



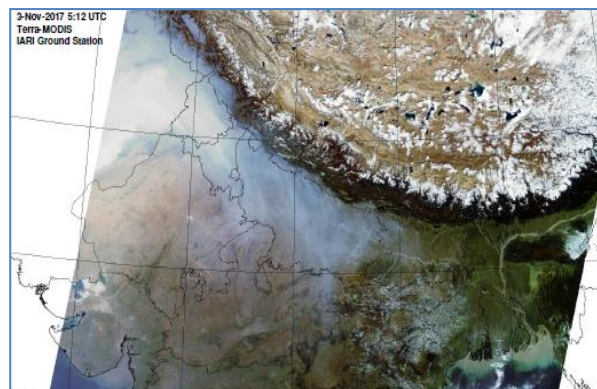
**Bulletin  
No. 13**

**Events Date:  
27-Sep-2021**

**Issued on:  
27-Sep-2021**



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



**Prepared by:**

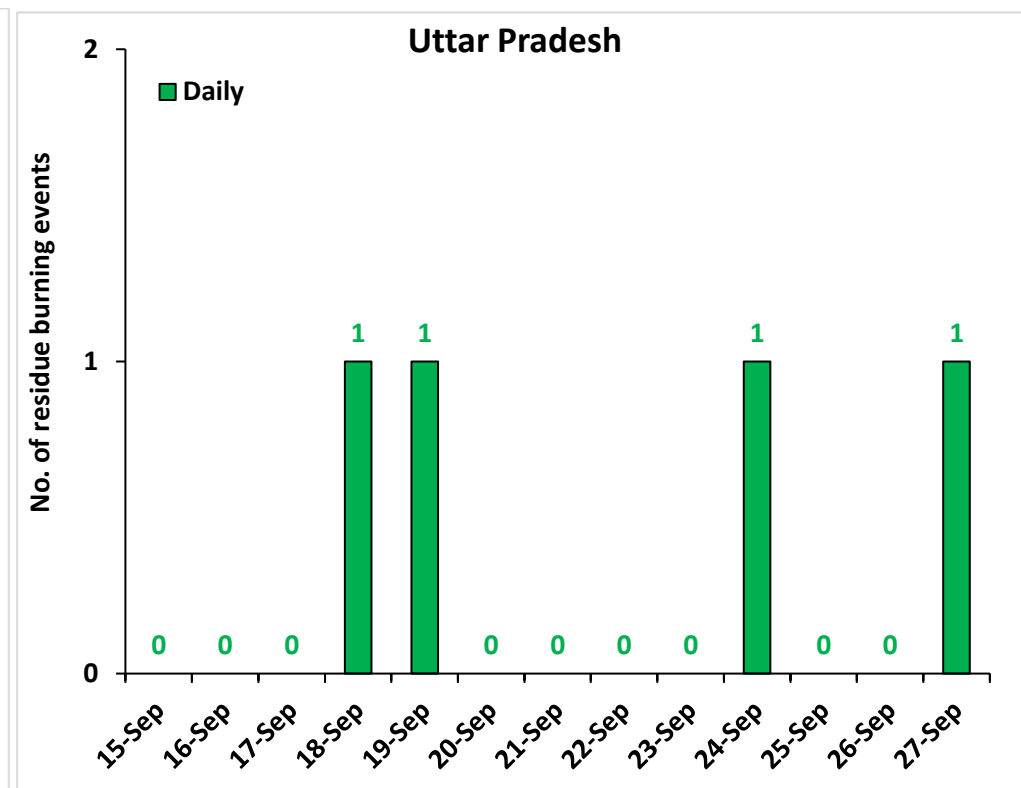
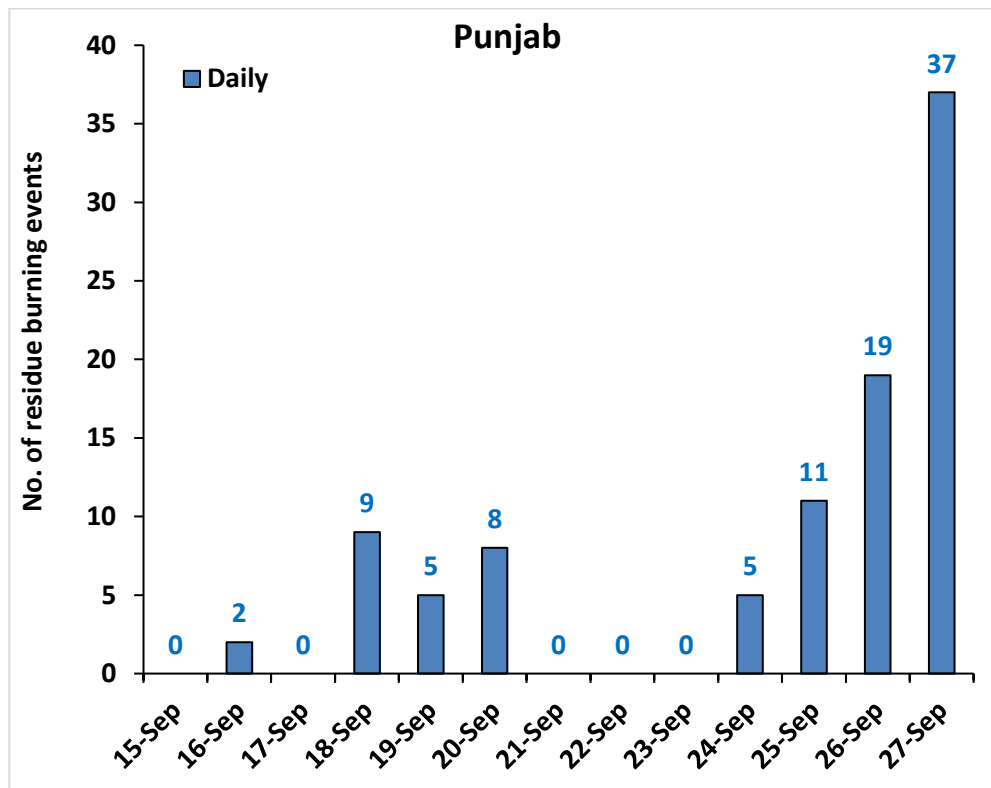
**Consortium for Research on Agroecosystem Monitoring and Modeling from Space (CREAMS) Laboratory,  
Division of Agricultural Physics, ICAR – Indian Agricultural Research Institute, New Delhi – 110012**

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

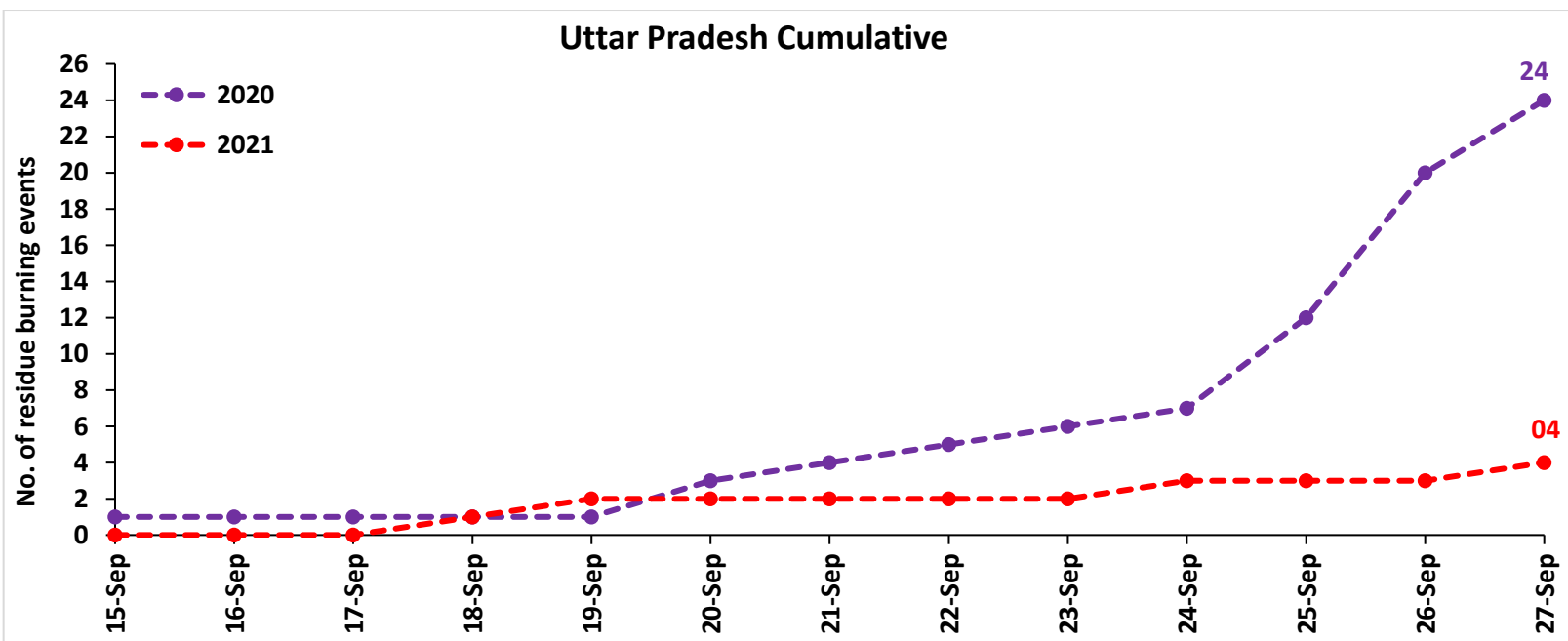
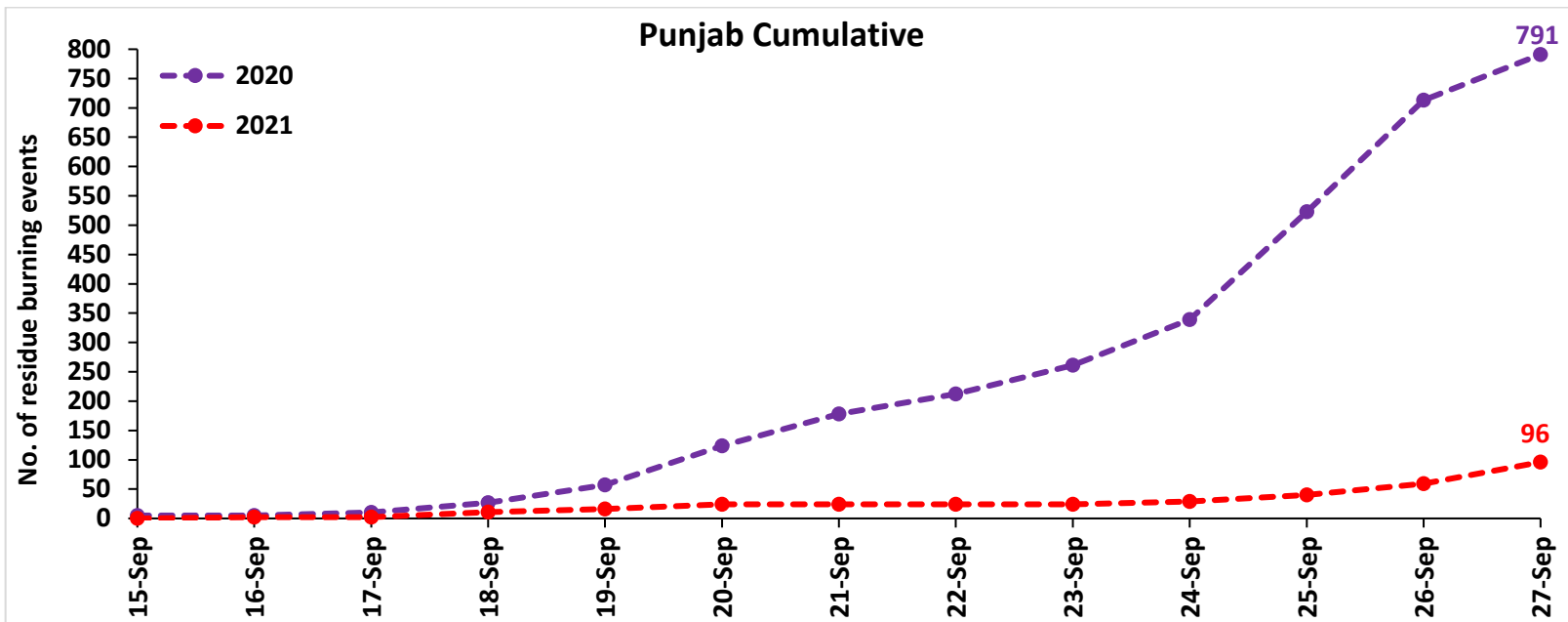
## Highlights for 27-September-2021

- The active fire events due to rice residue burning were monitored using satellite remote sensing, following the new "Standard Protocol for Estimation of Crop Residue Burning Fire Events using Satellite Data".
- Satellites detected **38** residue burning events in the six study States on 27-Sep-2021.
- The state wise events detected on 27-Sep-2021 were **37** in Punjab, **0** in Haryana, **1** in UP, **0** in Delhi, **0** in Rajasthan and **0** in MP.
- Detection of burning events by satellites was hampered due to cloud cover over Southern Haryana, Delhi, Eastern Rajasthan, and Madhya Pradesh.

### Temporal distribution of rice residue burning events for the study States in 2021

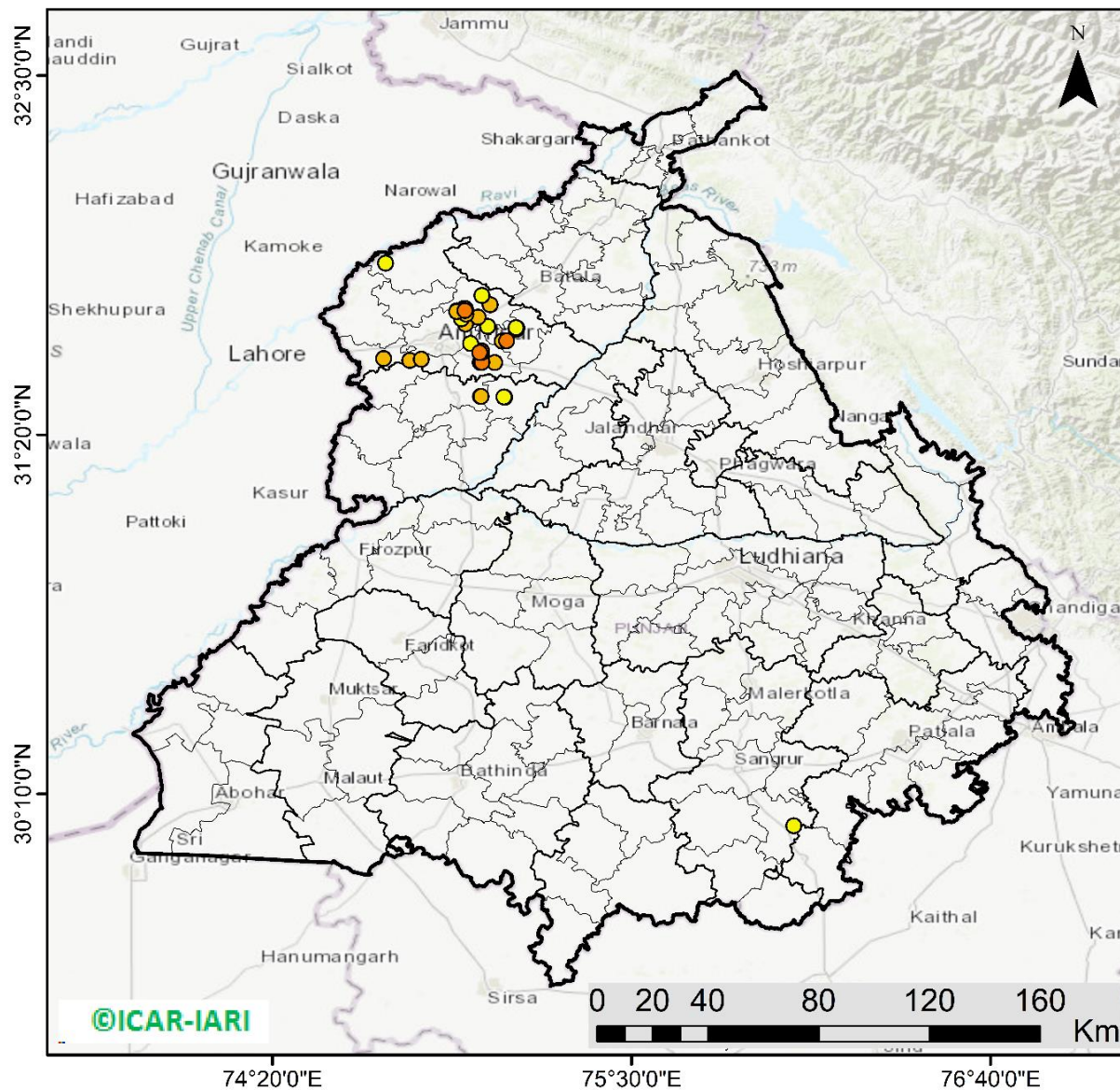


### Comparison of residue burning events in current year (2021) with previous year (2020) for the study States








# Punjab

## RICE RESIDUE BURNING IN PUNJAB



**37** burning events detected in Punjab on 27th September 2021

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

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

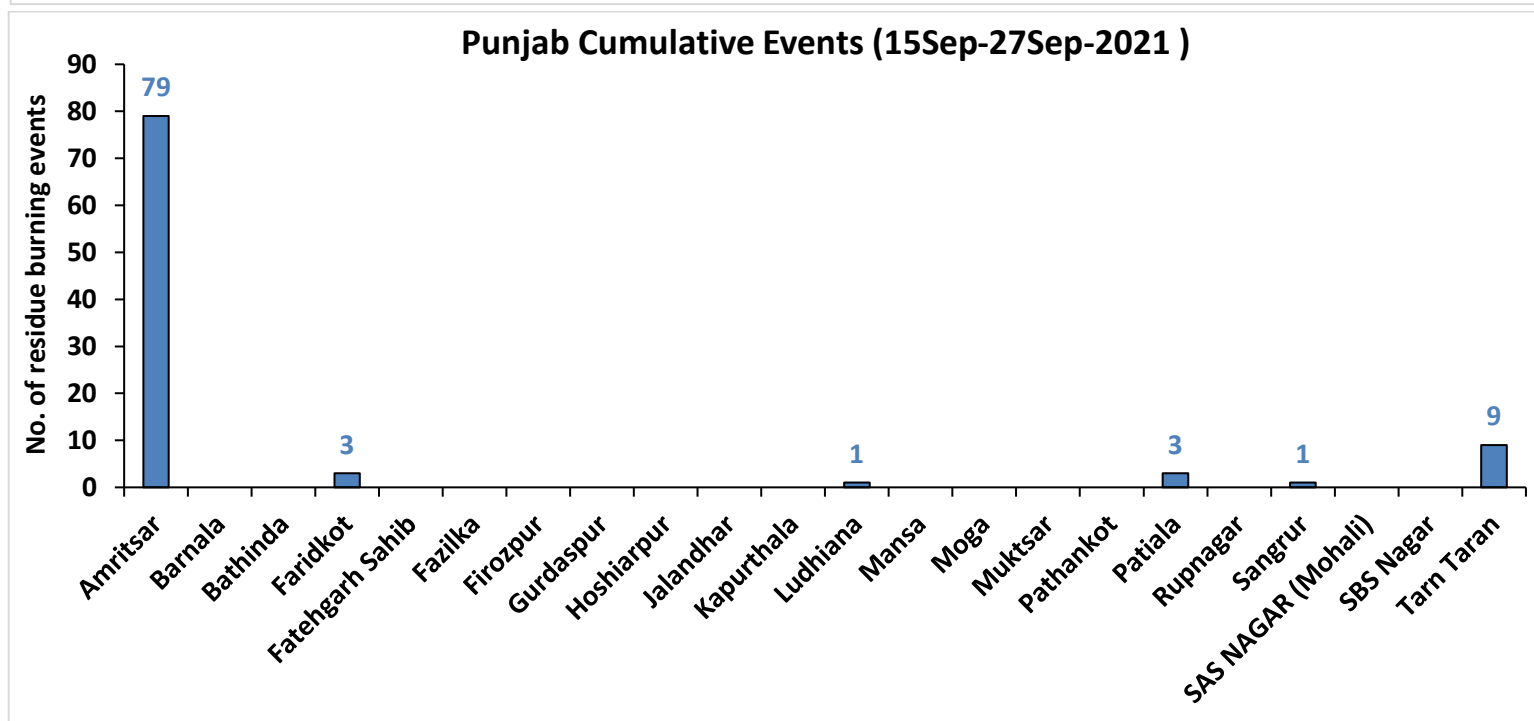
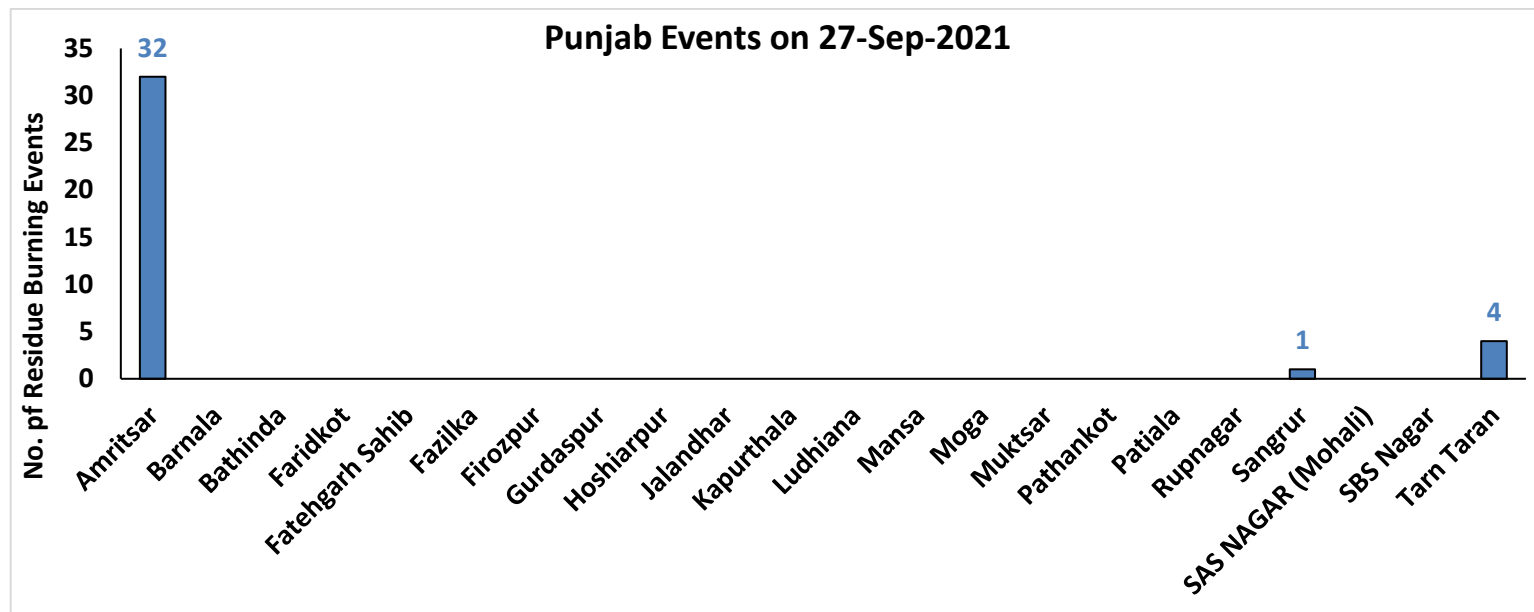


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<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

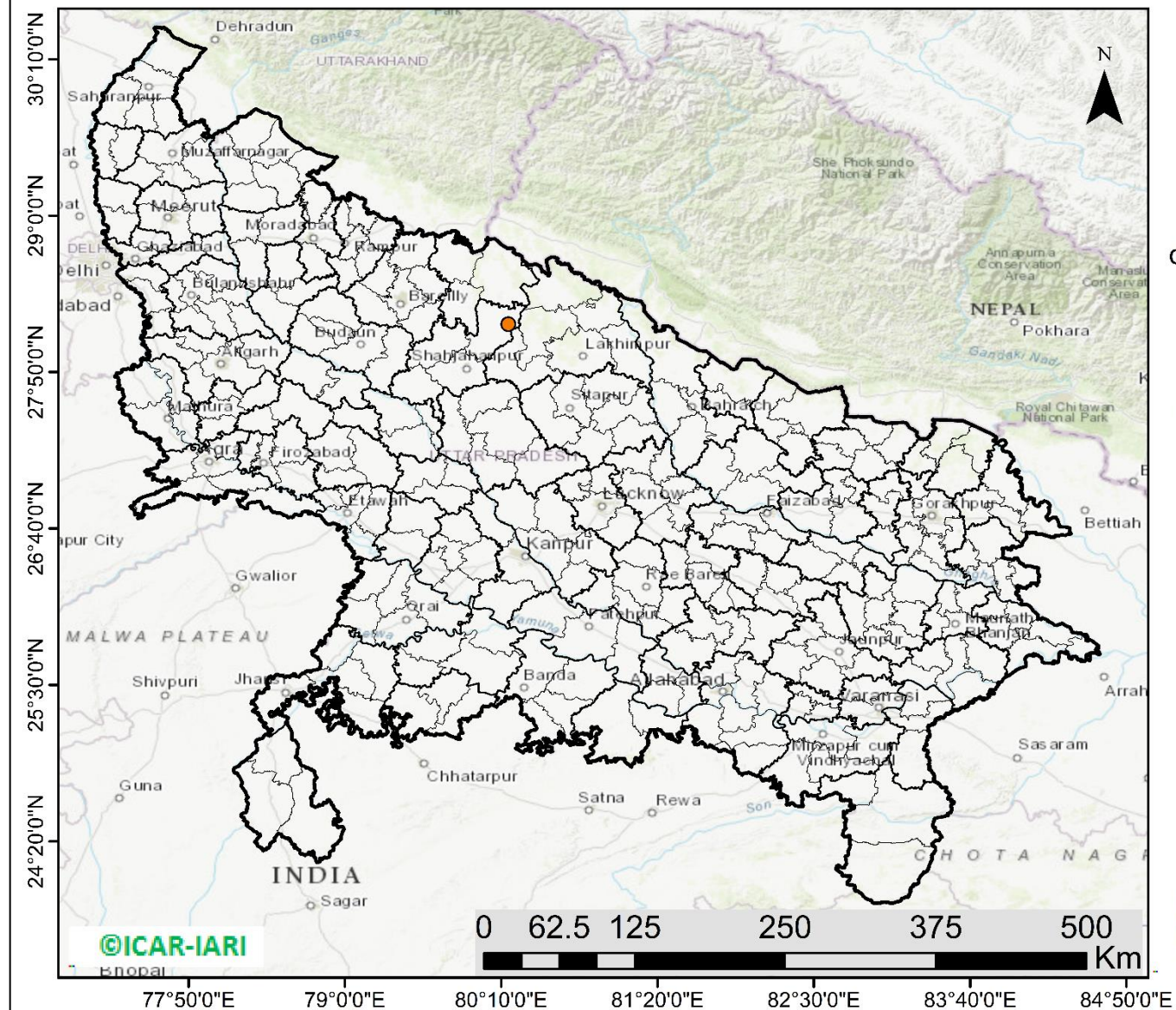


## District-wise cumulative number of residues burning events in Punjab (15-27 Sep-2021)



## Uttar Pradesh

### RICE RESIDUE BURNING IN UTTAR PRADESH



**01** burning events  
detected in Uttar Pradesh on  
**27th September 2021**

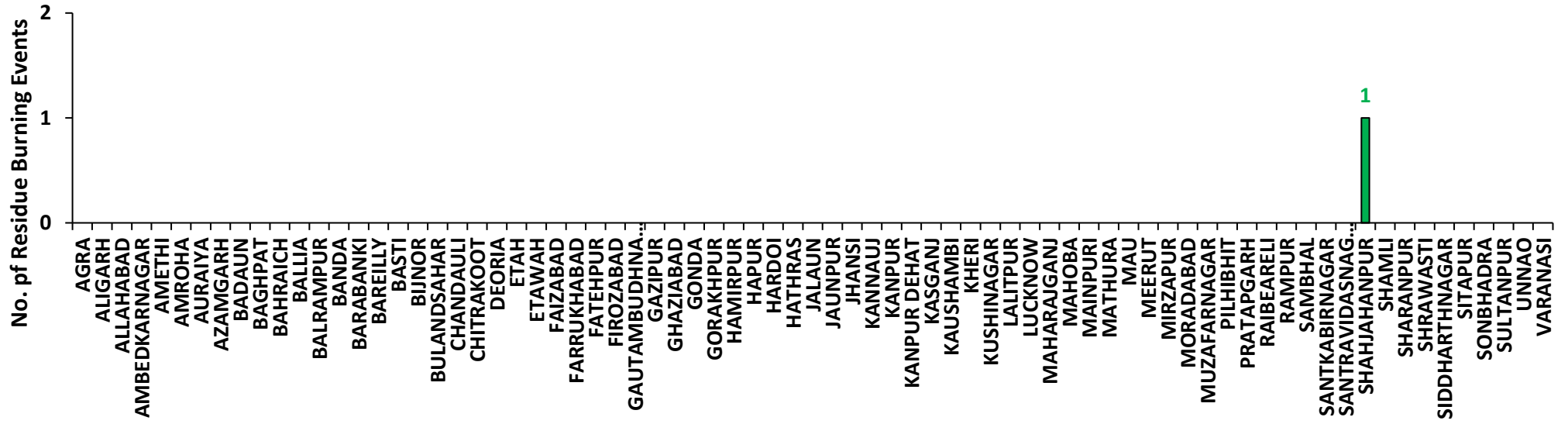
#### Fire Intensity (W/m<sup>2</sup>)



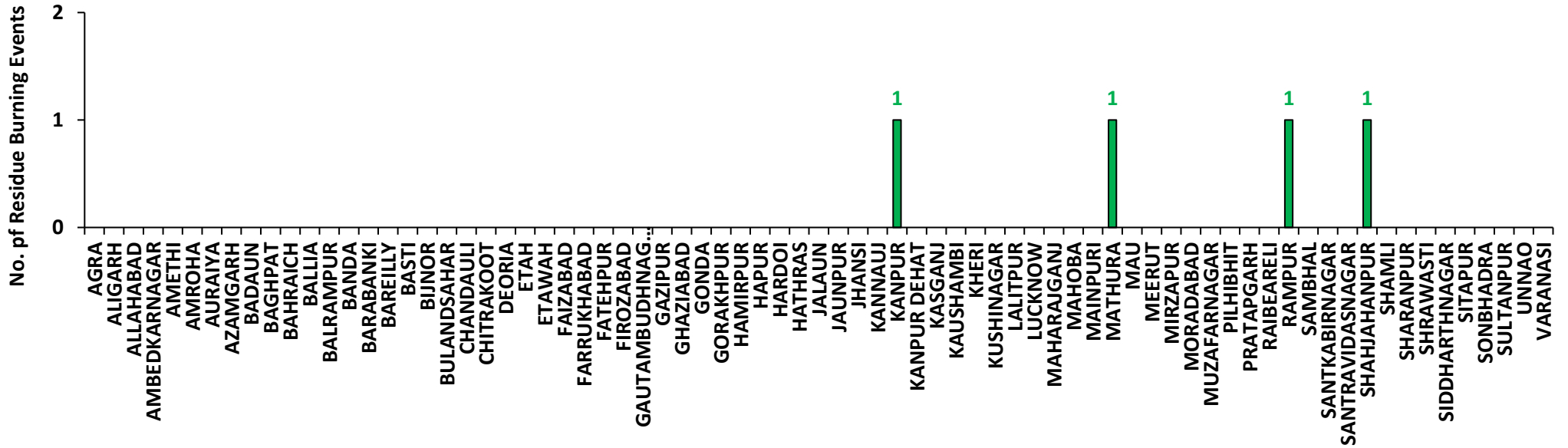
<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

## District-wise cumulative number of residues burning events in Uttar Pradesh (15-27 Sep-2021)

### Uttar Pradesh Events on 27-Sep-2021



### Uttar Pradesh Cumulative Events (15Sep-27Sep-2021)



**District-wise and date wise cumulative number of residues burning events detected in 2020 and 2021**  
**(Period: 15-27 September)**

**(a) Punjab**

District	15 Sep - 27 Sep	
	2020	2021
AMRITSAR	606	79
BARNALA	1	0
BATHINDA	0	0
FARIDKOT	1	3
FATEHGARH SAHIB	0	0
FAZILKA	0	0
FIROZPUR	2	0
GURDASPUR	19	0
HOSHIARPUR	0	0
JALANDHAR	2	0
KAPURTHALA	8	0
LUDHIANA	12	1
MANSA	1	0
MOGA	4	0
MUKTSAR	1	0
PATHANKOT	0	0
PATIALA	16	3
RUPNAGAR	0	0
SANGRUR	3	1
SAS NAGAR (MOHALI)	5	0
SBS NAGAR	0	0
TARN TARAN	110	9
<b>TOTAL</b>	<b>791</b>	<b>96</b>



(b) Uttar Pradesh

District	15 Sep - 27 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	1
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	1
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	Total	24	4
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	0	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			

**State-wise and date-wise number of paddy residue burning events detected in 2020 and 2021**  
**(Period: 15 - 27 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>Total</b>	<b>791</b>	<b>96</b>	<b>41</b>	<b>0</b>	<b>24</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>7</b>	<b>0</b>

### Details of residue burning events in Punjab on 27-Sep-2021

S. No.	District	Block	Satellite	Latitude	Longitude	ACQ_DATE	ACQ_TIME	Day / Night	Fire Power (W/m2)
1	AMRITSAR	AJNALA	S-NPP	31.89050	74.70090	9/27/2021	14:00:47	D	4.50
2	AMRITSAR	ATTARI	S-NPP	31.57440	74.77970	9/27/2021	14:00:47	D	8.30
3	AMRITSAR	ATTARI	S-NPP	31.58010	74.69470	9/27/2021	14:00:47	D	9.30
4	AMRITSAR	ATTARI	AQUA	31.57800	74.81700	9/27/2021	13:56:39	D	9.20
5	AMRITSAR	JANDIALA GURU	S-NPP	31.56740	75.05550	9/27/2021	14:00:47	D	5.40
6	AMRITSAR	JANDIALA GURU	S-NPP	31.56760	75.00870	9/27/2021	14:00:47	D	12.80
7	AMRITSAR	JANDIALA GURU	S-NPP	31.56810	75.01160	9/27/2021	14:00:47	D	23.80
8	AMRITSAR	JANDIALA GURU	S-NPP	31.56820	75.01410	9/27/2021	14:00:47	D	12.80
9	AMRITSAR	JANDIALA GURU	S-NPP	31.60050	75.01320	9/27/2021	14:00:47	D	3.90
10	AMRITSAR	JANDIALA GURU	S-NPP	31.60460	75.00720	9/27/2021	14:00:47	D	10.70
11	AMRITSAR	JANDIALA GURU	S-NPP	31.60510	75.01260	9/27/2021	14:00:47	D	10.70
12	AMRITSAR	JANDIALA GURU	S-NPP	31.62940	74.97690	9/27/2021	14:00:47	D	1.70
13	AMRITSAR	JANDIALA GURU	AQUA	31.60000	75.00700	9/27/2021	13:56:39	D	13.70
14	AMRITSAR	MAJITHA	S-NPP	31.68500	75.03270	9/27/2021	14:00:47	D	4.80
15	AMRITSAR	MAJITHA	S-NPP	31.71460	75.00170	9/27/2021	14:00:47	D	6.90
16	AMRITSAR	MAJITHA	S-NPP	31.72480	74.96220	9/27/2021	14:00:47	D	5.90
17	AMRITSAR	MAJITHA	S-NPP	31.73590	74.93360	9/27/2021	14:00:47	D	21.70
18	AMRITSAR	MAJITHA	S-NPP	31.73790	74.95510	9/27/2021	14:00:47	D	5.50
19	AMRITSAR	MAJITHA	S-NPP	31.73840	74.96050	9/27/2021	14:00:47	D	4.50
20	AMRITSAR	MAJITHA	S-NPP	31.74250	74.95460	9/27/2021	14:00:47	D	5.70
21	AMRITSAR	MAJITHA	S-NPP	31.74300	74.96000	9/27/2021	14:00:47	D	12.70
22	AMRITSAR	MAJITHA	S-NPP	31.75520	75.04080	9/27/2021	14:00:47	D	8.70
23	AMRITSAR	MAJITHA	S-NPP	31.78520	75.01390	9/27/2021	14:00:47	D	3.70
24	AMRITSAR	MAJITHA	AQUA	31.73300	74.93200	9/27/2021	13:56:39	D	9.10
25	AMRITSAR	MAJITHA	AQUA	31.73600	74.95900	9/27/2021	13:56:39	D	11.70
26	AMRITSAR	TARSIKKA	S-NPP	31.67580	75.12540	9/27/2021	14:00:47	D	2.40
27	AMRITSAR	TARSIKKA	S-NPP	31.67950	75.12750	9/27/2021	14:00:47	D	11.90
28	AMRITSAR	TARSIKKA	S-NPP	31.68040	75.12490	9/27/2021	14:00:47	D	3.60
29	AMRITSAR	TARSIKKA	AQUA	31.63700	75.08000	9/27/2021	13:56:39	D	9.50
30	AMRITSAR	TARSIKKA	AQUA	31.63800	75.09400	9/27/2021	13:56:39	D	12.50

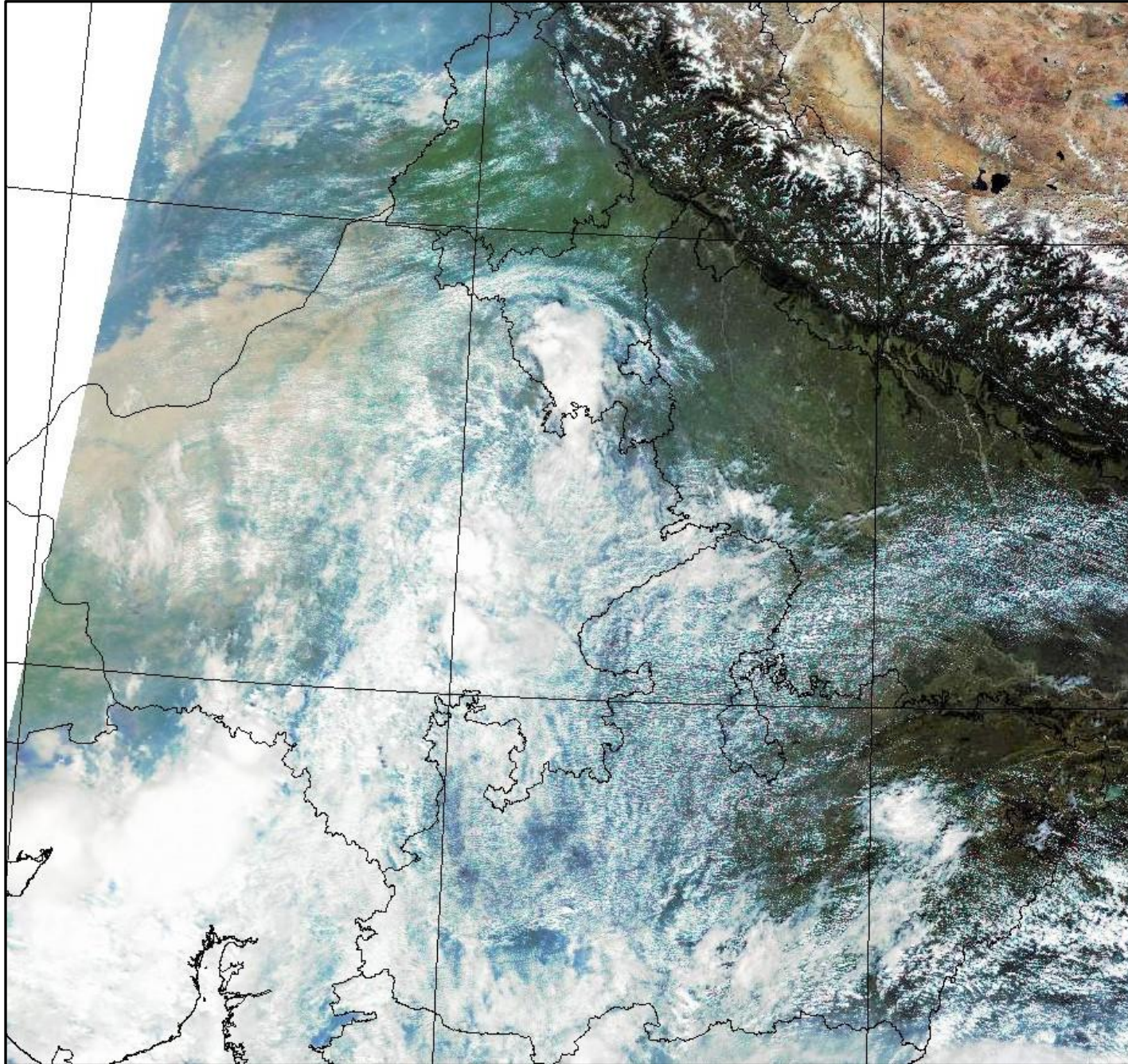
31	AMRITSAR	VERKA	S-NPP	31.69240	74.96060	9/27/2021	14:00:47	D	6.00
32	AMRITSAR	VERKA	S-NPP	31.70960	74.94770	9/27/2021	14:00:47	D	3.70
33	SANGRUR	DIRBA	S-NPP	30.06270	76.02720	9/27/2021	14:00:47	D	3.20
34	TARN TARAN	KHADUR SAHIB	S-NPP	31.45480	75.08810	9/27/2021	14:00:47	D	3.60
35	TARN TARAN	KHADUR SAHIB	S-NPP	31.45540	75.08560	9/27/2021	14:00:47	D	4.90
36	TARN TARAN	TARN TARAN	S-NPP	31.45730	75.00900	9/27/2021	14:00:47	D	7.00
37	TARN TARAN	TARN TARAN	S-NPP	31.45730	75.01120	9/27/2021	14:00:47	D	6.30

**Details of residue burning events in Uttar Pradesh on 27-Sep-2021**

S. No.	District	Block	Satellite	Latitude	Longitude	ACQ_DATE	ACQ_TIME	Day / Night	Fire Power (W/m2)
1	SHAHJAHANPUR	PUWANYA	S-NPP	28.19010	80.22030	9/27/2021	12:20:30	D	12.00



TERRA (MODIS) Satellite image (TCC) of North and Central India Acquired on 27-Sep-2021 at 10:38:00 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

### 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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