	Block	Satellite	Latitude	Longitude	ACQ_DATE	ACQ_TIME	Day / Night	Fire Power (W/m <sup>2</sup> )
1	AMRITSAR	AJNALA	S-NPP	31.81310	74.90720	9/28/2021	13:41:51	D	3.70
2	AMRITSAR	ATTARI	S-NPP	31.58000	74.76690	9/28/2021	13:41:51	D	5.00
3	AMRITSAR	CHOGAWAN	S-NPP	31.71850	74.56350	9/28/2021	13:41:51	D	2.50
4	AMRITSAR	HARSHA CHHINA	S-NPP	31.81050	74.91090	9/28/2021	13:41:51	D	3.90
5	AMRITSAR	JANDIALA GURU	S-NPP	31.58290	75.09470	9/28/2021	13:41:51	D	4.50
6	AMRITSAR	JANDIALA GURU	S-NPP	31.60470	75.06710	9/28/2021	13:41:51	D	8.00
7	AMRITSAR	JANDIALA GURU	S-NPP	31.61220	74.99110	9/28/2021	13:41:51	D	3.00
8	AMRITSAR	JANDIALA GURU	S-NPP	31.63340	75.01590	9/28/2021	13:41:51	D	3.10
9	AMRITSAR	JANDIALA GURU	S-NPP	31.65740	74.97850	9/28/2021	13:41:51	D	3.60
10	AMRITSAR	MAJITHA	S-NPP	31.72430	74.99710	9/28/2021	13:41:51	D	8.30
11	AMRITSAR	MAJITHA	S-NPP	31.73780	74.93300	9/28/2021	13:41:51	D	13.10
12	AMRITSAR	MAJITHA	S-NPP	31.74840	75.01660	9/28/2021	13:41:51	D	5.50
13	AMRITSAR	MAJITHA	S-NPP	31.80780	74.97300	9/28/2021	13:41:51	D	3.20
14	AMRITSAR	MAJITHA	S-NPP	31.81500	75.00040	9/28/2021	13:41:51	D	3.80
15	AMRITSAR	RAYYA	S-NPP	31.57130	75.23100	9/28/2021	13:41:51	D	3.60
16	AMRITSAR	TARSIKKA	S-NPP	31.62750	75.15880	9/28/2021	13:41:51	D	2.40
17	AMRITSAR	TARSIKKA	S-NPP	31.62980	75.15980	9/28/2021	13:41:51	D	2.40
18	AMRITSAR	TARSIKKA	S-NPP	31.68720	75.18360	9/28/2021	13:41:51	D	3.00
19	AMRITSAR	TARSIKKA	S-NPP	31.70440	75.14700	9/28/2021	13:41:51	D	2.90
20	AMRITSAR	VERKA	S-NPP	31.64210	74.97170	9/28/2021	13:41:51	D	2.50
21	AMRITSAR	VERKA	S-NPP	31.67270	74.98530	9/28/2021	13:41:51	D	1.80
22	FIROZPUR	GHALL KHURD	S-NPP	30.96530	74.76130	9/28/2021	13:41:51	D	3.70
23	JALANDHAR	LOHIAN	S-NPP	31.10260	75.18480	9/28/2021	13:41:51	D	5.50
24	LUDHIANA	MACHHIWARA	S-NPP	30.83920	76.29540	9/28/2021	13:41:51	D	4.60
25	PATIALA	PATRAN	S-NPP	29.89250	76.06290	9/28/2021	13:41:51	D	3.60
26	TARN TARAN	KHADUR SAHIB	S-NPP	31.44180	75.06040	9/28/2021	13:41:51	D	3.20
27	TARN TARAN	KHADUR SAHIB	S-NPP	31.48570	75.23420	9/28/2021	13:41:51	D	3.90
28	TARN TARAN	KHADUR SAHIB	S-NPP	31.50060	75.04070	9/28/2021	13:41:51	D	3.70

### Details of residue burning events in Haryana on 28-Sep-2021

S. No.	District	Block	Satellite	Latitude	Longitude	ACQ_DATE	ACQ_TIME	Day / Night	Fire Power (W/m2)
1	YAMUNANAGAR	MUSTAFABAD	S-NPP	30.24380	77.21640	9/28/2021	13:41:51	D	3.80

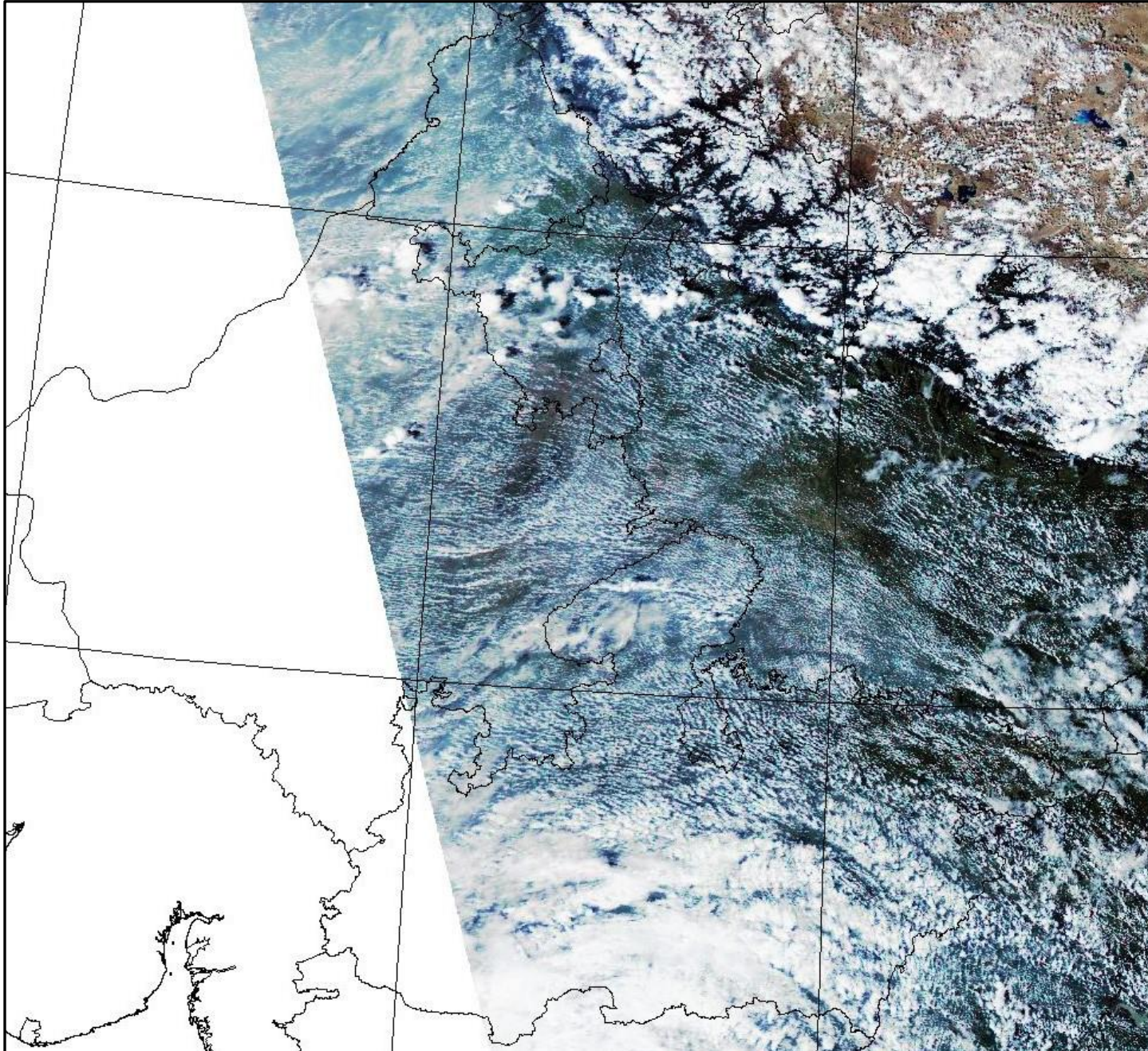
### Details of residue burning events in Uttar Pradesh on 28-Sep-2021

S. No.	District	Block	Satellite	Latitude	Longitude	ACQ_DATE	ACQ_TIME	Day / Night	Fire Power (W/m2)
1	RAMPUR	TANDA	S-NPP	28.93000	78.98610	9/28/2021	02:31:52	N	1.30
2	SHAHJAHANPUR	PUWANYA	S-NPP	28.16810	80.22210	9/28/2021	13:41:51	D	3.00
3	SHAHJAHANPUR	PUWANYA	S-NPP	28.23440	80.15780	9/28/2021	13:41:51	D	6.60
4	SHAHJAHANPUR	PUWANYA	S-NPP	28.23650	80.15590	9/28/2021	13:41:51	D	5.00
5	SHAHJAHANPUR	PUWANYA	S-NPP	28.23700	80.16090	9/28/2021	13:41:51	D	5.00
6	SHAHJAHANPUR	PUWANYA	AQUA	28.13200	80.10400	9/28/2021	13:01:50	D	12.60

### Details of residue burning events in Madhya Pradesh on 28-Sep-2021

S. No.	District	Block	Satellite	Latitude	Longitude	ACQ_DATE	ACQ_TIME	Day / Night	Fire Power (W/m2)
1	GUNA	RAGHOGARH	S-NPP	24.48370	77.14560	9/28/2021	02:31:52	N	0.60

AQUA (MODIS) Satellite image (TCC) of North and Central India Acquired on 28-Sep-2021 at 12:59:20 IST by IARI Ground Station



**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**

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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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