



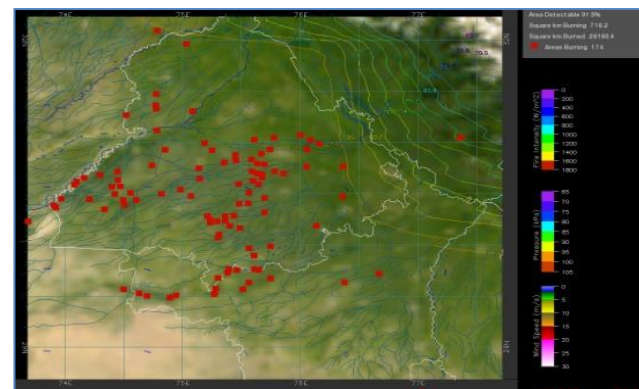
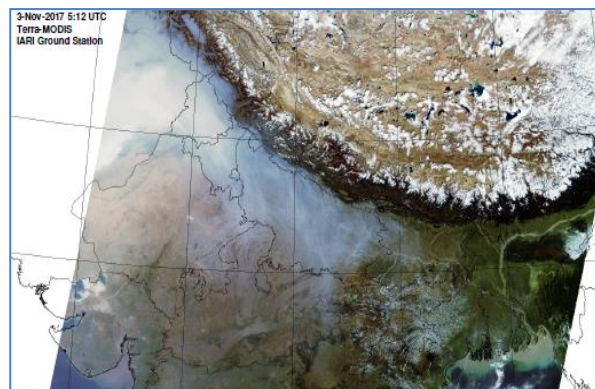
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# MONITORING PADDY RESIDUE BURNING IN INDIA USING SATELLITE REMOTE SENSING DURING 2021



Prepared by:

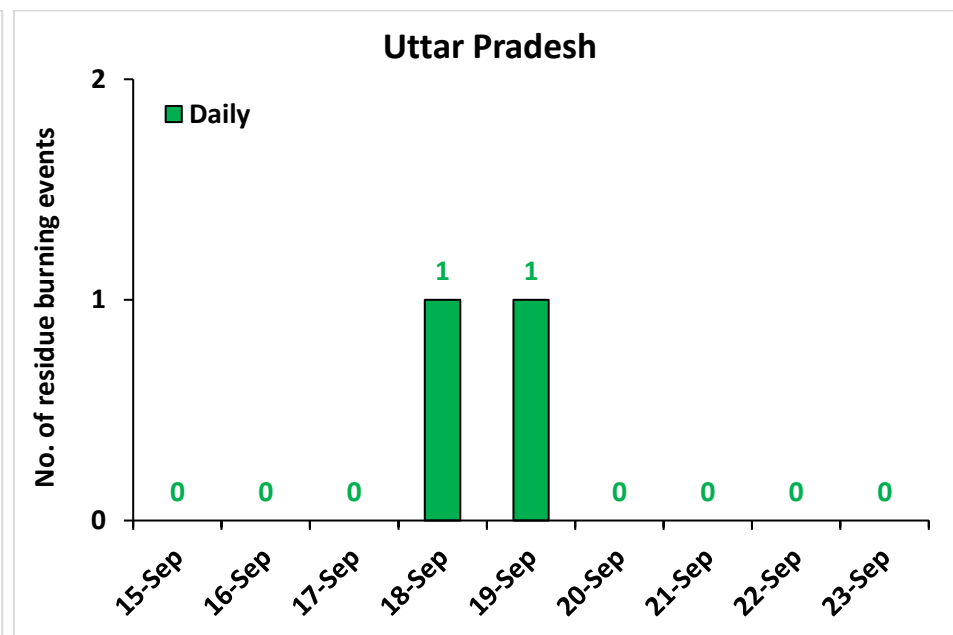
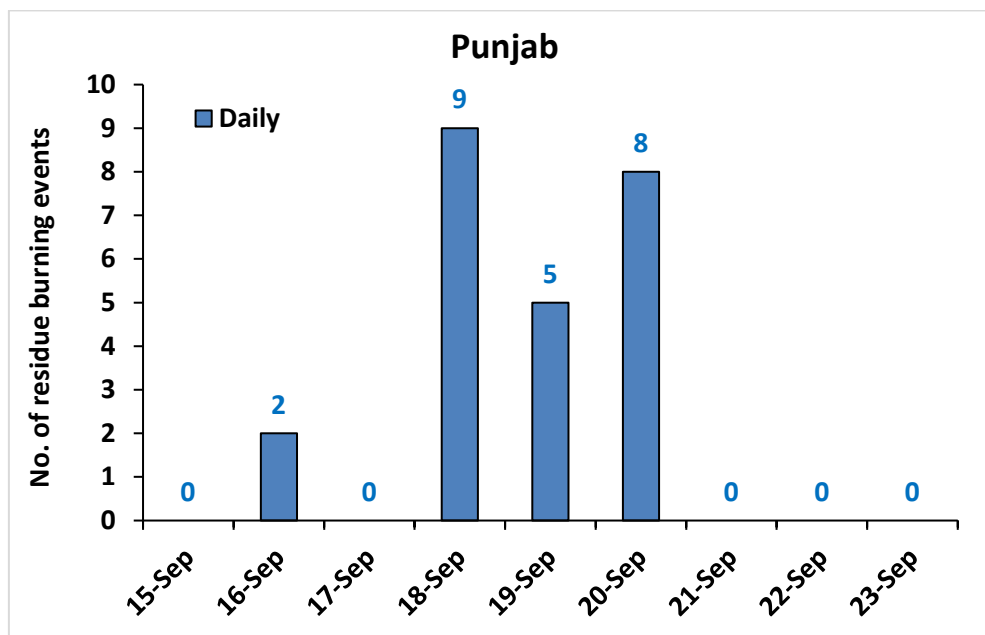
Consortium for Research on Agroecosystem Monitoring and Modeling from Space (CREAMS) Laboratory,  
Division of Agricultural Physics, ICAR – Indian Agricultural Research Institute, New Delhi – 110012

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

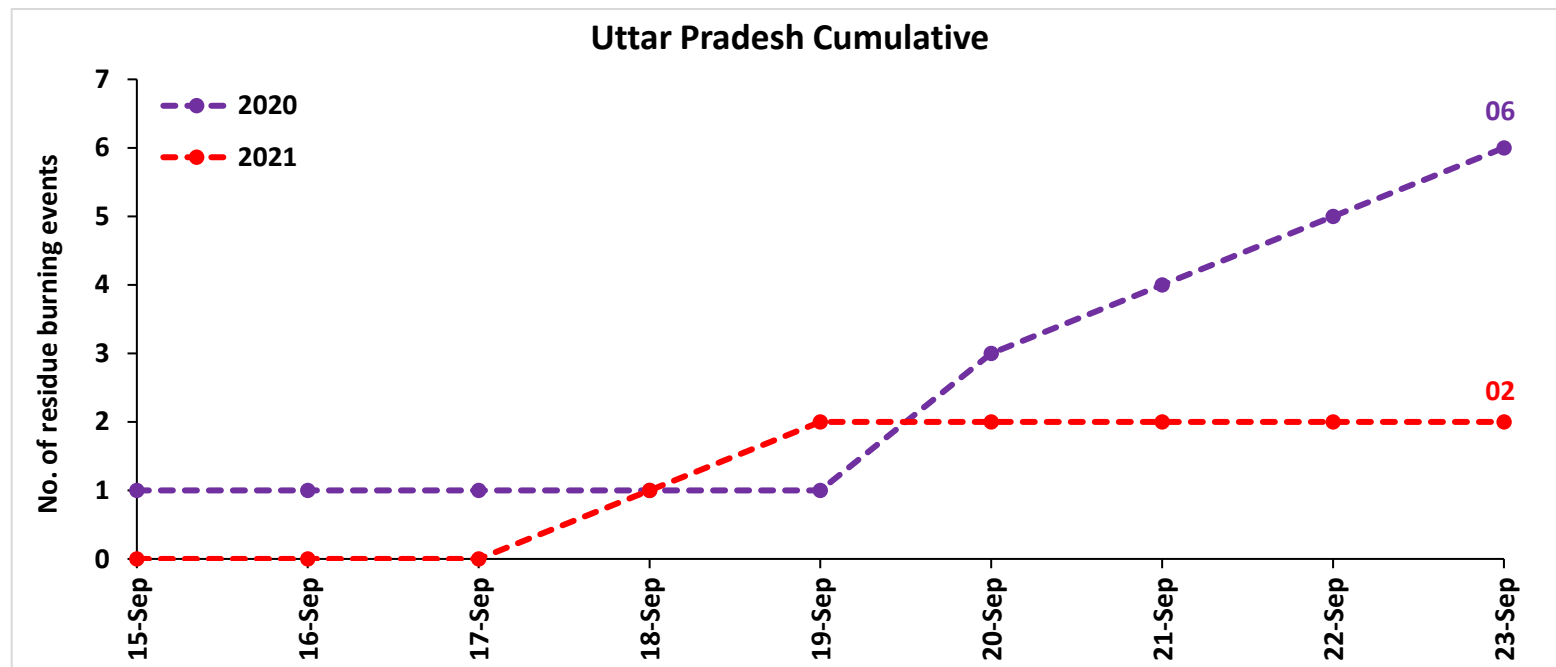
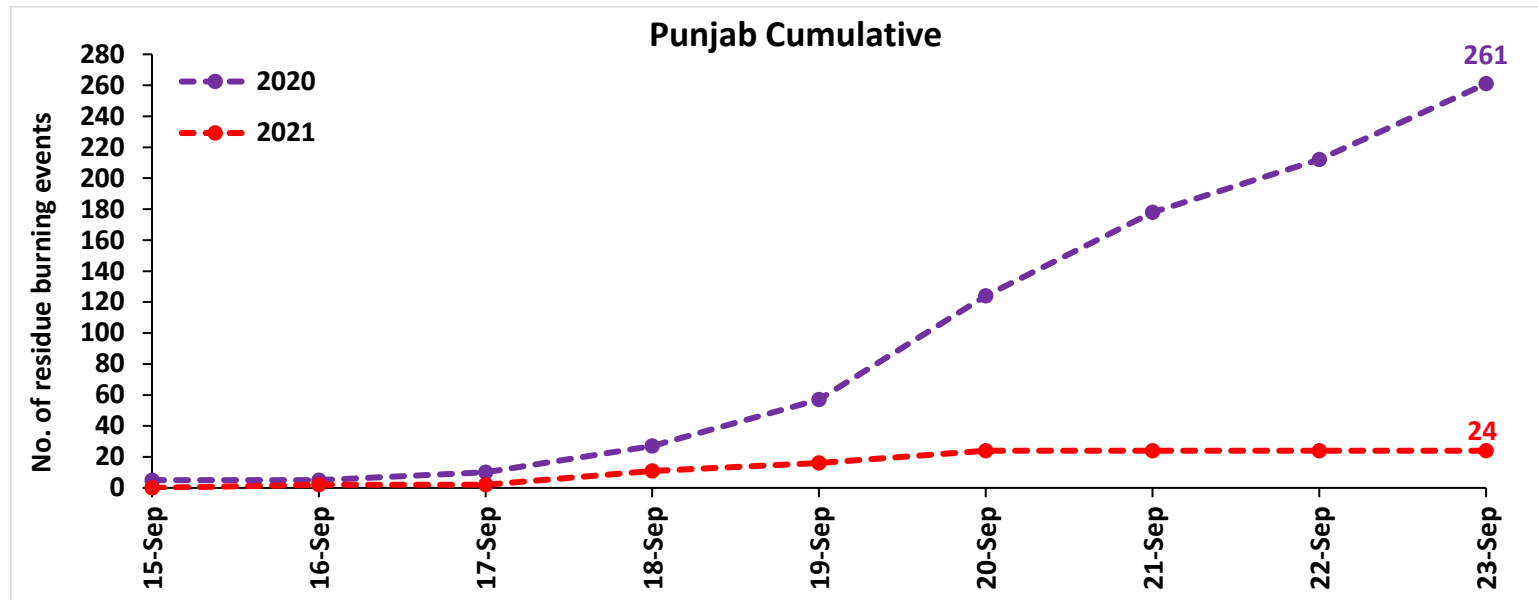
## Highlights for 23-September-2021

- 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 **00** residue burning events in the six study States on 23-Sep-2021.
- The state wise events detected on 23-Sep-2021 were **0** in Punjab, **0** in Haryana, **0** 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 Punjab, Haryana, Delhi, Rajasthan, Western Uttar Pradesh and Western Madhya Pradesh.

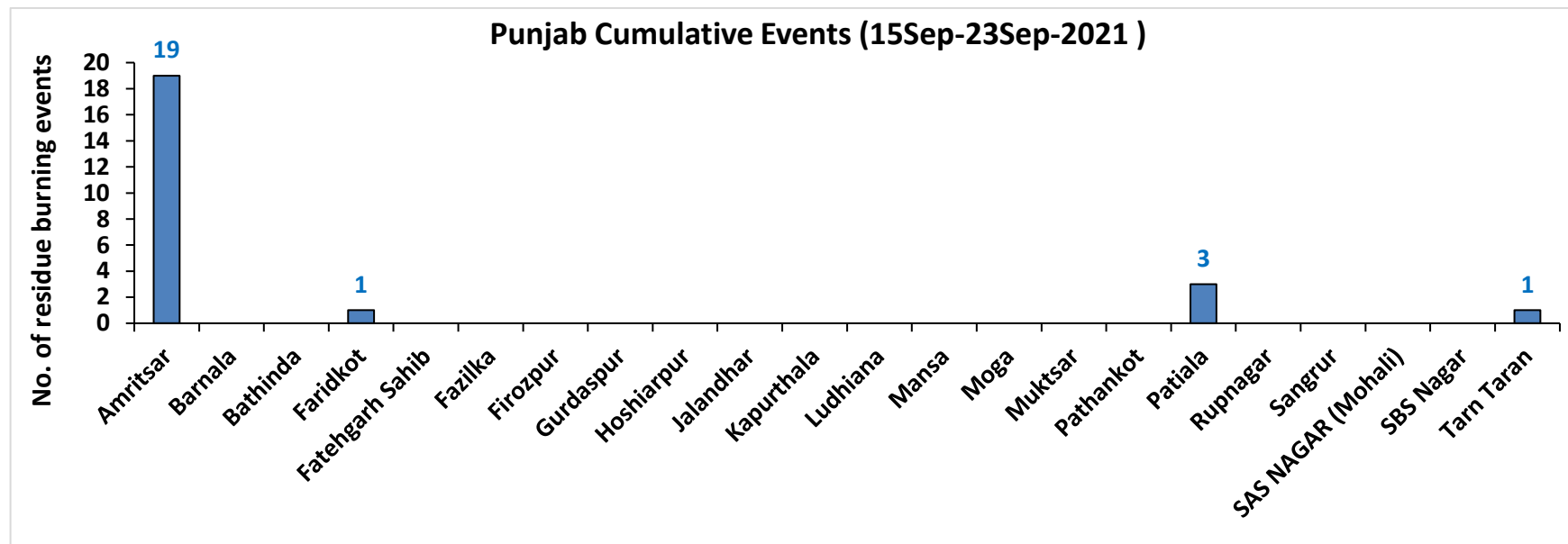
### Temporal distribution of rice residue burning events for the study States in 2021



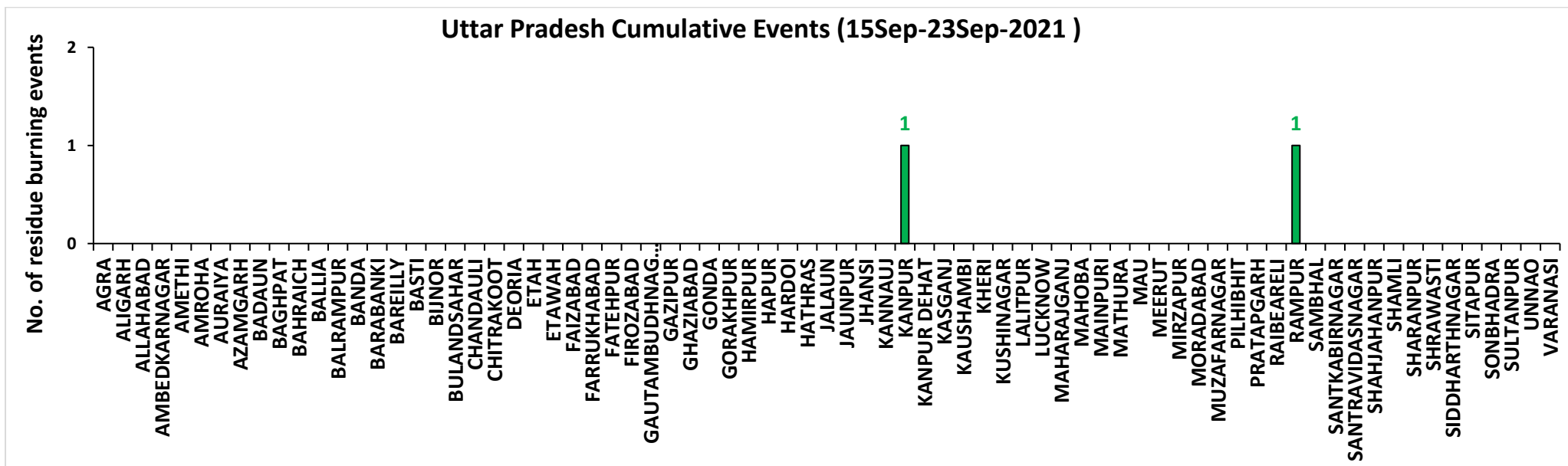
### Comparison of residue burning events in current year (2021) with previous year (2020) for the study States



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



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



**District-wise and date wise cumulative number of residues burning events detected in 2020 and 2021**  
**(Period: 15-22 September)**

**(a) Punjab**

District	15 Sep - 23 Sep	
	2020	2021
AMRITSAR	231	19
BARNALA	0	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	0
MANSA	1	0
MOGA	2	0
MUKTSAR	1	0
PATHANKOT	0	0
PATIALA	0	3
RUPNAGAR	0	0
SANGRUR	0	0
SAS NAGAR (MOHALI)	3	0
SBS NAGAR	0	0
TARN TARAN	17	1
<b>TOTAL</b>	<b>261</b>	<b>24</b>

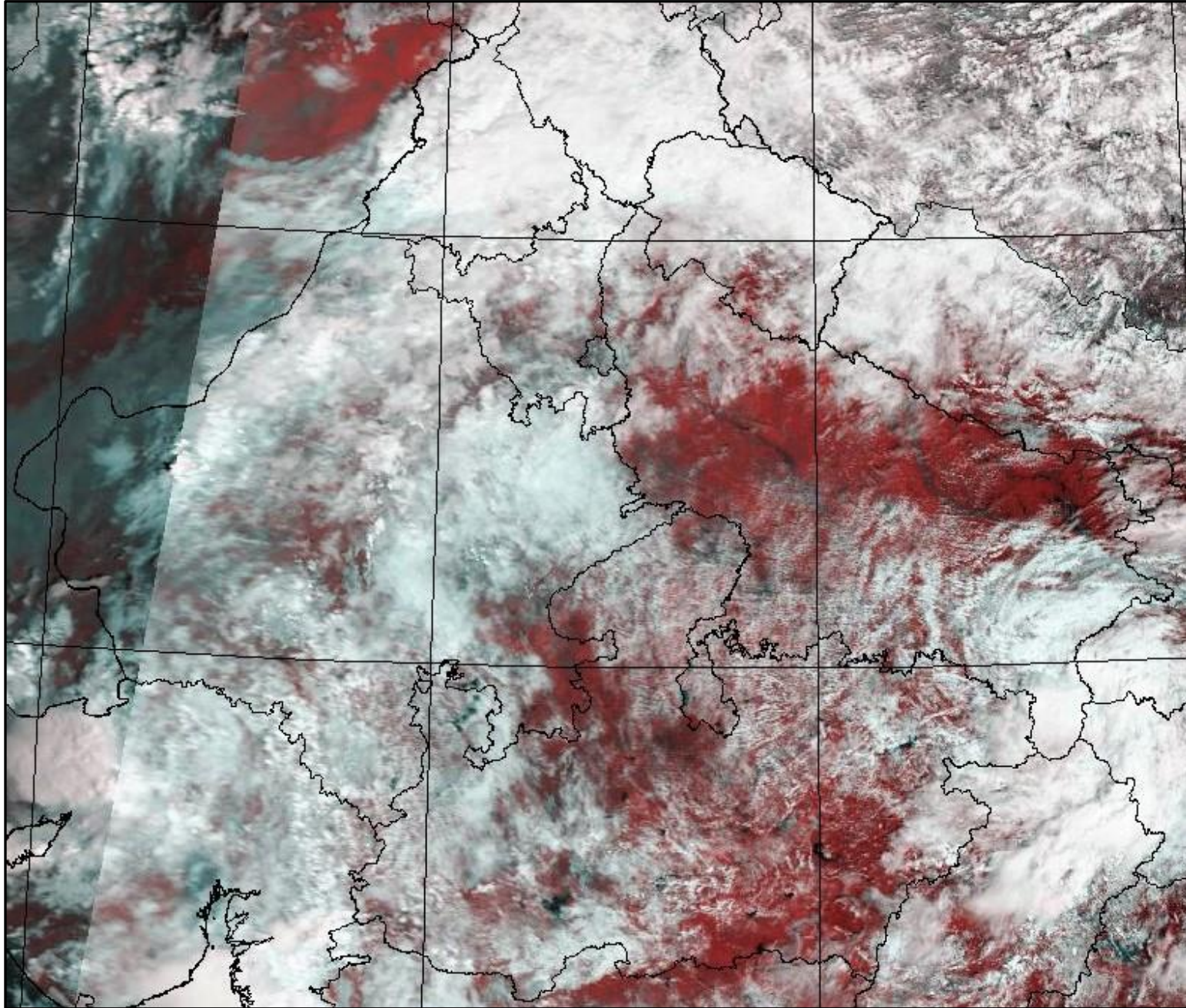
(b) Uttar Pradesh

District	15 Sep - 23 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	0	0	KUSHINAGAR	0	0	Total	6	2
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	0			
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 - 23 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>Total</b>	<b>261</b>	<b>24</b>	<b>17</b>	<b>0</b>	<b>6</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>4</b>	<b>0</b>

METOP-1 (VHRR) Satellite image (FCC) of North and Central India Acquired on 23-Sep-2021 at 09:13:20 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

### Study Team

ICAR – HQ	Dr S.K. Chaudhari	DDG (AG. ENGG.)	<a href="mailto:ddgengg@icar.org.in">ddgengg@icar.org.in</a>
	Dr S. Bhasker	ADG (NRM)	<a href="mailto:adgagroandaf@gmail.com">adgagroandaf@gmail.com</a>
	Dr K.K. Singh	ADG (AG. ENGG.)	<a href="mailto:kanchansingh044@gmail.com">kanchansingh044@gmail.com</a>
ICAR - IARI	<b>Dr V.K. Sehgal</b>	Professor & Nodal Scientist	<a href="mailto:iaricreams@gmail.com">iaricreams@gmail.com</a>
	Dr Rajkumar Dhakar	Scientist	<a href="mailto:raidhakar.iari@gmail.com">raidhakar.iari@gmail.com</a>
	Mr Mohd Jahangir	Lab Assistant (KRISHI)	<a href="mailto:mjahangir198@gmail.com">mjahangir198@gmail.com</a>
ICAR - ATARI	Dr Rajbir Singh	Director ATARI (Zone-I) Ludhiana	<a href="mailto:rajbirsingh.zpd@gmail.com">rajbirsingh.zpd@gmail.com</a>
	Dr S.K. Singh	Director ATARI (Zone-II) Jodhpur	<a href="mailto:sushilsinghiipr@yahoo.co.in">sushilsinghiipr@yahoo.co.in</a>
	Dr Atar Singh	Director ATARI (Zone-III) Kanpur	<a href="mailto:zpdicarkanpur@gmail.com">zpdicarkanpur@gmail.com</a>
ICAR - IASRI	Dr Rajender Parsad	Director	<a href="mailto:rajender.parsad@icar.gov.in">rajender.parsad@icar.gov.in</a>

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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