



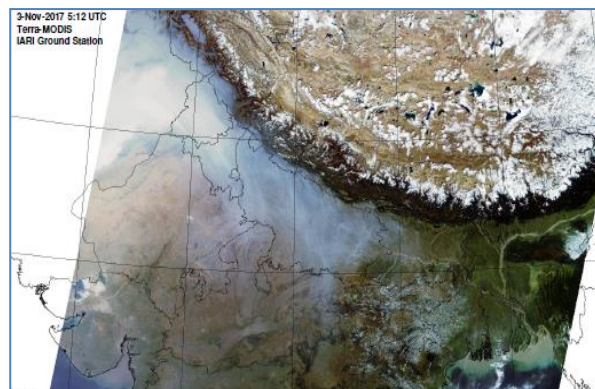
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24-Sep-2021

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24-Sep-2021



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



Prepared by:

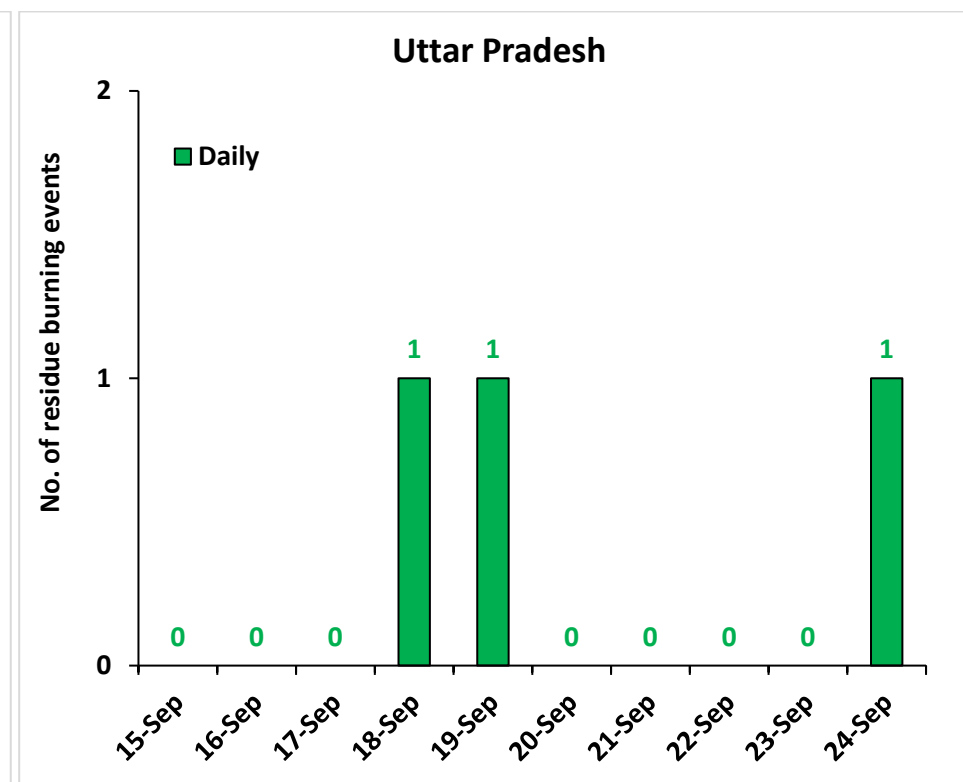
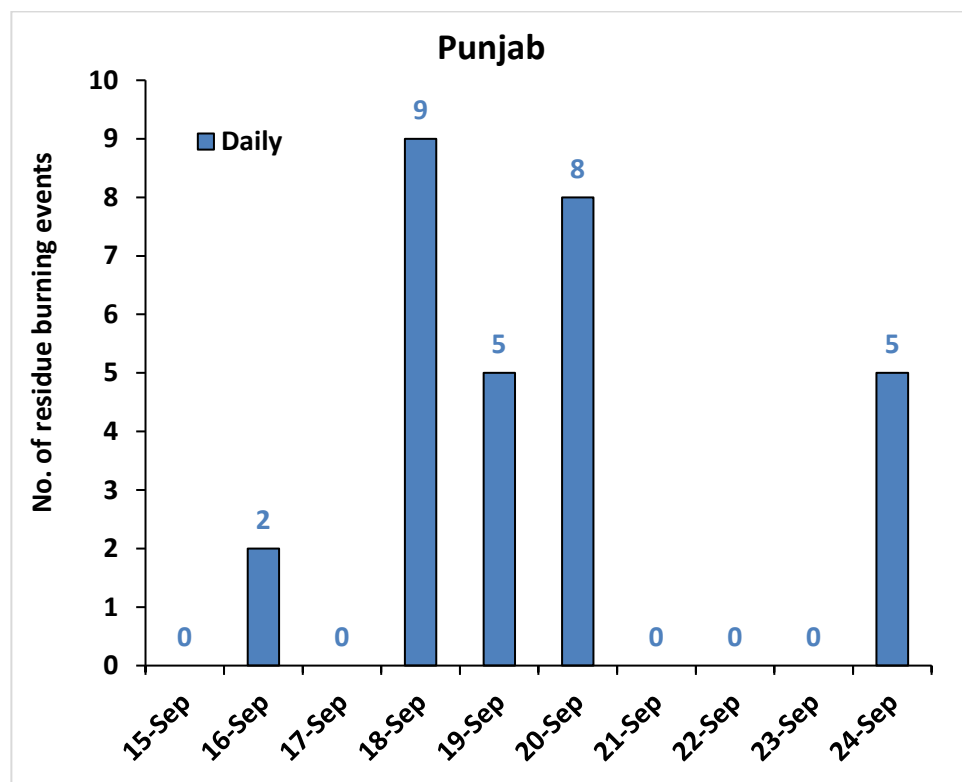
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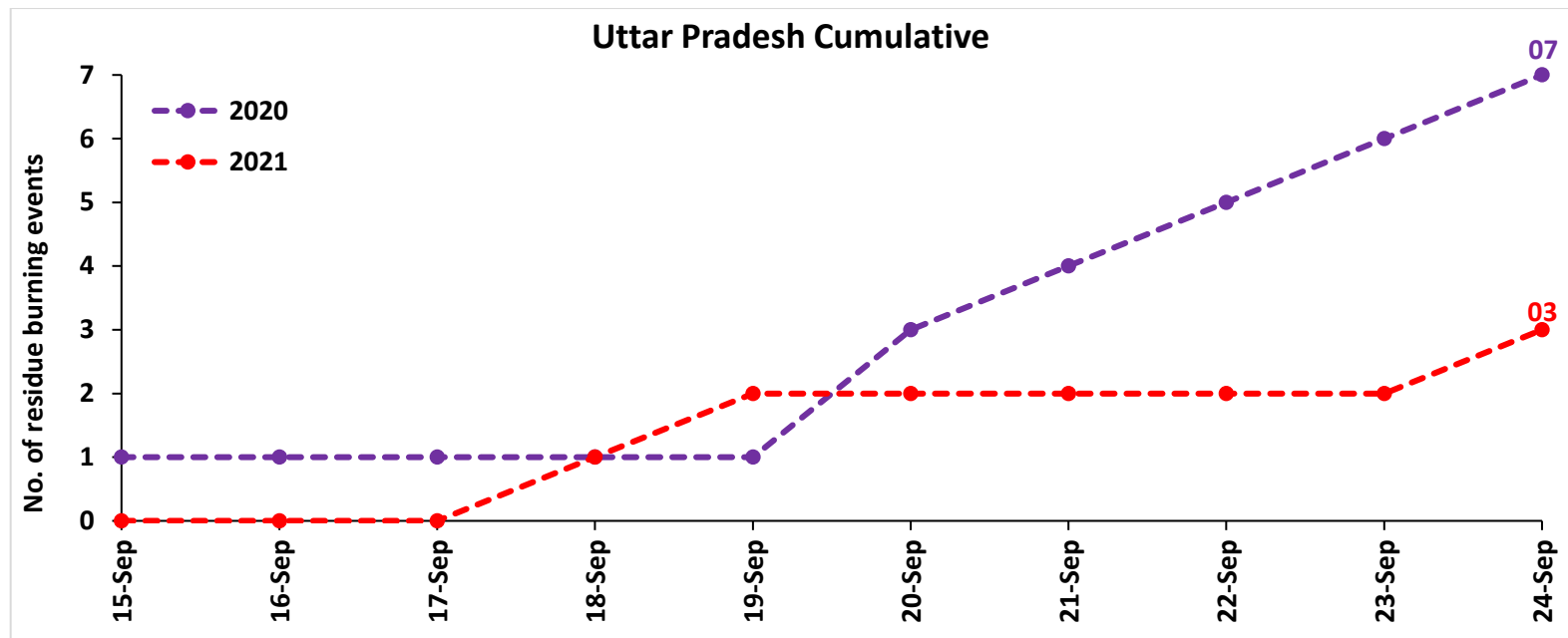
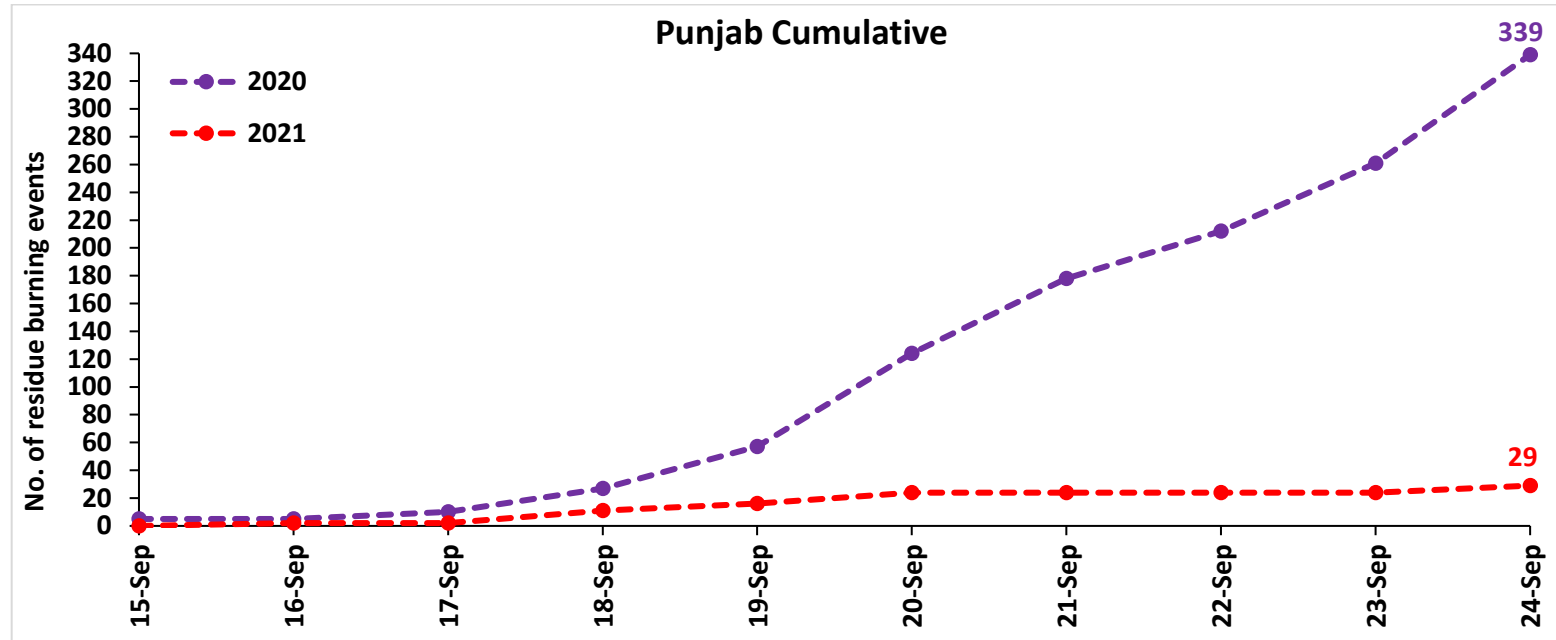
Highlights for 24-September-2021

- 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 **06** residue burning events in the six study States on 24-Sep-2021.
- The state wise events detected on 24-Sep-2021 were **5** 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 Haryana, Delhi, Rajasthan, Uttar Pradesh and Madhya Pradesh.

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

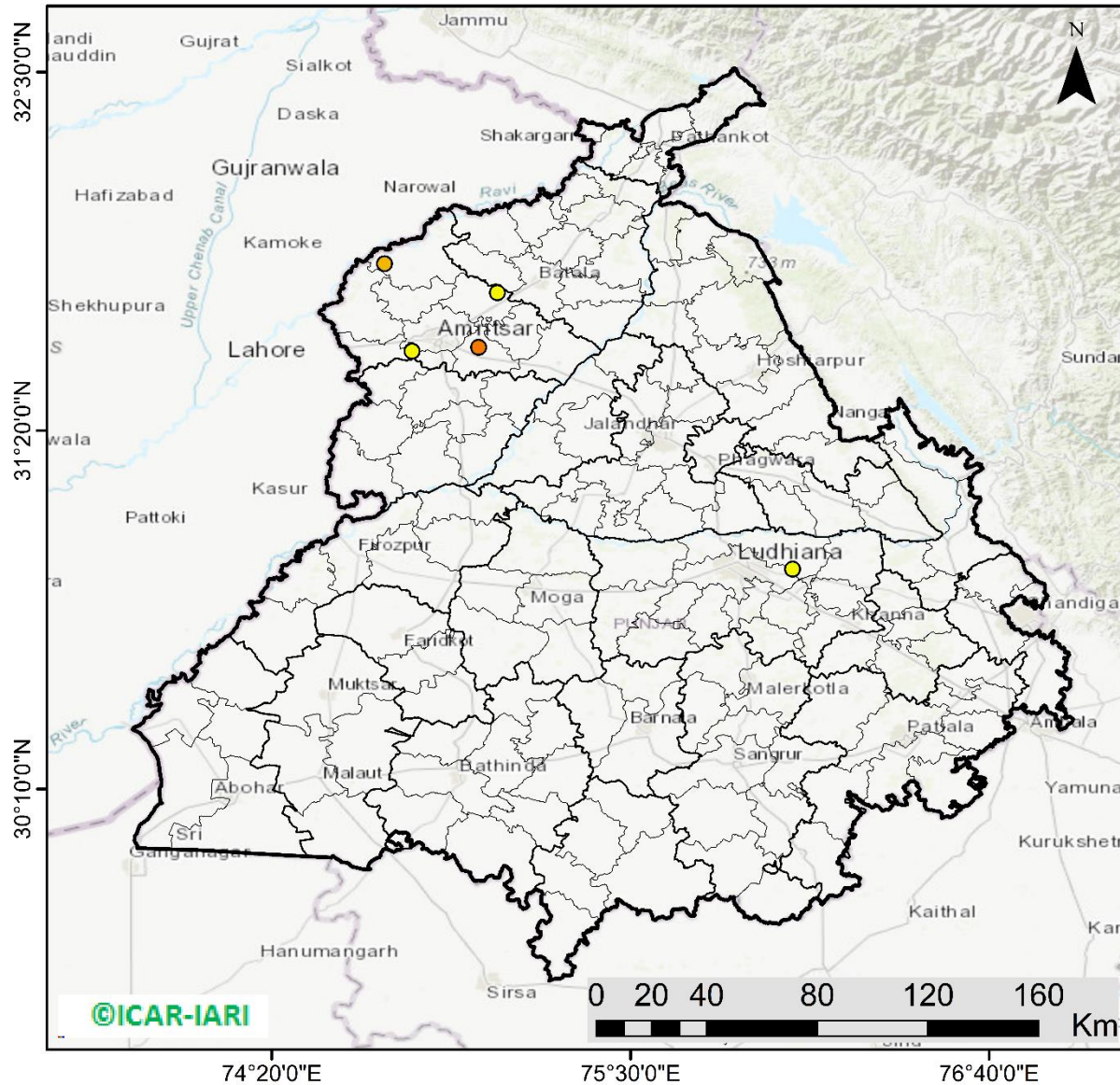


Comparison of residue burning events in current year (2021) with previous year (2020) for the study States



Punjab

RICE RESIDUE BURNING IN PUNJAB



05 burning events detected in Punjab on 24th September 2021

Fire Intensity (W/m²)

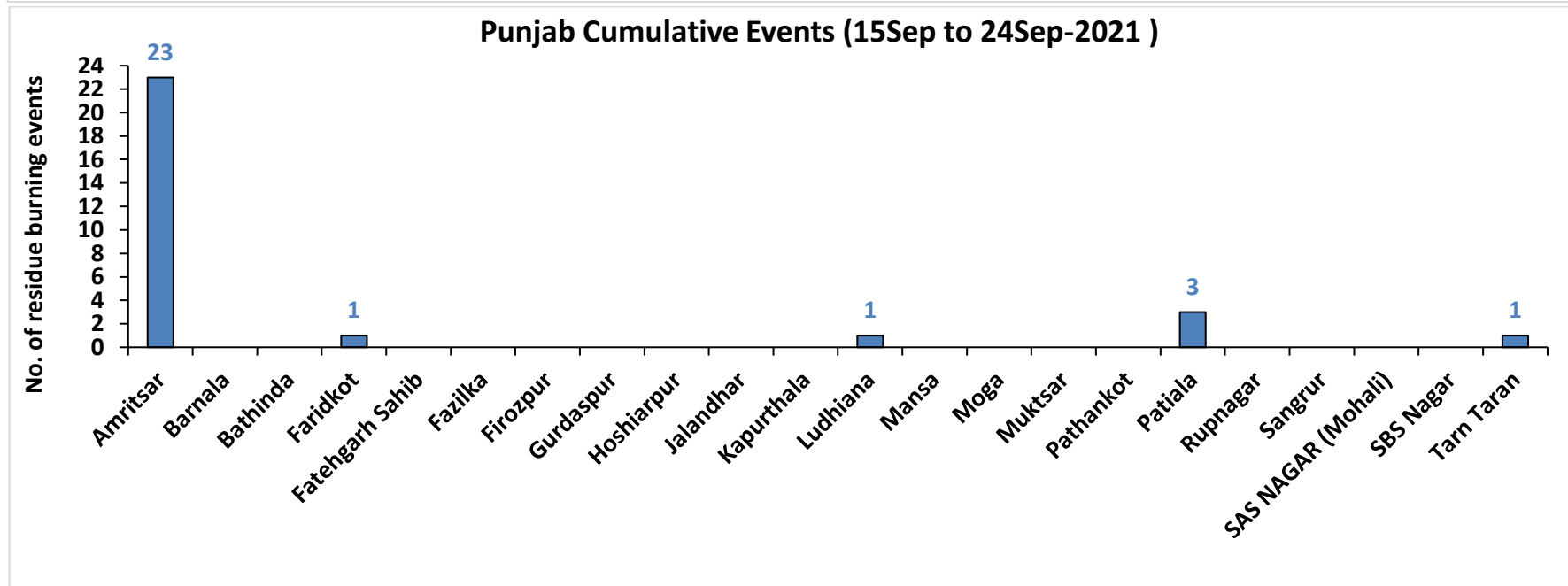
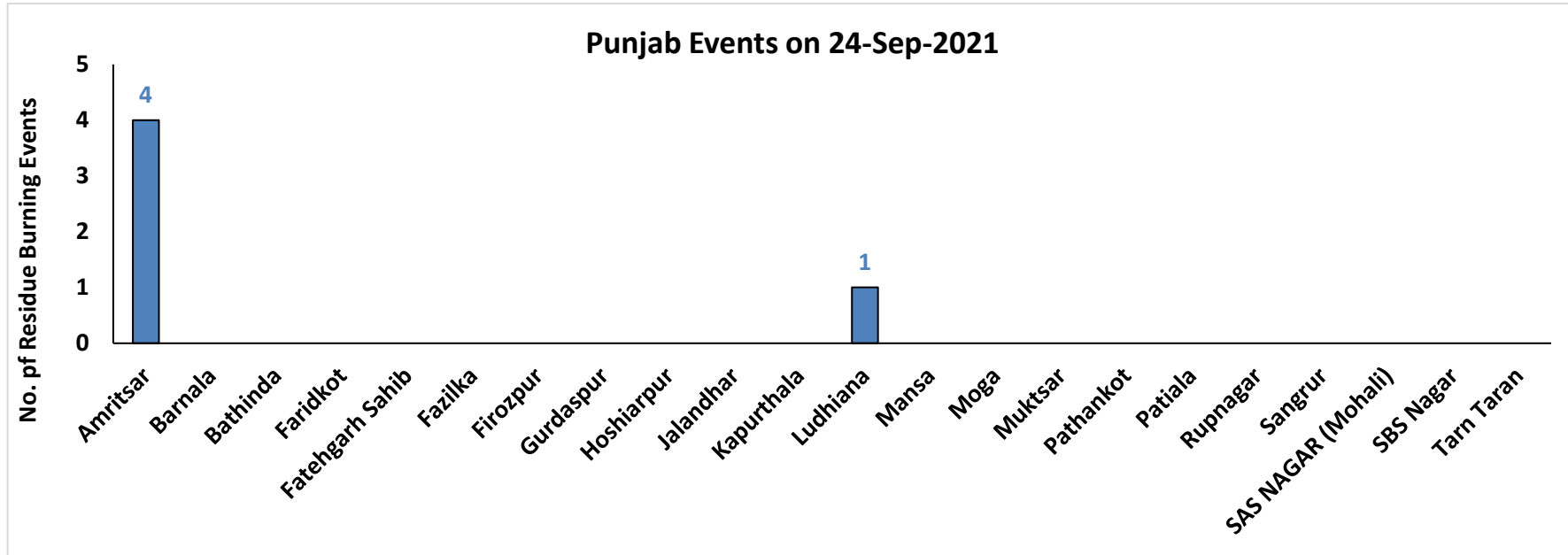
- 0 - 5
- 6 - 10
- 11 - 15
- 16 - 20
- >20

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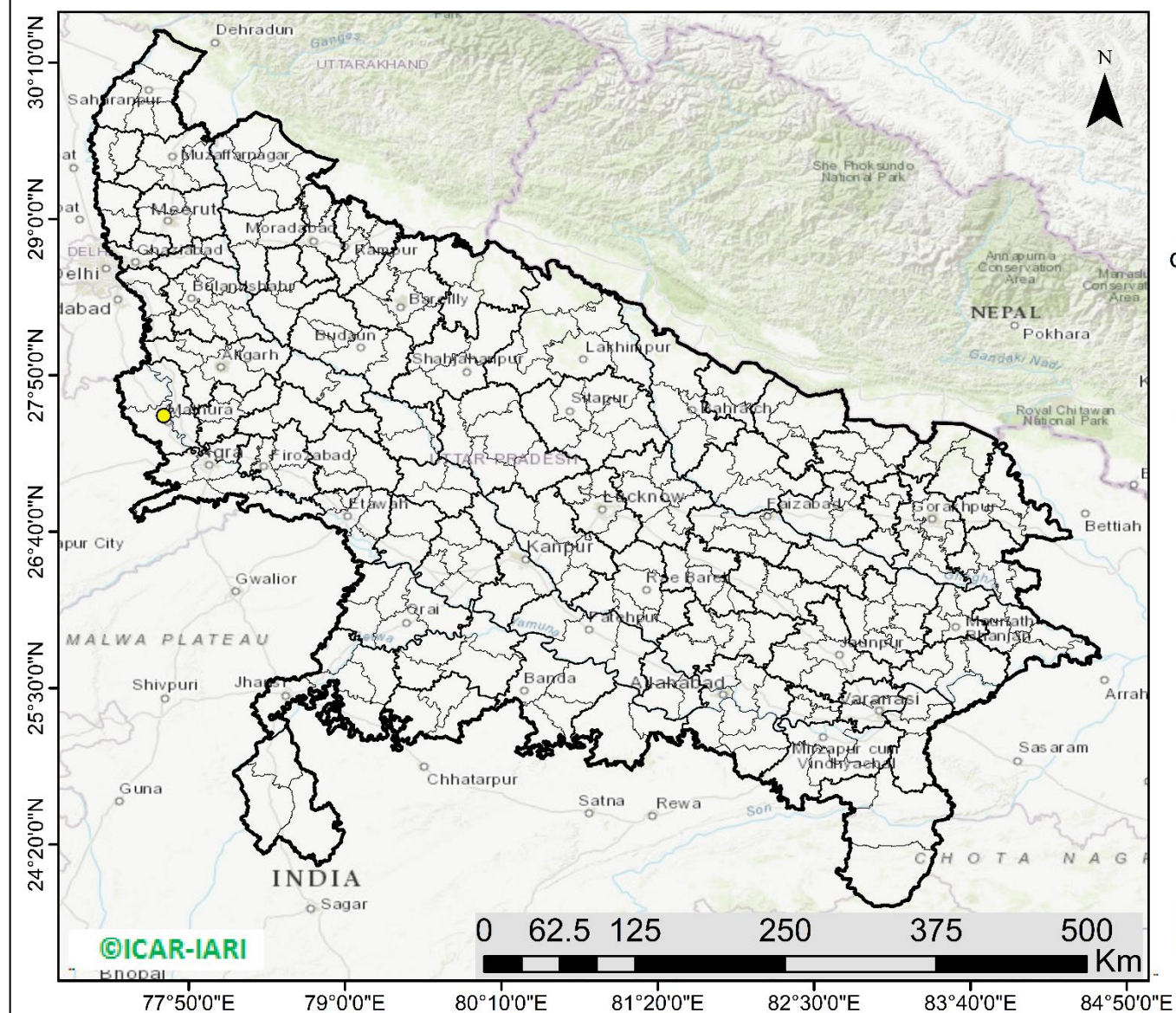
<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

District-wise cumulative number of residues burning events in Punjab (15-24 Sep-2021)



Uttar Pradesh

RICE RESIDUE BURNING IN UTTAR PRADESH



01 burning events
detected in Uttar Pradesh on
24th September 2021

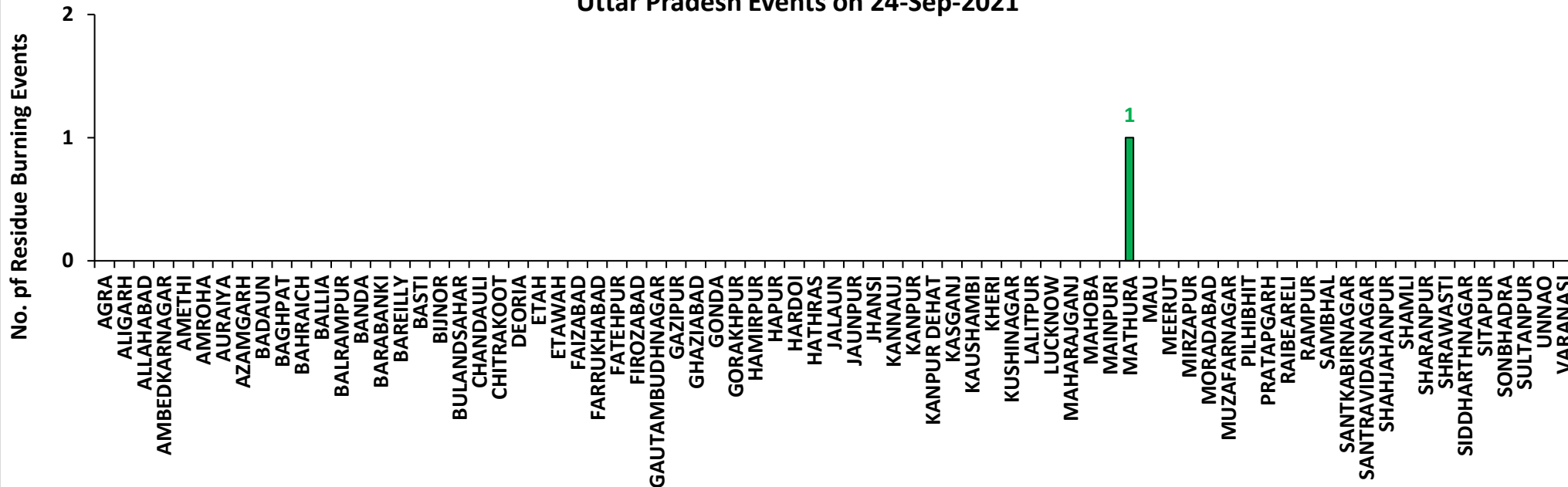
Fire Intensity (W/m²)



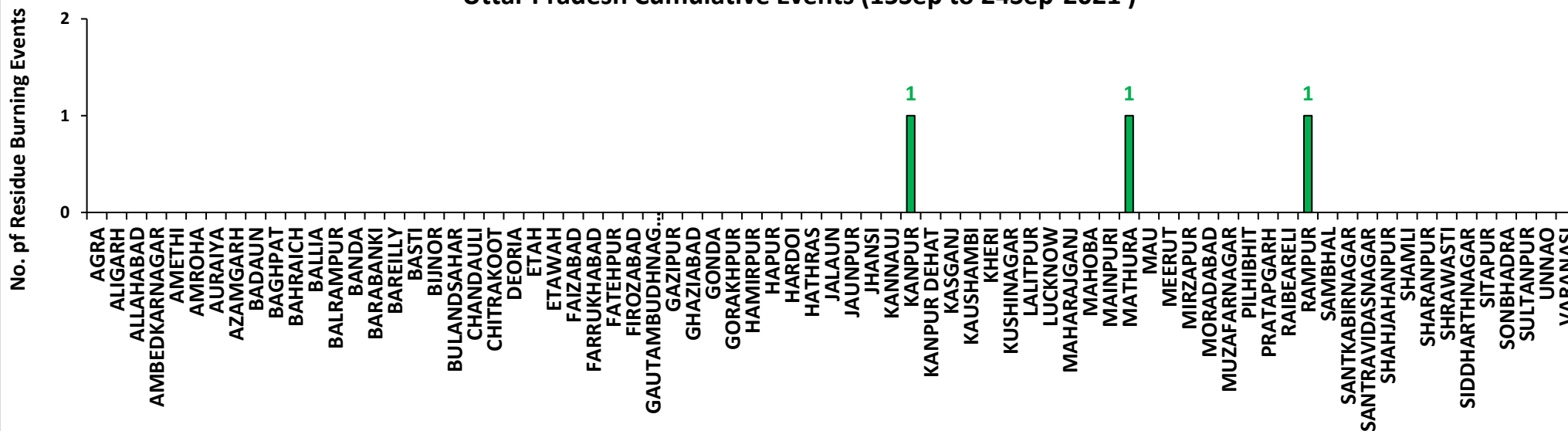
<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

District-wise cumulative number of residues burning events in Uttar Pradesh (15-23 Sep-2021)

Uttar Pradesh Events on 24-Sep-2021



Uttar Pradesh Cumulative Events (15Sep to 24Sep-2021)



District-wise and date wise cumulative number of residues burning events detected in 2020 and 2021
(Period: 15-24 September)

(a) Punjab

District	15 Sep - 24 Sep	
	2020	2021
AMRITSAR	299	23
BARNALA	1	0
BATHINDA	0	0
FARIDKOT	0	1
FATEHGARH SAHIB	0	0
FAZILKA	0	0
FIROZPUR	0	0
GURDASPUR	1	0
HOSHIARPUR	0	0
JALANDHAR	0	0
KAPURTHALA	2	0
LUDHIANA	3	1
MANSA	1	0
MOGA	2	0
MUKTSAR	1	0
PATHANKOT	0	0
PATIALA	1	3
RUPNAGAR	0	0
SANGRUR	0	0
SAS NAGAR (MOHALI)	3	0
SBS NAGAR	0	0
TARN TARAN	25	1
TOTAL	339	29

(b) Uttar Pradesh

District	15 Sep - 24 Sep							
	2020	2021	GAUTAMBUDHNAGAR	0	0	MUZAFARNAGAR	0	0
AGRA	0	0	GAZIPUR	0	0	PILHIBHIT	0	0
ALIGARH	0	0	GHAZIABAD	0	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	1	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	0	0
BADAUN	0	0	JALAUN	0	0	SHAMLI	1	0
BAGHPAT	1	0	JAUNPUR	0	0	SHARANPUR	0	0
BAHRAICH	0	0	JHANSI	0	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	7	3
BULANDSAHAR	0	0	LALITPUR	0	0			
CHANDAULI	0	0	LUCKNOW	0	0			
CHITRAKOOT	0	0	MAHARAJGANJ	0	0			
DEORIA	0	0	MAHOBA	0	0			
ETAH	0	0	MAINPURI	0	0			
ETAWAH	0	0	MATHURA	0	1			
FAIZABAD	0	0	MAU	0	0			
FARRUKHABAD	0	0	MEERUT	0	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 - 24 September)

Number of Paddy Residue Burning Events Detected												
	Punjab		Haryana		Uttar Pradesh		Delhi		Rajasthan		Madhya Pradesh	
	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021
15-Sep	5	0	2	0	1	0	0	0	1	0	2	0
16-Sep	0	2	1	0	0	0	0	0	0	0	0	0
17-Sep	5	0	3	0	0	0	0	0	0	0	0	0
18-Sep	17	9	0	0	0	1	0	0	0	0	0	0
19-Sep	30	5	2	0	0	1	0	0	0	0	0	0
20-Sep	67	8	6	0	2	0	0	0	0	0	0	0
21-Sep	54	0	2	0	1	0	0	0	1	0	2	0
22-Sep	34	0	1	0	1	0	0	0	0	0	0	0
23-Sep	49	0	0	0	1	0	0	0	1	0	0	0
24-Sep	78	5	0	0	1	1	0	0	0	0	0	0
Total	339	29	17	0	7	3	0	0	3	0	4	0

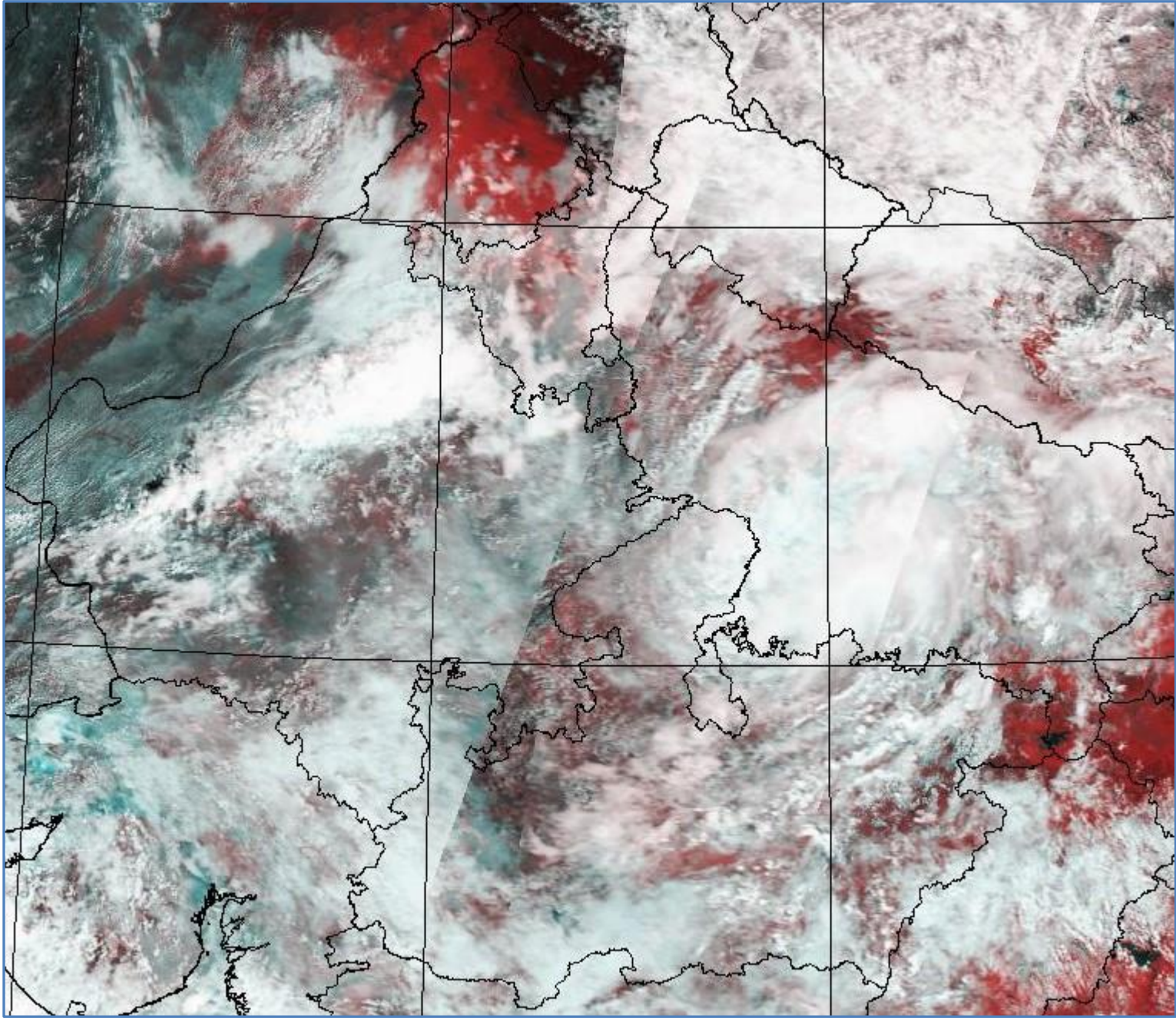
Details of residue burning events in Punjab on 24-Sep-2021

S. No.	District	Block	Satellite	Latitude	Longitude	ACQ_DATE	ACQ_TIME	Day / Night	Fire Power (W/m ²)
1	AMRITSAR	AJNALA	S-NPP	30.88180	76.02720	9/24/2021	13:16:33	D	2.00
2	AMRITSAR	ATTARI	S-NPP	31.59080	74.78970	9/24/2021	13:16:33	D	2.40
3	AMRITSAR	JANDIALA GURU	S-NPP	31.60380	75.00600	9/24/2021	13:16:33	D	12.10
4	AMRITSAR	MAJITHA	S-NPP	31.78160	75.06690	9/24/2021	13:16:33	D	4.30
5	LUDHIANA	LUDHIANA-1	AQUA	31.87600	74.70000	9/24/2021	13:26:08	D	8.70

Details of residue burning events in Uttar Pradesh on 24-Sep-2021

S. No.	District	Block	Satellite	Longitude	Latitude	ACQ_DATE	ACQ_TIME	Day / Night	Fire Power (W/m ²)
1	MATHURA	MATHURA	S-NPP	27.53210	77.64740	9/24/2021	02:06:33	N	1.30

METOP-1 (VHRR) Satellite image (FCC) of North and Central India Acquired on 24-Sep-2021 at 10:46:05 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)
