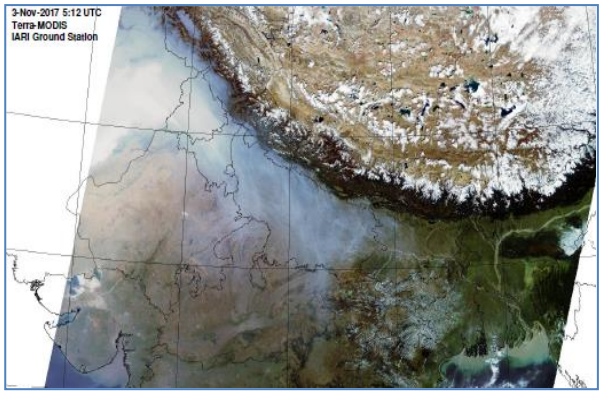
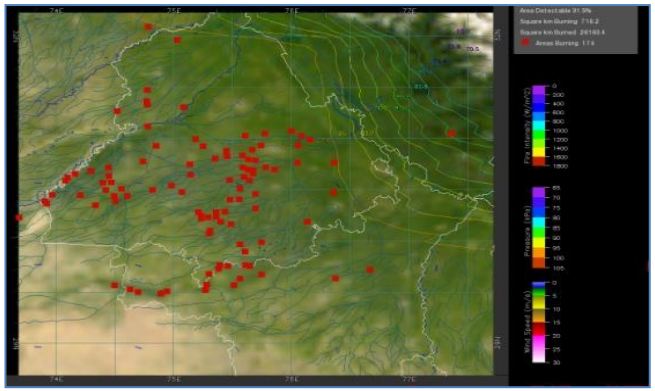
# MONITORING PADDY RESIDUE BURNING IN INDIA USING SATELLITE REMOTE SENSING DURING 2021



**Bulletin No. 11**

**Events Date: 25-Sep-2021**

**Issued on: 25-Sep-2021**

**Prepared by:**

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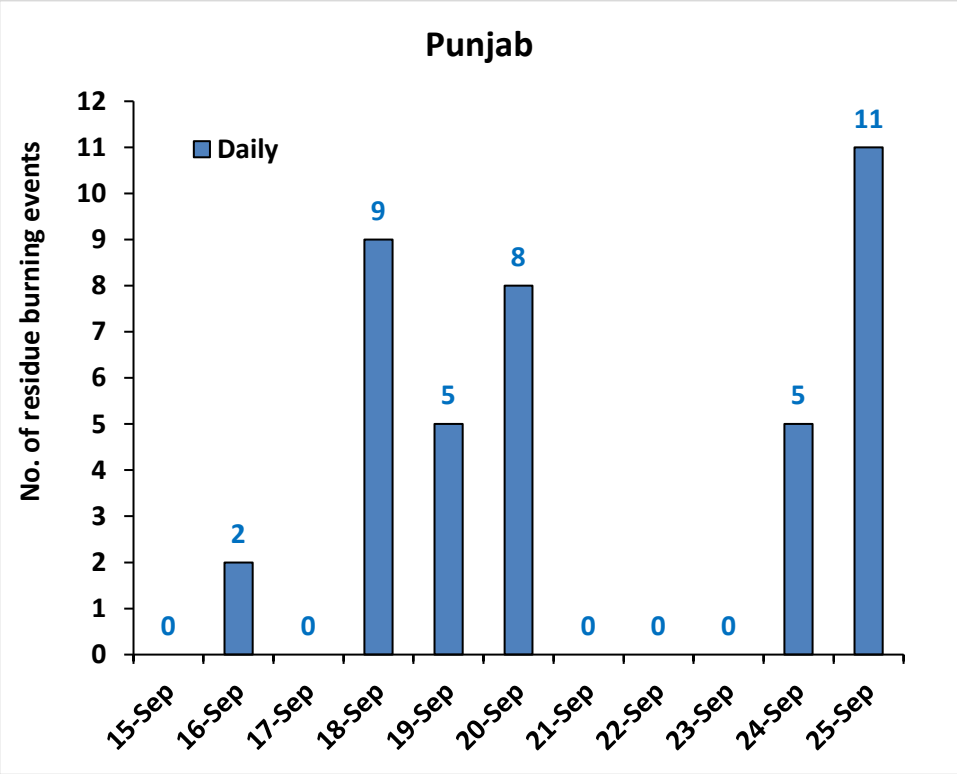
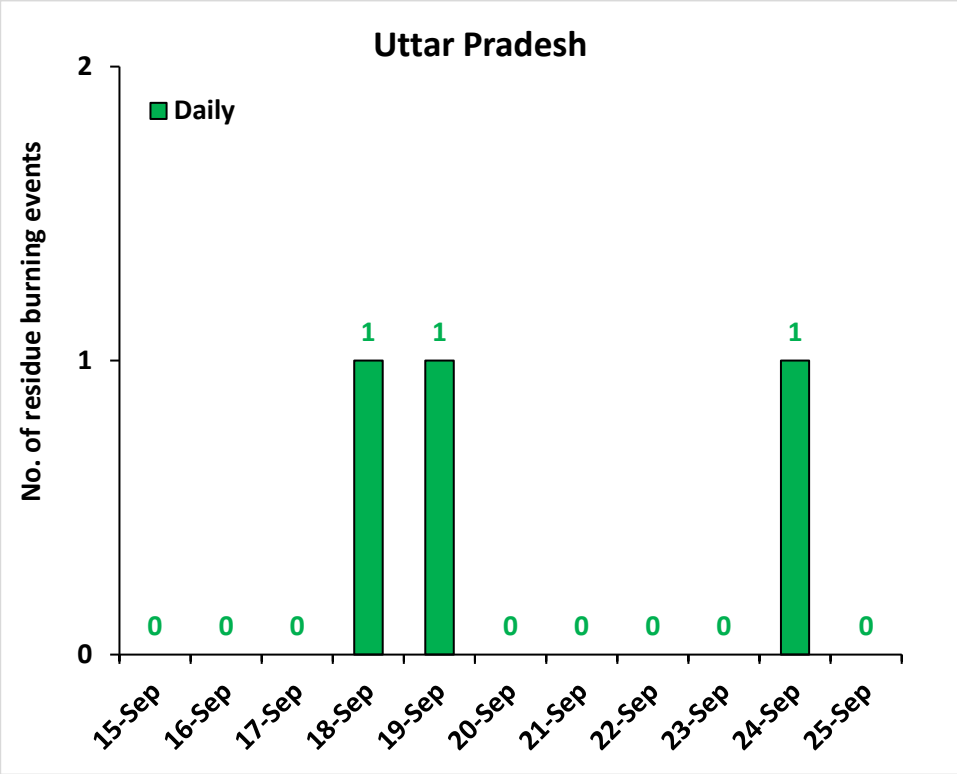
**http://creams.iari.res.in**

# Highlights for 25-September-2021

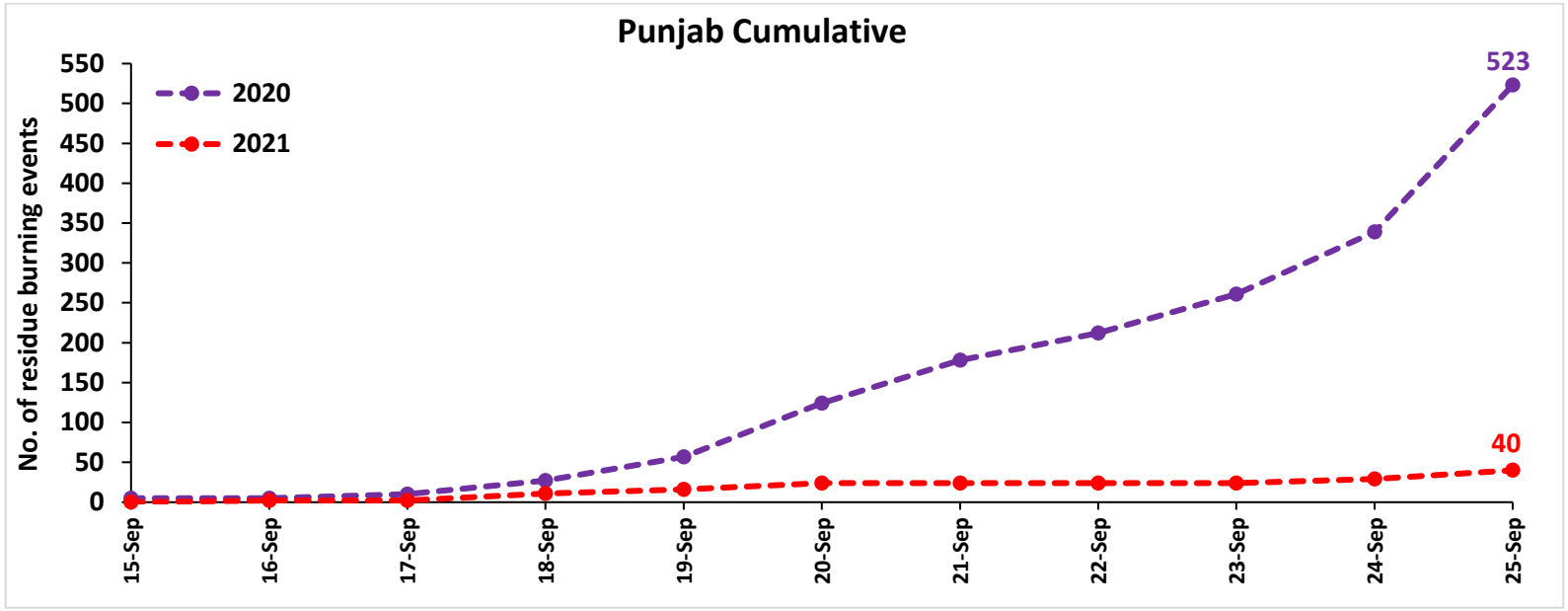
- The active fire events due to rice residue burning were monitored using satellite remote sensing, following the new "Standard Protocol for Estimation of Crop Residue Burning Fire Events using Satellite Data".
- Satellites detected **11** residue burning events in the six study States on 25-Sep-2021.
- The state wise events detected on 25-Sep-2021 were **11** 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 Delhi, Eastern Rajasthan, Uttar Pradesh and Madhya Pradesh.

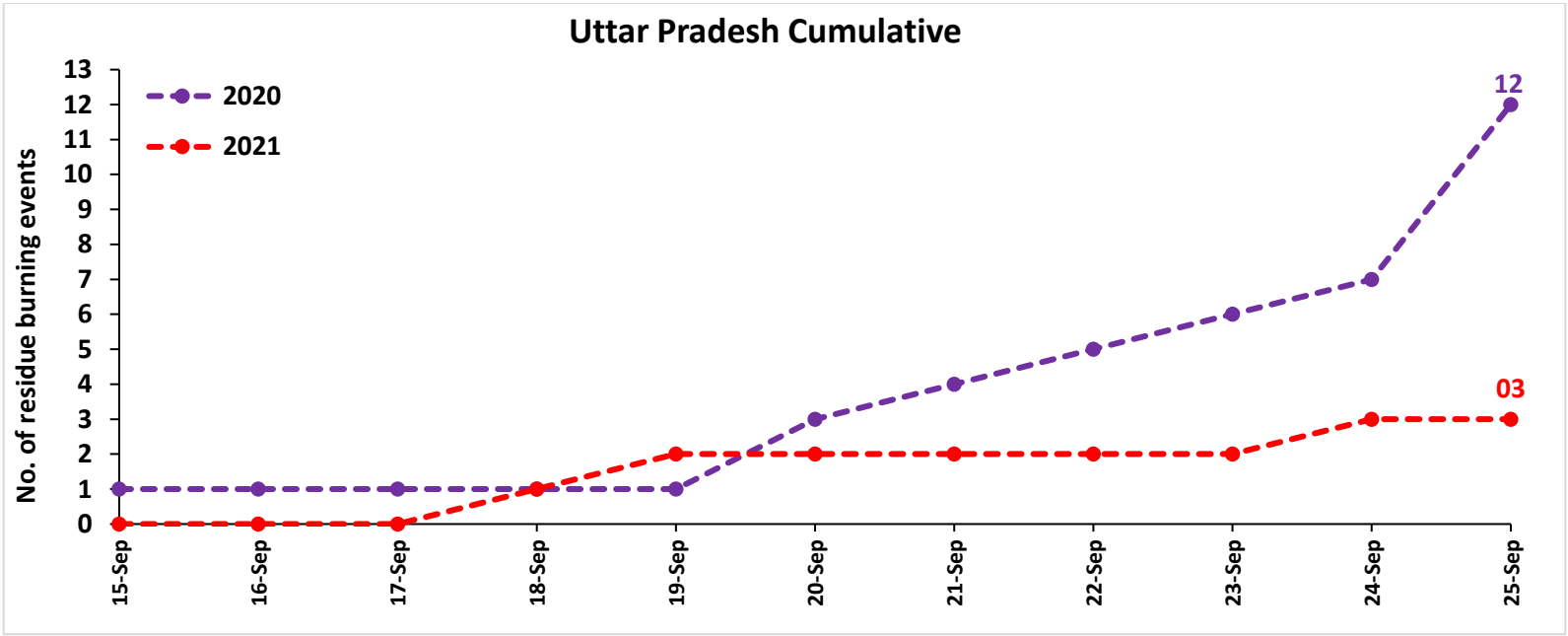
## Temporal distribution of rice residue burning events for the study States in 2021



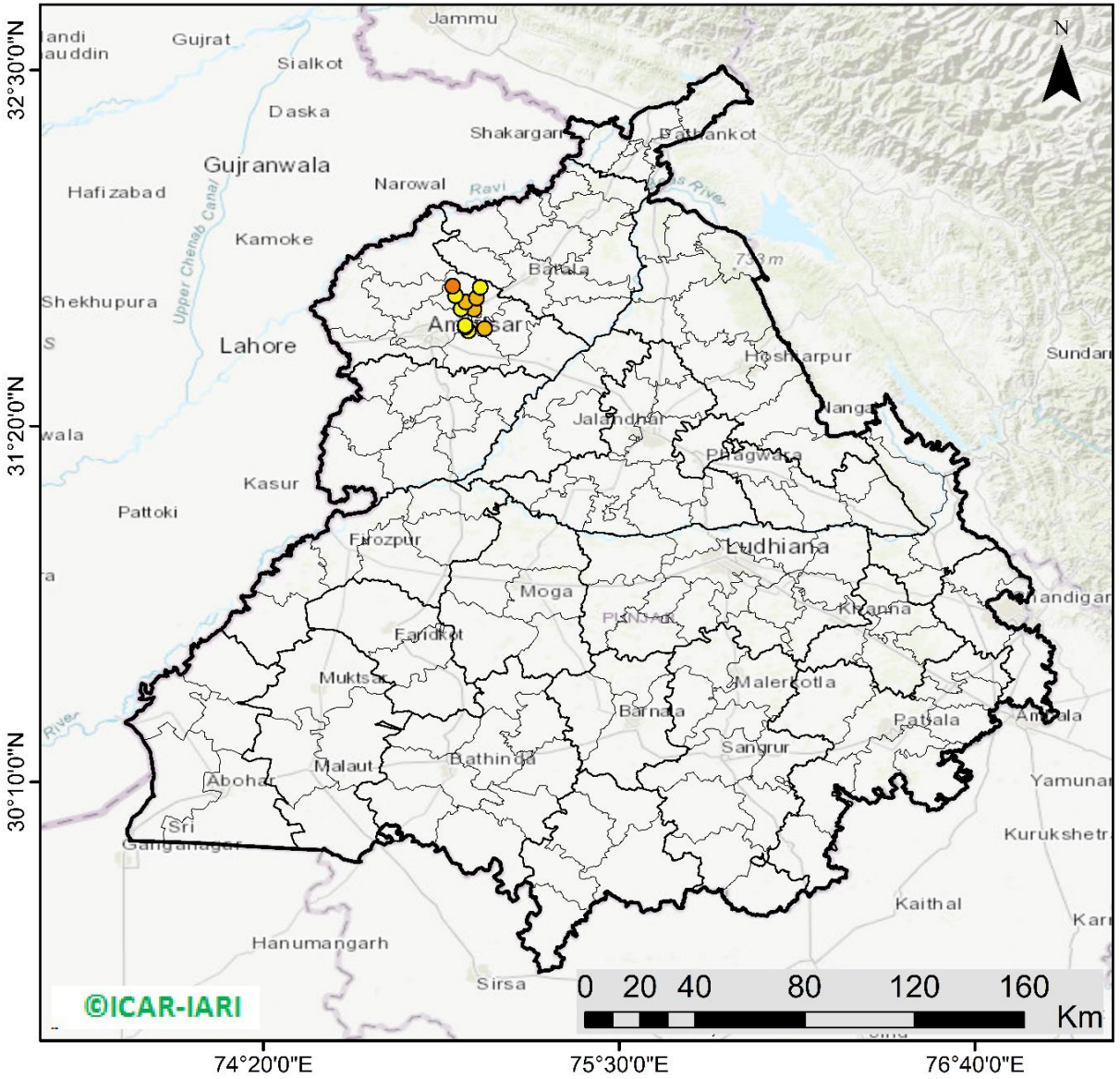
## Comparison of residue burning events in current year (2021) with previous year (2020) for the study States



# Punjab

## RICE RESIDUE BURNING IN PUNJAB



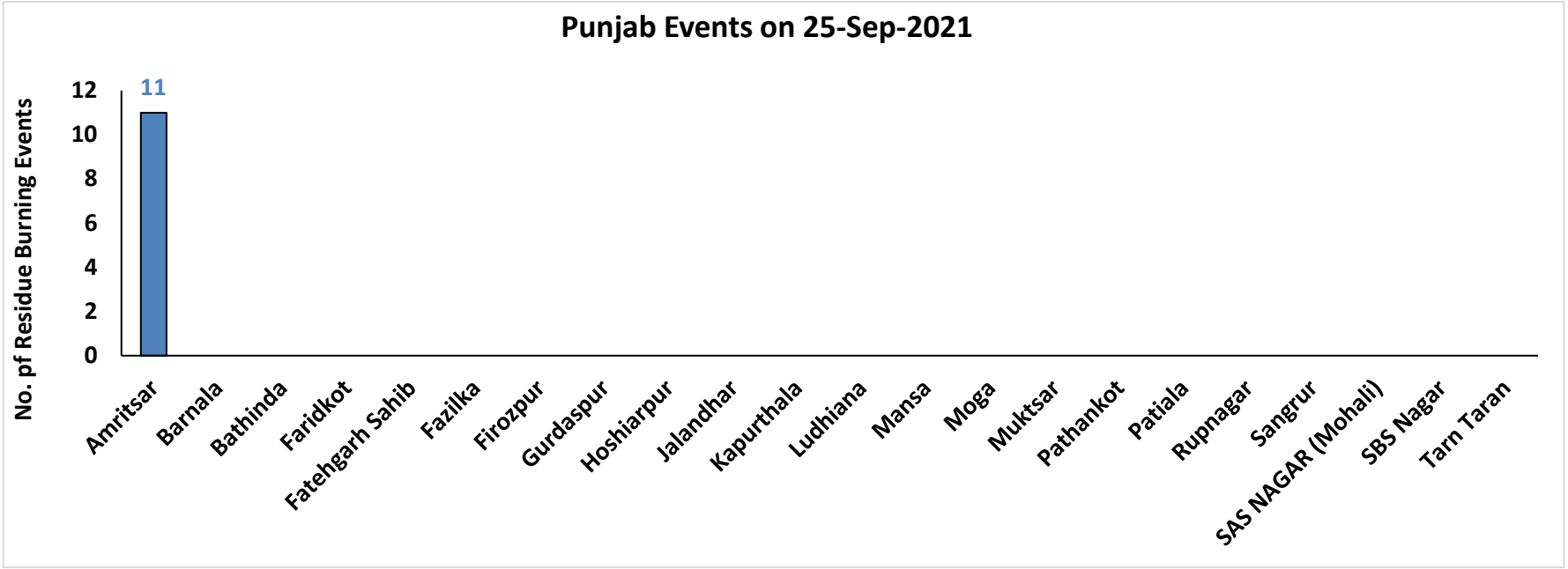

**11** burning events detected in Punjab on **25th September 2021**

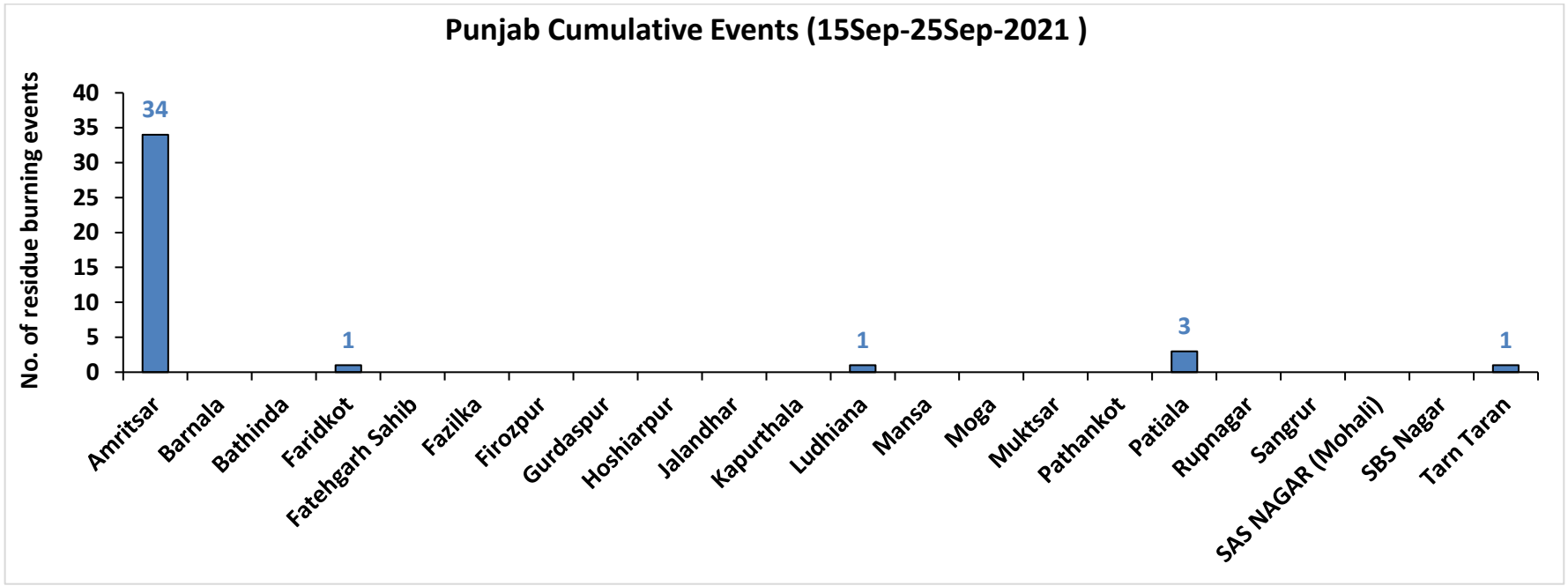
### Fire Intensity (W/m2)

- 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 Punjab (15-25 Sep-2021)



# District-wise and date wise cumulative number of residues burning events detected in 2020 and 2021 (Period: 15-25 September)

## (a) Punjab

| District | 15 Sep - 25 Sep | |
|---|---|---|
| | 2020 | 2021 |
| AMRITSAR | 425 | 34 |
| BARNALA | 1 | 0 |
| BATHINDA | 0 | 0 |
| FARIDKOT | 1 | 1 |
| FATEHGARH SAHIB | 0 | 0 |
| FAZILKA | 0 | 0 |
| FIROZPUR | 2 | 0 |
| GURDASPUR | 5 | 0 |
| HOSHIARPUR | 0 | 0 |
| JALANDHAR | 2 | 0 |
| KAPURTHALA | 5 | 0 |
| LUDHIANA | 5 | 1 |
| MANSA | 1 | 0 |
| MOGA | 3 | 0 |
| MUKTSAR | 1 | 0 |
| PATHANKOT | 0 | 0 |
| PATIALA | 11 | 3 |
| RUPNAGAR | 0 | 0 |
| SANGRUR | 2 | 0 |
| SAS NAGAR (MOHALI) | 3 | 0 |
| SBS NAGAR | 0 | 0 |
| TARN TARAN | 56 | 1 |
| **TOTAL** | **523** | **40** |

## (b) Uttar Pradesh

| District | 15 Sep - 25 Sep | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 2020 | 2021 | GAUTAMBUDHNAGAR | 0 | 0 | MUZAFARNAGAR | 0 | 0 |
| AGRA | 0 | 0 | GAZIPUR | 0 | 0 | PILHIBHIT | 0 | 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 | 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 | SIDDHARTHNAGAR | 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 | 12 | 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 | 1 | 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

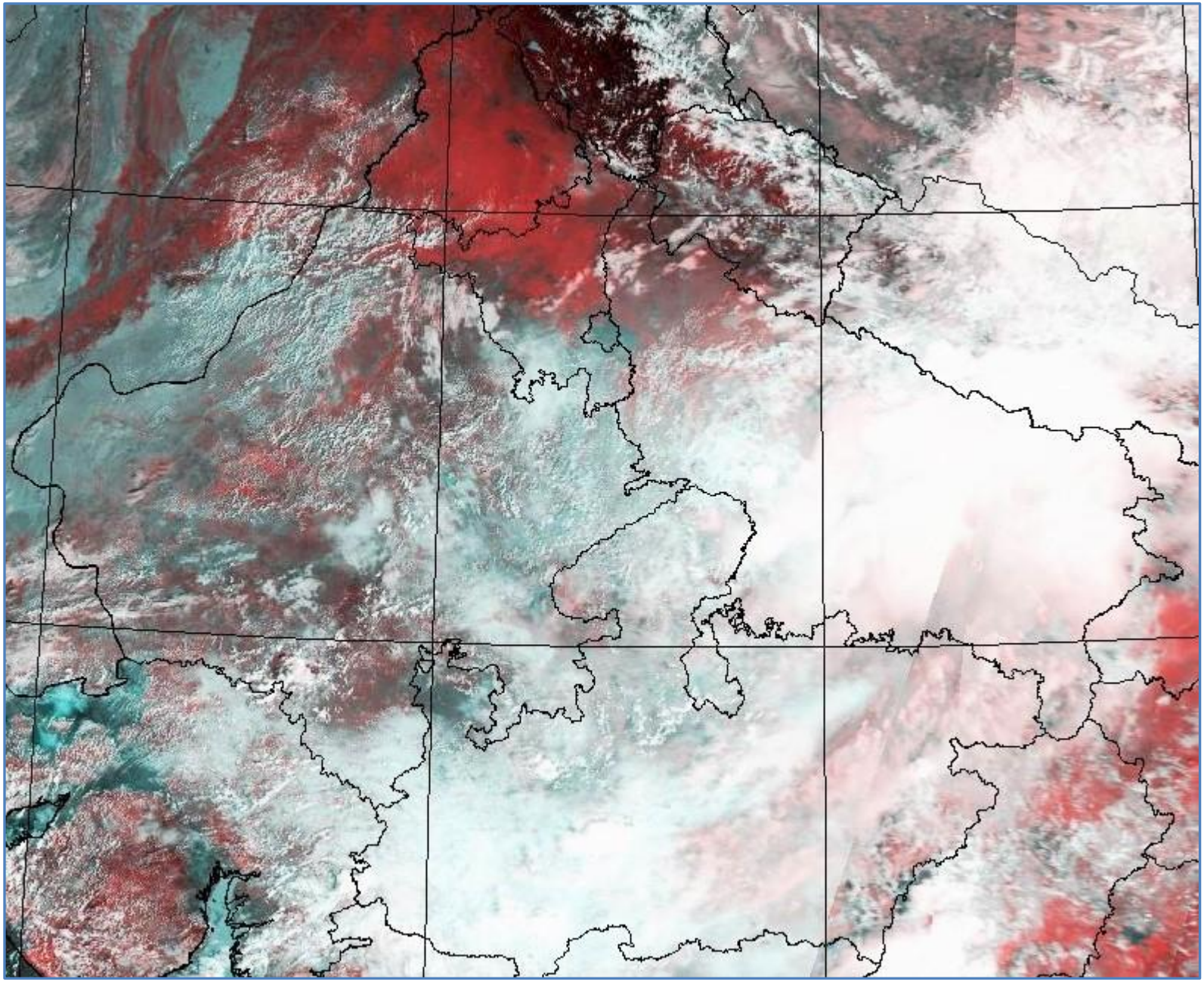
## (Period: 15 - 25 September)

| 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 |
| **25-Sep** | 184 | 11 | 11 | 0 | 5 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| **Total** | **523** | **40** | **28** | **0** | **12** | **3** | **0** | **0** | **4** | **0** | **4** | **0** |

# Details of residue burning events in Punjab on 25-Sep-2021

| S. No. | District | Block | Satellite | Latitude | Longitude | ACQ_DATE | ACQ_TIME | Day / Night | Fire Power (W/m2) |
|---|---|---|---|---|---|---|---|---|---|
| 1 | AMRITSAR | JANDIALA GURU | S-NPP | 31.64550 | 75.00560 | 9/25/2021 | 12:58:20 | D | 4.70 |
| 2 | AMRITSAR | MAJITHA | S-NPP | 31.65260 | 75.05920 | 9/25/2021 | 12:58:20 | D | 5.10 |
| 3 | AMRITSAR | MAJITHA | S-NPP | 31.65760 | 74.99640 | 9/25/2021 | 12:58:20 | D | 2.40 |
| 4 | AMRITSAR | MAJITHA | S-NPP | 31.66210 | 74.99510 | 9/25/2021 | 12:58:20 | D | 4.80 |
| 5 | AMRITSAR | MAJITHA | S-NPP | 31.71550 | 75.02380 | 9/25/2021 | 12:58:20 | D | 5.20 |
| 6 | AMRITSAR | MAJITHA | S-NPP | 31.71710 | 74.98160 | 9/25/2021 | 12:58:20 | D | 2.00 |
| 7 | AMRITSAR | MAJITHA | S-NPP | 31.73950 | 74.99730 | 9/25/2021 | 12:58:20 | D | 5.60 |
| 8 | AMRITSAR | MAJITHA | S-NPP | 31.75200 | 75.03250 | 9/25/2021 | 12:58:20 | D | 9.30 |
| 9 | AMRITSAR | TARSIKKA | S-NPP | 31.76030 | 74.96320 | 9/25/2021 | 12:58:20 | D | 3.70 |
| 10 | AMRITSAR | VERKA | S-NPP | 31.78750 | 75.04410 | 9/25/2021 | 12:58:20 | D | 4.20 |
| 11 | AMRITSAR | VERKA | S-NPP | 31.79140 | 74.95390 | 9/25/2021 | 12:58:20 | D | 13.40 |

**METOP-1 (VHRR) Satellite image (FCC) of North and Central India Acquired on 25-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)**

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