



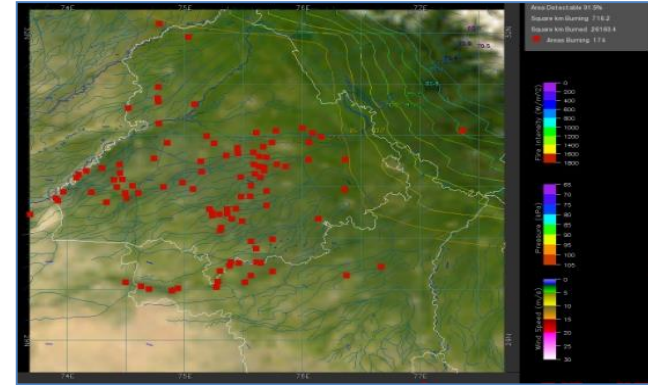
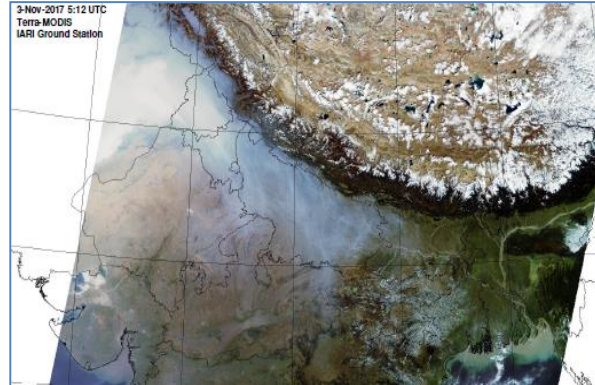
**Bulletin  
No. 52**

**Events Date:  
21-Nov-2019**

**Issued on:  
22-Nov-2019**



# **MONITORING PADDY RESIDUE BURNING IN NORTH INDIA USING SATELLITE REMOTE SENSING DURING 2019**



**Prepared by:**

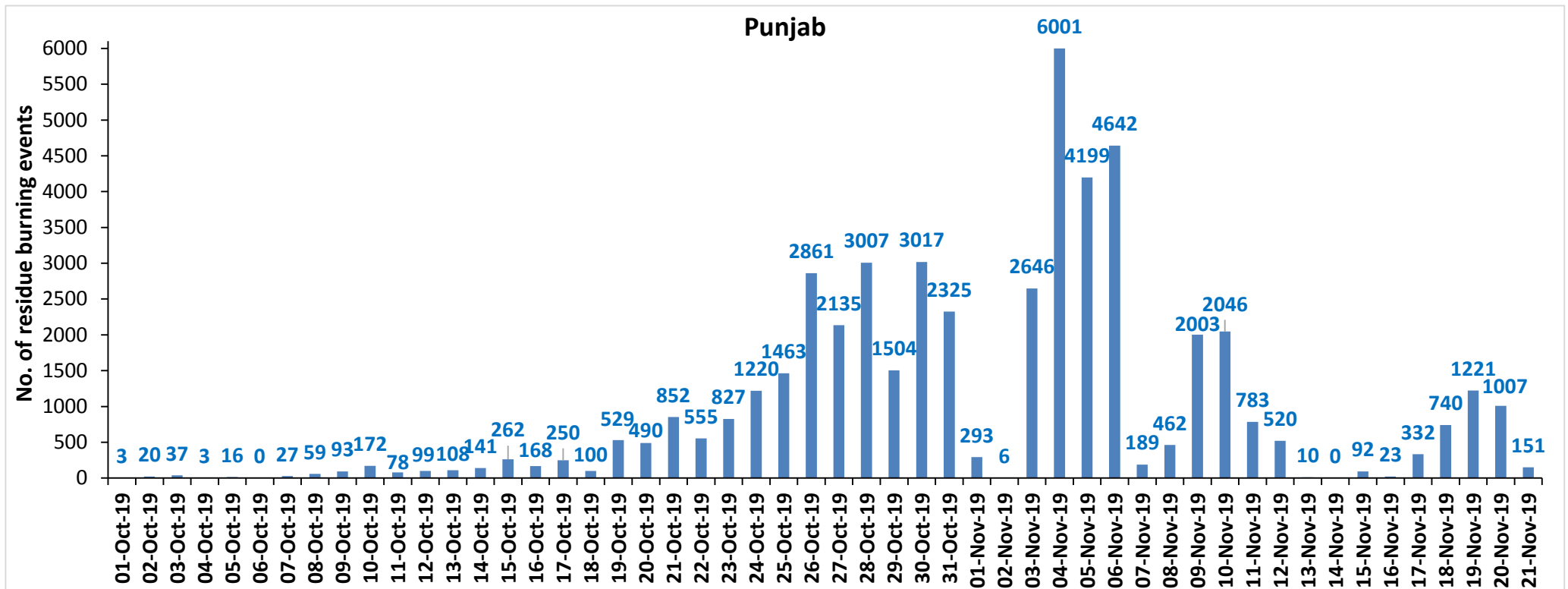
**Consortium for Research on Agroecosystem Monitoring and Modeling from Space (CREAMS) Laboratory,  
Division of Agricultural Physics, ICAR – Indian Agricultural Research Institute, New Delhi – 110012**

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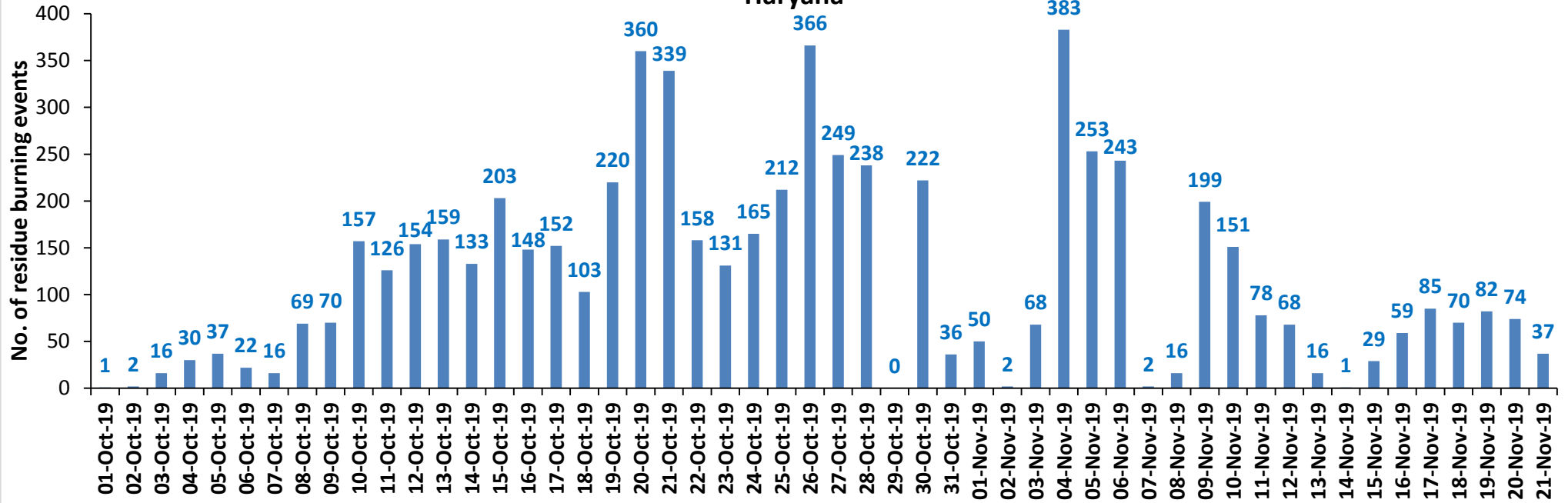
## Highlights for 21-November-2019

- Satellites detected **272** residue burning events in the three study States on **21-Nov-2019**.
- The burning events detected on **21-Nov-2019** are **151**, **37** and **84** in Punjab, Haryana and UP, respectively.
- The number of events has decreased from **1145** on **20-Nov-2019** to **272** on **21-Nov-2019** in the three states.
- The state of Punjab and Haryana were partially covered with clouds which prevented fire event detection by satellites
- Total **59556** burning events were detected in the three States between **01-Oct-2019** and **21-Nov-2019**, which are distributed as **49787**, **6260** and **3509** in Punjab, Haryana and UP, respectively.
- Overall, the total burning events recorded in the three states are **18.1%** less than in 2018 till date. UP recorded **37.5%** reduction, Haryana recorded **26.4%** reduction, and Punjab recorded **15.0%** reduction, respectively, in the current season than in 2018.

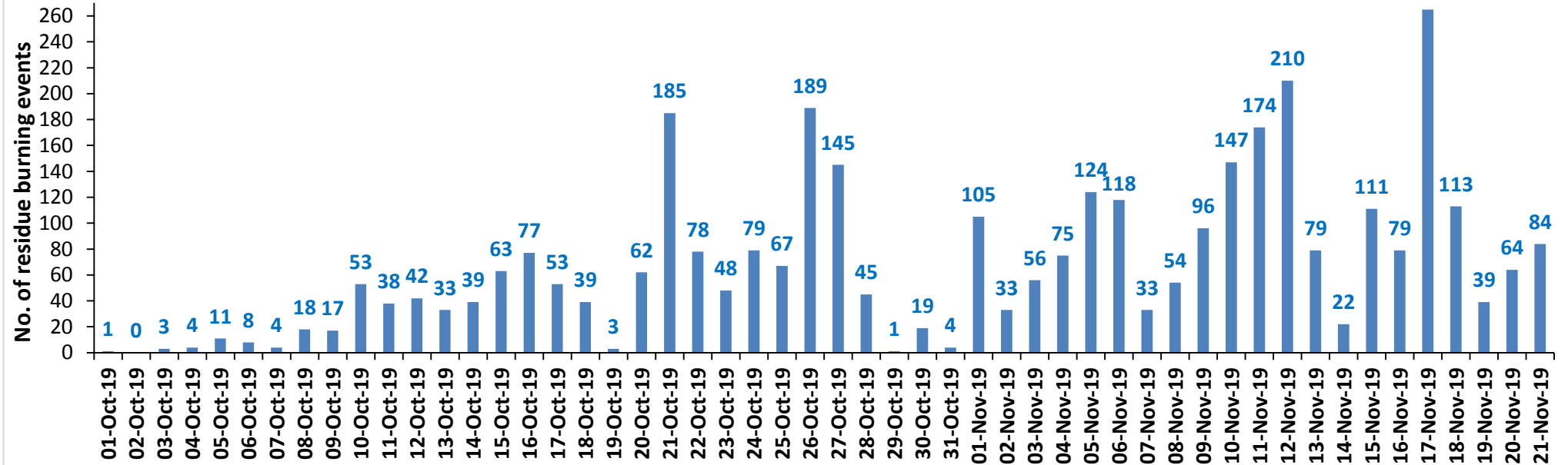
### Temporal distribution of residue burning events for the three study States in 2019



### Haryana

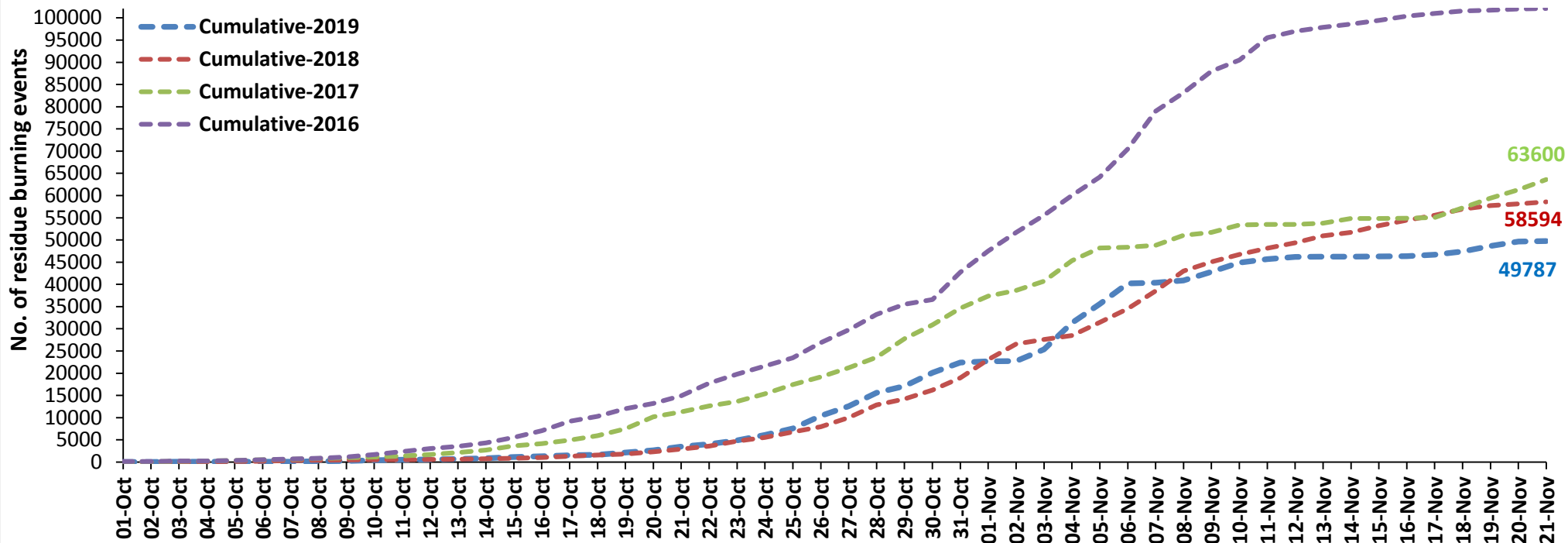


### UP

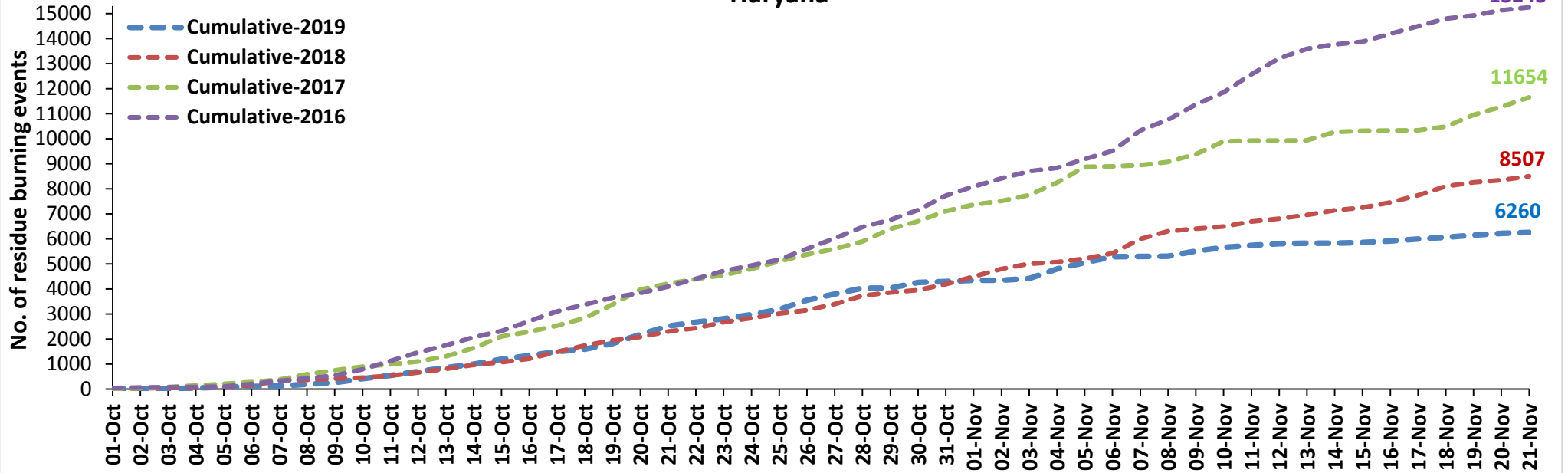


**Comparison of residue burning events in current year (2019) with previous years (2018, 2017 & 2016) for the three study States**  
**(01-Oct to 21-Nov)**

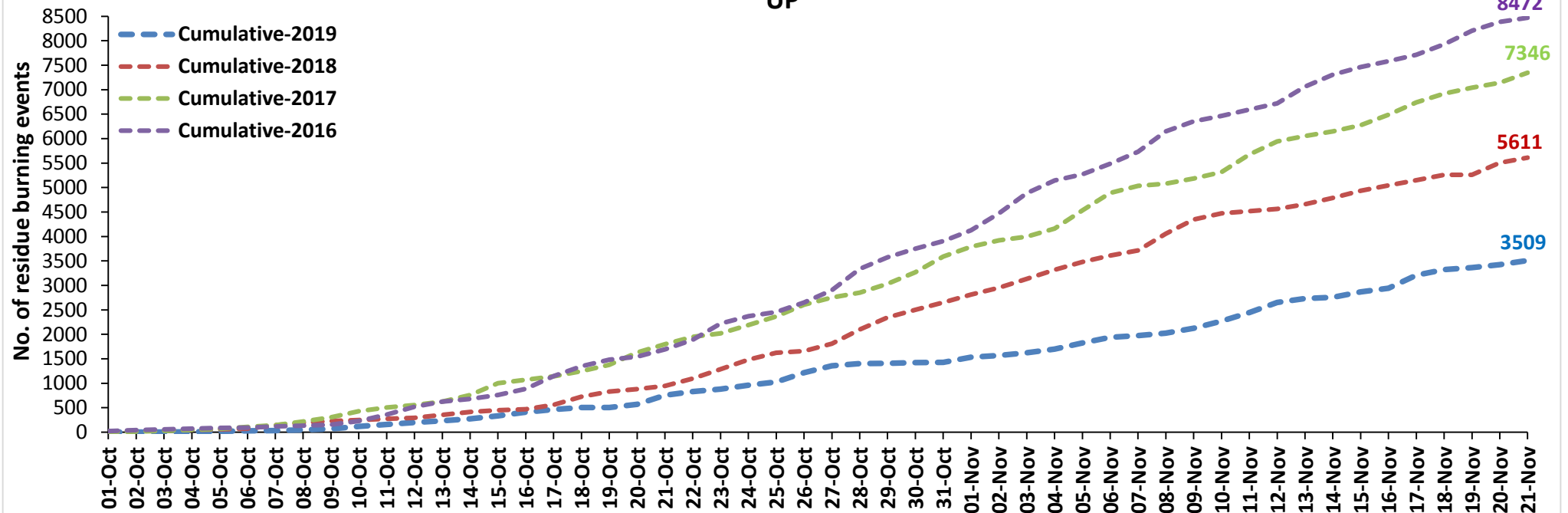
**Punjab**



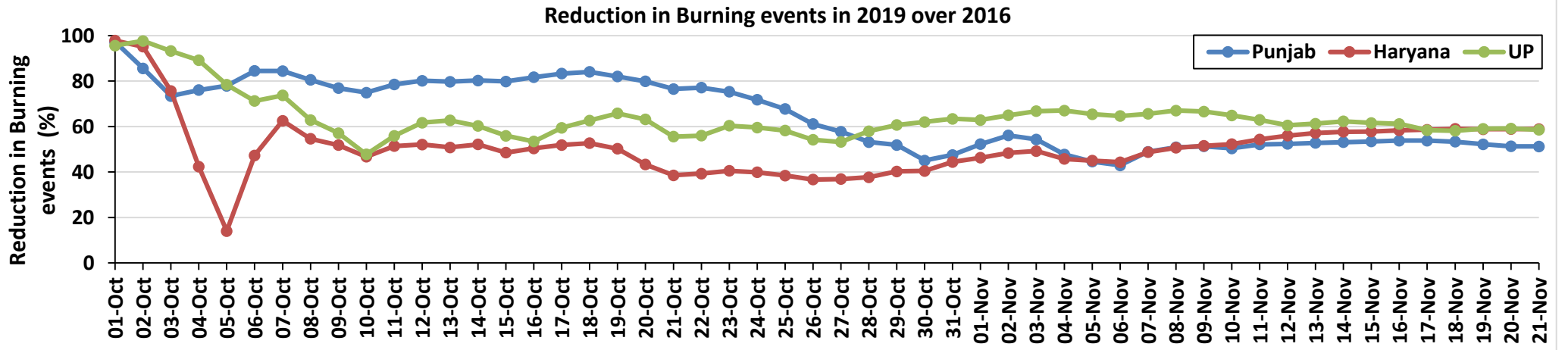
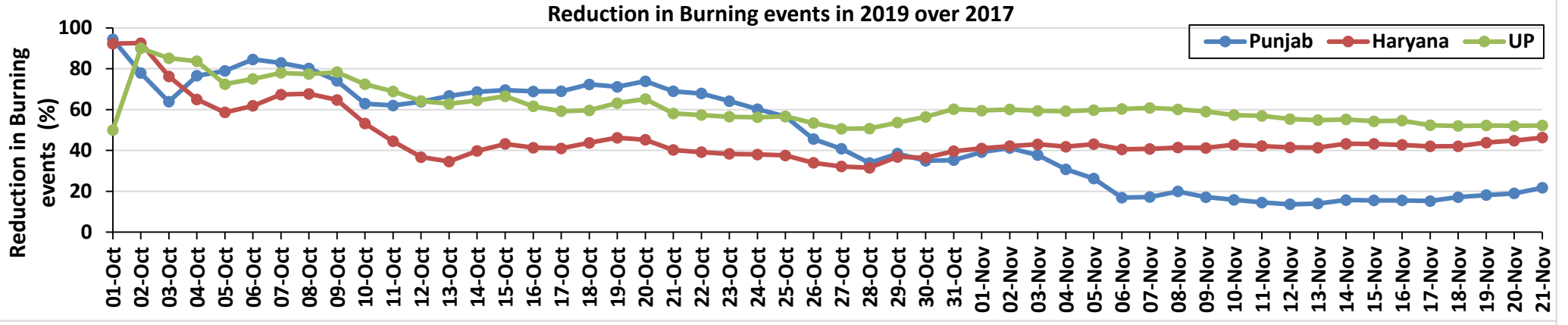
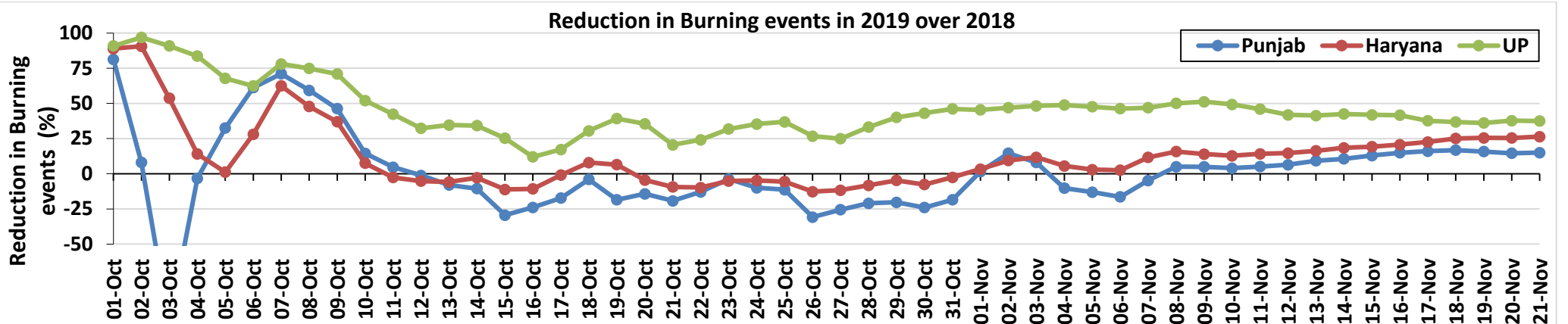
### Haryana



### UP

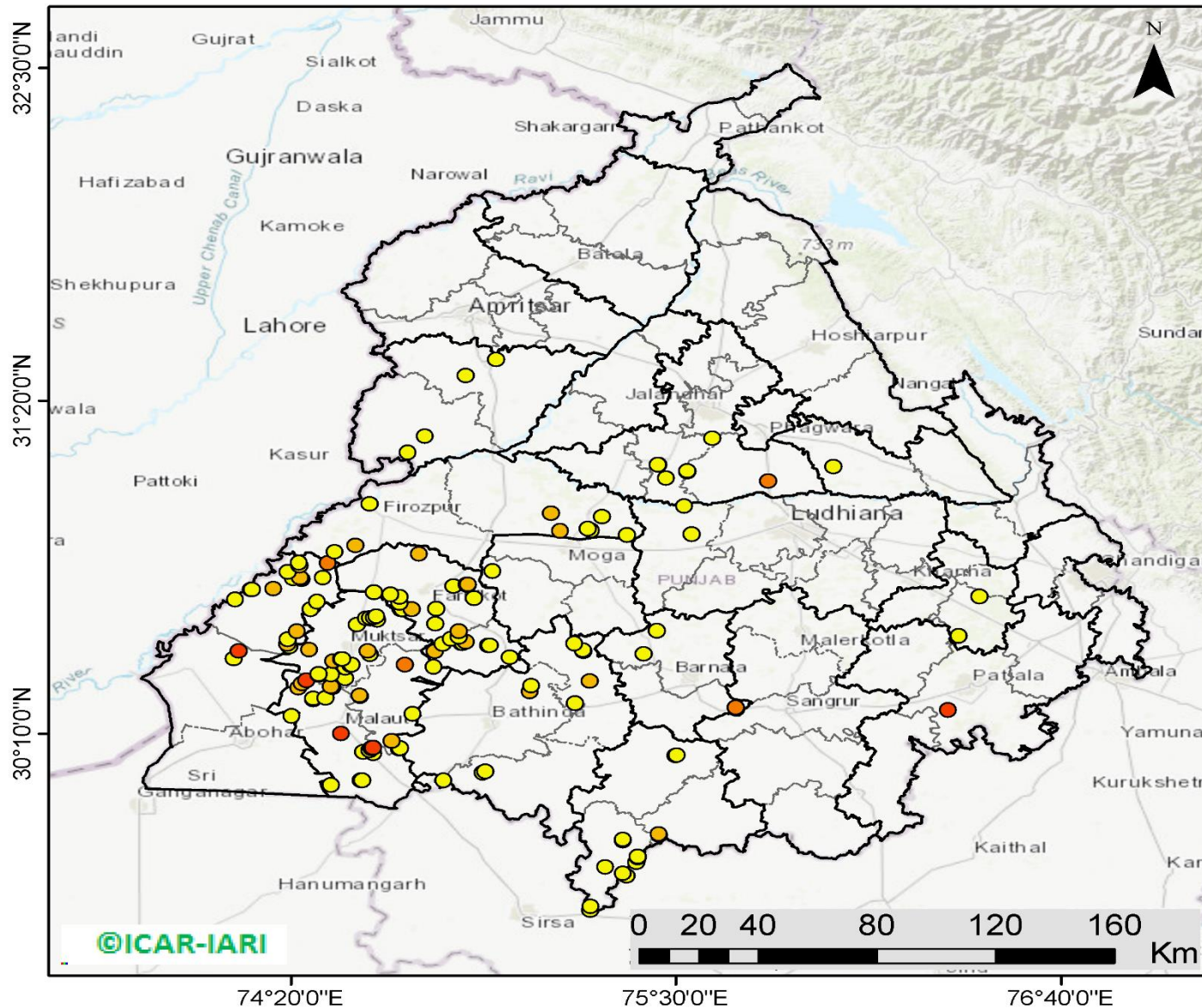


## Percent Reduction in Burning events in 2019 over 2018, 2017 and 2016 (Daily Cumulative)



(a) Punjab

RICE RESIDUE BURNING IN PUNJAB



**151** burning events detected in Punjab on 21st November 2019

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

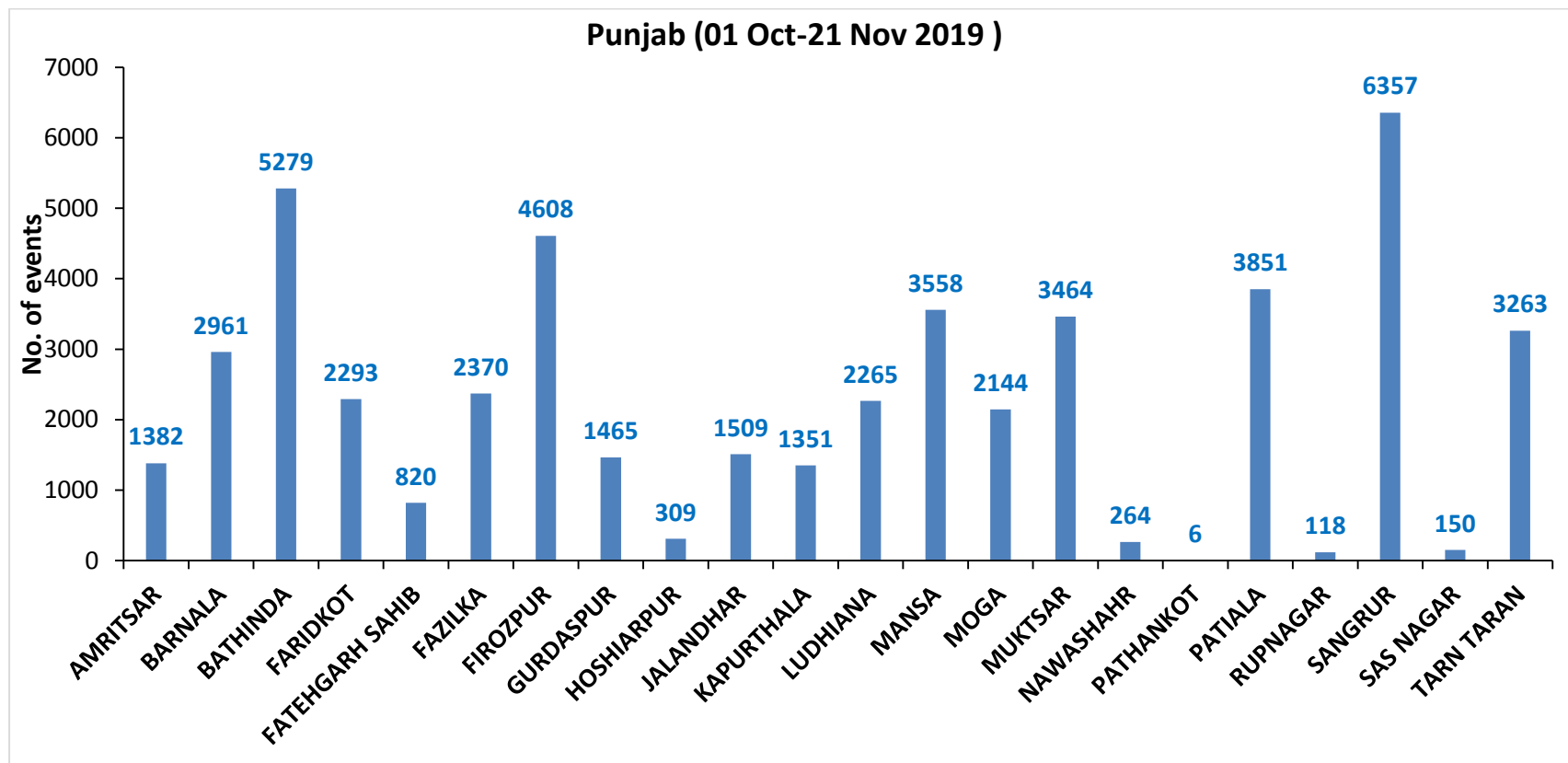
- 0 - 5
- 6 - 10
- 11 - 15
- 16 - 20
- >20

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

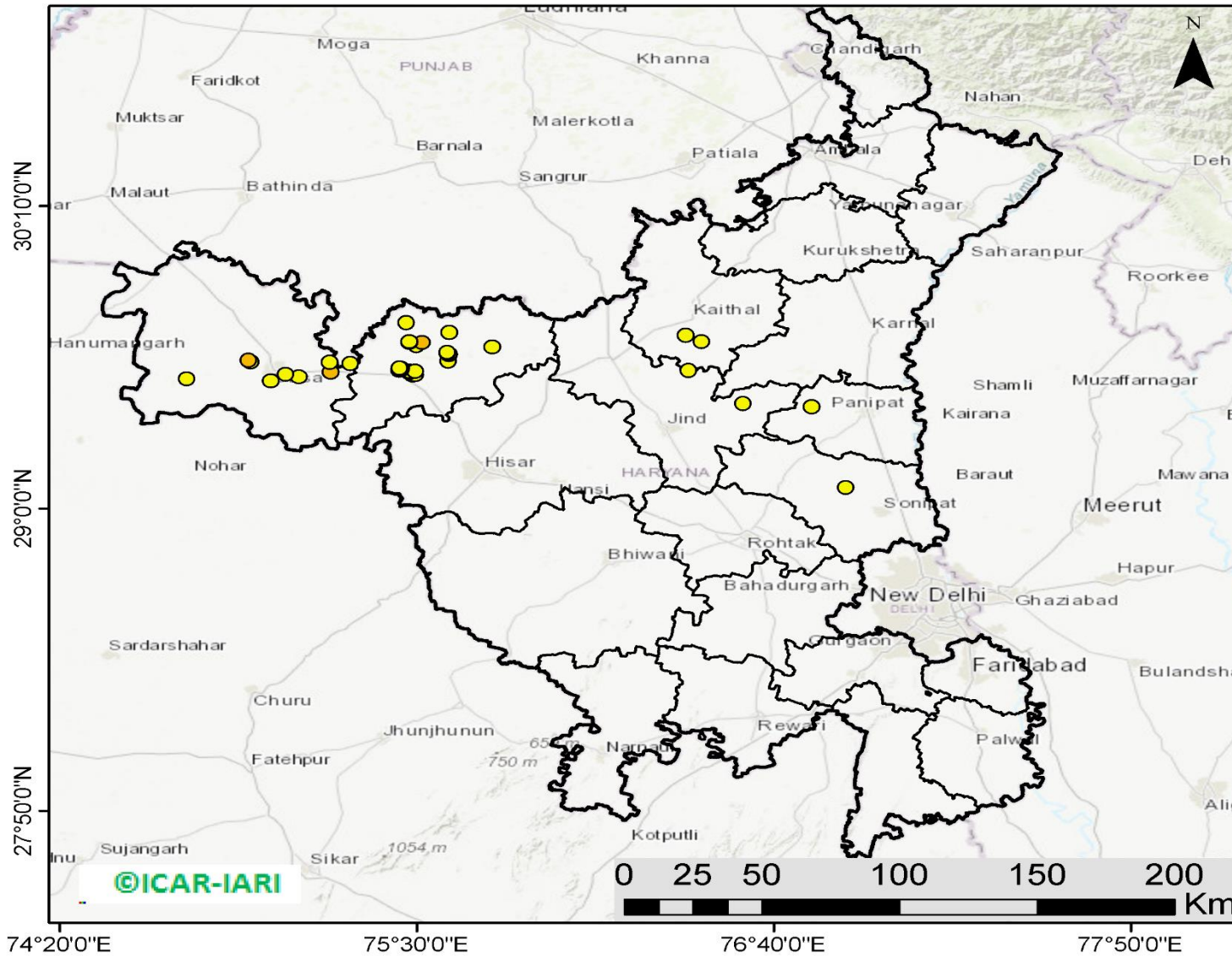
**District-wise cumulative number of residues burning events in Punjab (01 Oct to 21-Nov 2019)**





(b) Haryana

**RICE RESIDUE BURNING IN HARYANA**



**37** burning events detected in Haryana on 21st November 2019

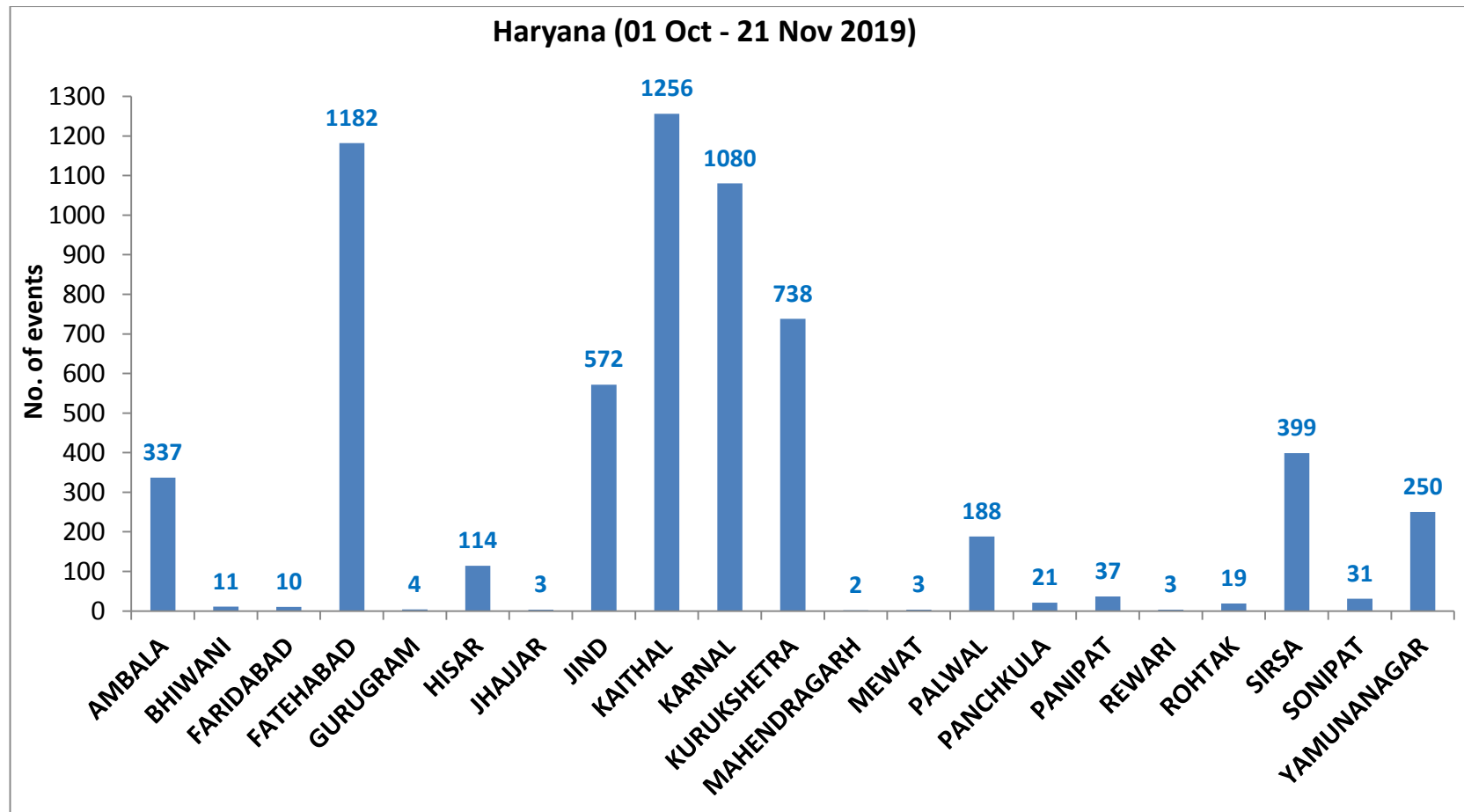
**Fire Intensity (W/m<sup>2</sup>)**

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



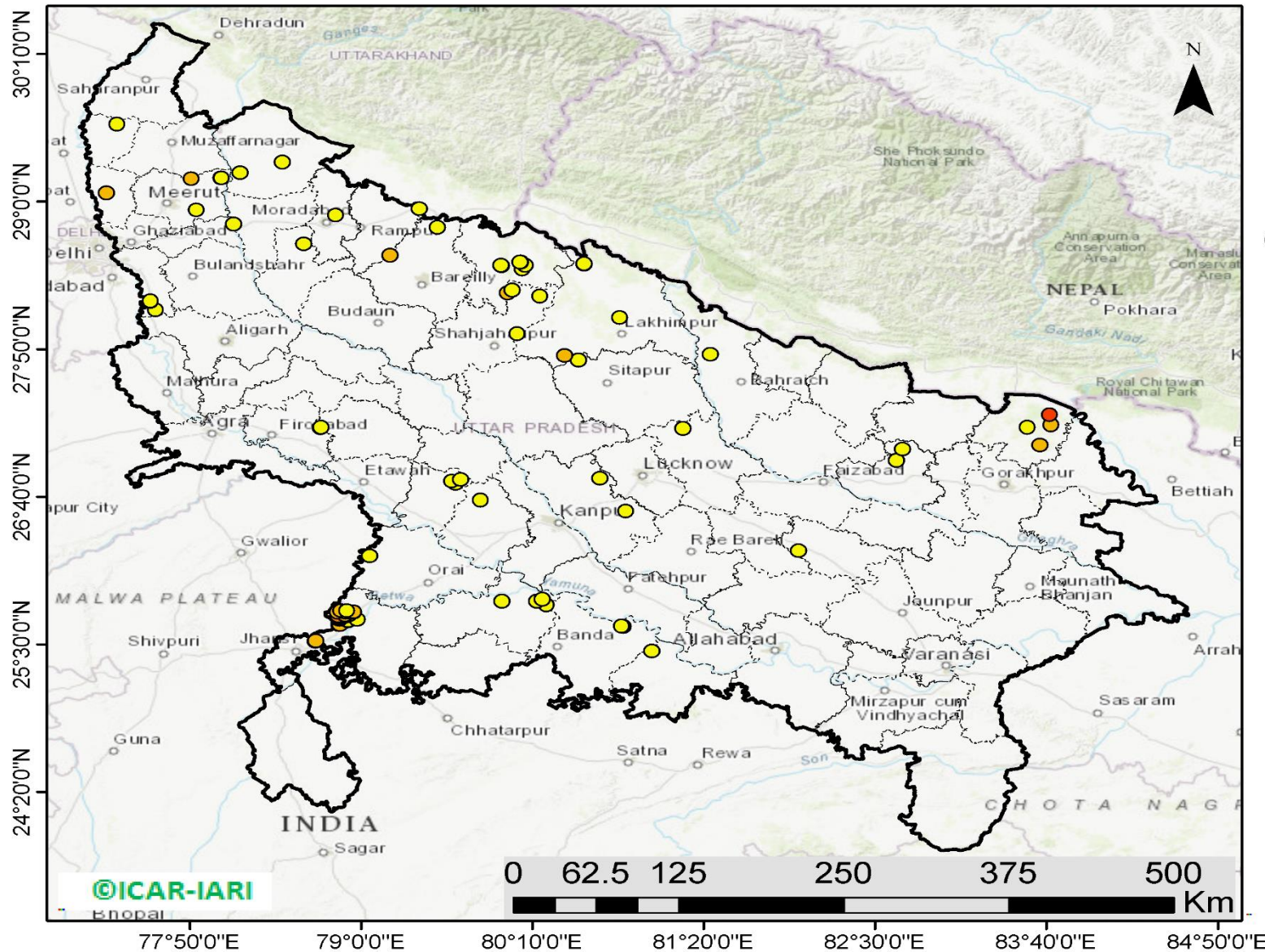
<http://geoportal.icar.gov.in:8080/geoexplorer/composer/>

**District-wise cumulative number of residues burning events in Haryana (01 Oct to 21-Nov 2019)**



(c) UP

### RICE RESIDUE BURNING IN UTTAR PRADESH



**84** burning events detected in Uttar Pradesh on 21st November 2019

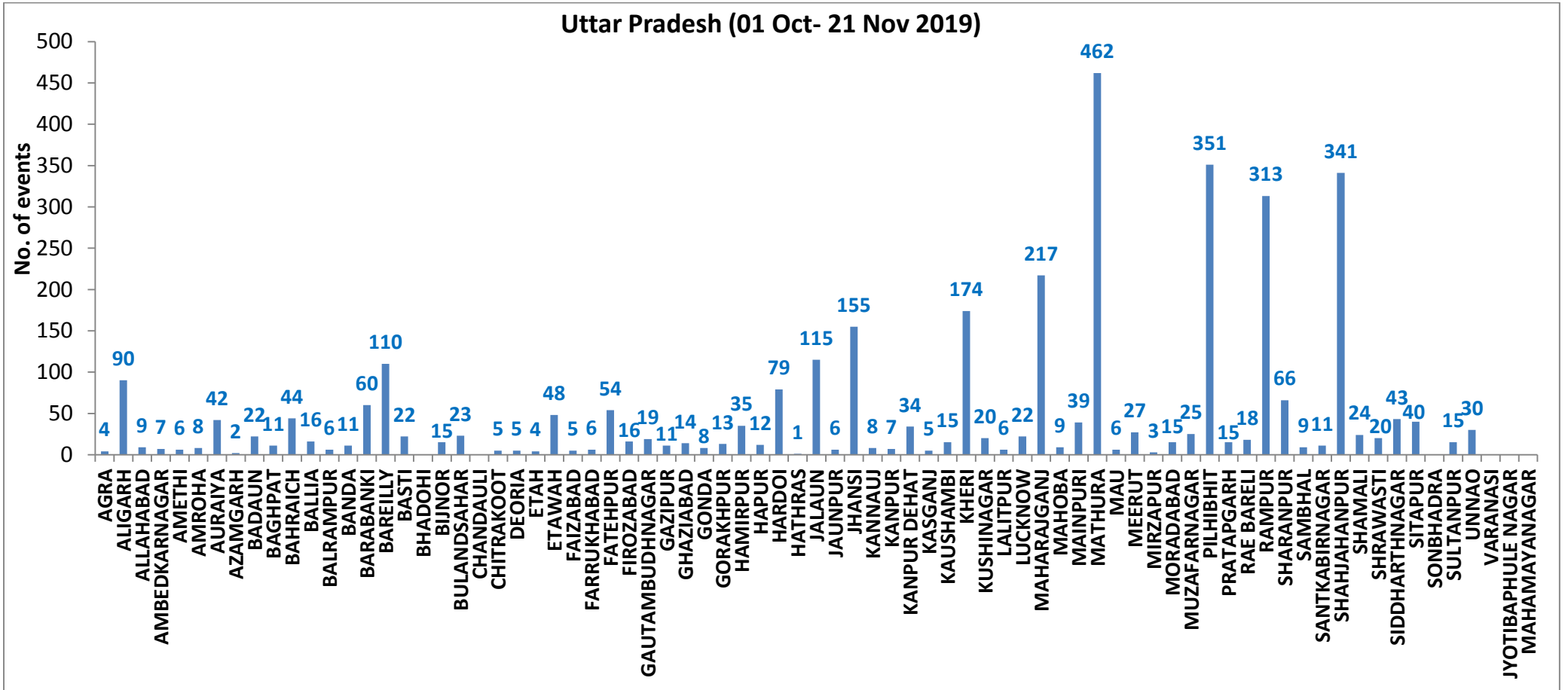
#### Fire Intensity (W/m<sup>2</sup>)

- 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 Uttar Pradesh (01 Oct to 21-Nov 2019)**



**State-wise, date-wise and district-wise number of residues burning events detected in 2016, 2017, 2018 and 2019**  
**(Period: 01-Oct to 21-Nov)**

| Date   | Punjab |      |      |      | Haryana |      |      |      | UP   |      |      |      | Total |      |      |      |
|--------|--------|------|------|------|---------|------|------|------|------|------|------|------|-------|------|------|------|
|        | 2019   | 2018 | 2017 | 2016 | 2019    | 2018 | 2017 | 2016 | 2019 | 2018 | 2017 | 2016 | 2019  | 2018 | 2017 | 2016 |
| 01-Oct | 3      | 16   | 54   | 109  | 1       | 9    | 13   | 46   | 1    | 11   | 2    | 23   | 5     | 36   | 69   | 178  |
| 02-Oct | 20     | 9    | 50   | 51   | 2       | 23   | 27   | 16   | 0    | 21   | 8    | 20   | 23    | 53   | 85   | 87   |
| 03-Oct | 37     | 4    | 62   | 66   | 16      | 9    | 40   | 16   | 3    | 12   | 17   | 16   | 56    | 25   | 119  | 98   |
| 04-Oct | 3      | 32   | 103  | 37   | 30      | 16   | 60   | 7    | 4    | 5    | 22   | 15   | 37    | 53   | 185  | 59   |
| 05-Oct | 16     | 56   | 106  | 95   | 37      | 30   | 68   | 15   | 11   | 10   | 20   | 14   | 64    | 96   | 194  | 124  |
| 06-Oct | 0      | 87   | 138  | 152  | 22      | 63   | 75   | 105  | 8    | 13   | 39   | 6    | 30    | 163  | 252  | 263  |
| 07-Oct | 27     | 162  | 105  | 171  | 16      | 180  | 97   | 126  | 4    | 69   | 33   | 24   | 47    | 411  | 235  | 321  |
| 08-Oct | 59     | 39   | 215  | 166  | 69      | 40   | 218  | 94   | 18   | 54   | 76   | 14   | 146   | 133  | 509  | 274  |
| 09-Oct | 93     | 75   | 163  | 270  | 70      | 47   | 148  | 121  | 17   | 32   | 88   | 22   | 180   | 154  | 399  | 413  |
| 10-Oct | 172    | 23   | 164  | 597  | 157     | 37   | 151  | 242  | 53   | 21   | 126  | 74   | 382   | 81   | 441  | 913  |
| 11-Oct | 78     | 30   | 177  | 652  | 126     | 78   | 87   | 336  | 38   | 24   | 74   | 128  | 242   | 131  | 338  | 1116 |
| 12-Oct | 99     | 67   | 342  | 694  | 154     | 133  | 123  | 338  | 42   | 22   | 51   | 164  | 295   | 222  | 516  | 1196 |
| 13-Oct | 108    | 62   | 470  | 467  | 159     | 147  | 207  | 284  | 33   | 61   | 69   | 102  | 300   | 270  | 746  | 853  |
| 14-Oct | 141    | 112  | 582  | 812  | 133     | 153  | 333  | 328  | 39   | 57   | 137  | 60   | 313   | 322  | 1052 | 1200 |
| 15-Oct | 262    | 90   | 943  | 1215 | 203     | 110  | 458  | 248  | 63   | 35   | 237  | 76   | 528   | 235  | 1638 | 1539 |
| 16-Oct | 168    | 174  | 465  | 1478 | 148     | 138  | 186  | 385  | 77   | 20   | 71   | 125  | 393   | 332  | 722  | 1988 |
| 17-Oct | 250    | 272  | 807  | 2173 | 152     | 268  | 244  | 399  | 53   | 94   | 69   | 261  | 455   | 634  | 1120 | 2833 |
| 18-Oct | 100    | 263  | 970  | 1065 | 103     | 255  | 306  | 270  | 39   | 163  | 108  | 204  | 242   | 681  | 1384 | 1539 |
| 19-Oct | 529    | 254  | 1591 | 1762 | 220     | 208  | 541  | 276  | 3    | 108  | 128  | 132  | 752   | 570  | 2260 | 2170 |
| 20-Oct | 490    | 496  | 2653 | 1175 | 360     | 141  | 597  | 188  | 62   | 49   | 255  | 62   | 912   | 686  | 3505 | 1425 |
| 21-Oct | 852    | 618  | 1139 | 1726 | 339     | 217  | 233  | 257  | 185  | 66   | 168  | 152  | 1376  | 901  | 1540 | 2135 |
| 22-Oct | 555    | 656  | 1356 | 2837 | 158     | 134  | 186  | 309  | 78   | 149  | 151  | 194  | 791   | 939  | 1693 | 3340 |
| 23-Oct | 827    | 1113 | 994  | 2040 | 131     | 232  | 155  | 313  | 48   | 193  | 72   | 331  | 1006  | 1538 | 1221 | 2684 |
| 24-Oct | 1220   | 844  | 1714 | 1836 | 165     | 166  | 244  | 221  | 79   | 192  | 171  | 152  | 1464  | 1202 | 2129 | 2209 |
| 25-Oct | 1463   | 1247 | 2104 | 1813 | 212     | 182  | 303  | 229  | 67   | 142  | 175  | 83   | 1742  | 1571 | 2582 | 2125 |
| 26-Oct | 2861   | 1173 | 1715 | 3390 | 366     | 132  | 276  | 434  | 189  | 33   | 240  | 195  | 3416  | 1338 | 2231 | 4019 |
| 27-Oct | 2135   | 2040 | 2069 | 2904 | 249     | 252  | 224  | 417  | 145  | 154  | 145  | 255  | 2529  | 2446 | 2438 | 3576 |
| 28-Oct | 3007   | 2864 | 2318 | 3493 | 238     | 330  | 292  | 458  | 45   | 290  | 99   | 435  | 3290  | 3484 | 2709 | 4386 |
| 29-Oct | 1504   | 1321 | 4184 | 2258 | 0       | 124  | 502  | 278  | 1    | 243  | 180  | 237  | 1505  | 1688 | 4866 | 2773 |
| 30-Oct | 3017   | 2008 | 3152 | 1076 | 222     | 103  | 307  | 395  | 19   | 158  | 238  | 175  | 3258  | 2269 | 3697 | 1646 |
| 31-Oct | 2325   | 2715 | 3743 | 6132 | 36      | 229  | 413  | 575  | 4    | 148  | 321  | 153  | 2365  | 3092 | 4477 | 6860 |
| 01-Nov | 293    | 4140 | 2736 | 4843 | 50      | 306  | 250  | 362  | 105  | 161  | 199  | 223  | 448   | 4607 | 3185 | 5428 |
| 02-Nov | 6      | 3550 | 1246 | 4183 | 2       | 306  | 145  | 332  | 33   | 142  | 131  | 345  | 41    | 3998 | 1522 | 4860 |

|               |              |              |              |               |             |             |              |              |             |             |             |             |              |              |              |               |
|---------------|--------------|--------------|--------------|---------------|-------------|-------------|--------------|--------------|-------------|-------------|-------------|-------------|--------------|--------------|--------------|---------------|
| <b>03-Nov</b> | 2646         | 972          | 2109         | 3806          | 68          | 202         | 240          | 275          | 56          | 181         | 75          | 409         | 2770         | 1355         | 2424         | 4490          |
| <b>04-Nov</b> | 6001         | 882          | 4603         | 4477          | 383         | 77          | 499          | 146          | 75          | 183         | 168         | 265         | 6459         | 1142         | 5270         | 4888          |
| <b>05-Nov</b> | 4199         | 2989         | 2876         | 4137          | 253         | 129         | 625          | 345          | 124         | 163         | 367         | 125         | 4576         | 3281         | 3868         | 4607          |
| <b>06-Nov</b> | 4642         | 3071         | 171          | 6303          | 243         | 222         | 26           | 322          | 118         | 130         | 357         | 215         | 5003         | 3423         | 554          | 6840          |
| <b>07-Nov</b> | 189          | 4033         | 420          | 8575          | 2           | 568         | 46           | 821          | 33          | 108         | 149         | 244         | 224          | 4709         | 615          | 9640          |
| <b>08-Nov</b> | 462          | 4450         | 2256         | 4129          | 16          | 313         | 128          | 432          | 54          | 338         | 43          | 419         | 532          | 5101         | 2427         | 4980          |
| <b>09-Nov</b> | 2003         | 2083         | 675          | 4857          | 199         | 199         | 311          | 608          | 96          | 294         | 107         | 205         | 2298         | 2473         | 1093         | 5670          |
| <b>10-Nov</b> | 2046         | 1675         | 1642         | 2468          | 151         | 85          | 509          | 484          | 147         | 125         | 131         | 109         | 2344         | 1885         | 2282         | 3061          |
| <b>11-Nov</b> | 783          | 1364         | 103          | 5040          | 78          | 196         | 29           | 716          | 174         | 45          | 358         | 129         | 1035         | 1605         | 490          | 5885          |
| <b>12-Nov</b> | 520          | 1256         | 33           | 1477          | 68          | 122         | 3            | 634          | 210         | 45          | 269         | 129         | 798          | 1423         | 305          | 2240          |
| <b>13-Nov</b> | 10           | 1563         | 237          | 885           | 16          | 146         | 7            | 389          | 79          | 94          | 109         | 338         | 105          | 1803         | 353          | 1612          |
| <b>14-Nov</b> | 0            | 765          | 1101         | 692           | 1           | 189         | 340          | 171          | 22          | 128         | 95          | 247         | 23           | 1082         | 1536         | 1110          |
| <b>15-Nov</b> | 92           | 1480         | 5            | 871           | 29          | 107         | 40           | 107          | 111         | 146         | 123         | 154         | 232          | 1733         | 168          | 1132          |
| <b>16-Nov</b> | 23           | 1250         | 8            | 911           | 59          | 204         | 17           | 318          | 79          | 112         | 218         | 123         | 161          | 1566         | 243          | 1352          |
| <b>17-Nov</b> | 332          | 1132         | 217          | 638           | 85          | 289         | 12           | 299          | 265         | 103         | 249         | 130         | 682          | 1524         | 478          | 1067          |
| <b>18-Nov</b> | 740          | 1400         | 2147         | 568           | 70          | 356         | 139          | 312          | 113         | 111         | 180         | 217         | 923          | 1867         | 2466         | 1097          |
| <b>19-Nov</b> | 1221         | 752          | 2200         | 168           | 82          | 159         | 471          | 125          | 39          | 3           | 122         | 273         | 1342         | 914          | 2793         | 566           |
| <b>20-Nov</b> | 1007         | 385          | 1857         | 240           | 74          | 88          | 325          | 204          | 64          | 243         | 101         | 183         | 1145         | 716          | 2283         | 627           |
| <b>21-Nov</b> | 151          | 480          | 2310         | 112           | 37          | 161         | 378          | 115          | 84          | 107         | 205         | 86          | 272          | 748          | 2893         | 313           |
| <b>Total</b>  | <b>49787</b> | <b>58594</b> | <b>63600</b> | <b>102092</b> | <b>6260</b> | <b>8507</b> | <b>11654</b> | <b>15243</b> | <b>3509</b> | <b>5611</b> | <b>7346</b> | <b>8472</b> | <b>59556</b> | <b>72712</b> | <b>82600</b> | <b>125807</b> |

**(a) Punjab**

| Districts                | 01Oct-21 Nov  |              |              |              |
|--------------------------|---------------|--------------|--------------|--------------|
|                          | 2016          | 2017         | 2018         | 2019         |
| AMRITSAR                 | 2164          | 1314         | 1282         | 1382         |
| BARNALA                  | 5691          | 3189         | 3244         | 2961         |
| BATHINDA                 | 8822          | 5348         | 6297         | 5279         |
| FARIDKOT                 | 4622          | 3383         | 3029         | 2293         |
| FATEHGARH<br>SAHIB       | 2459          | 1622         | 853          | 820          |
| FAZILKA                  | 0             | 0            | 0            | 2370         |
| FIROZPUR                 | 13565         | 9198         | 9750         | 4608         |
| GURDASPUR                | 2208          | 1559         | 1137         | 1465         |
| HOSHIARPUR               | 899           | 483          | 197          | 309          |
| JALANDHAR                | 4658          | 2054         | 1364         | 1509         |
| KAPURTHALA               | 3134          | 1594         | 745          | 1351         |
| LUDHIANA                 | 9524          | 4329         | 2887         | 2265         |
| MANSA                    | 5626          | 4370         | 4284         | 3558         |
| MOGA                     | 6392          | 2406         | 2701         | 2144         |
| MUKTSAR                  | 7001          | 4973         | 5632         | 3464         |
| NAWASHAHR<br>(SBS Nagar) | 1605          | 806          | 373          | 264          |
| PATHANKOT                | 0             | 0            | 0            | 6            |
| PATIALA                  | 6536          | 5027         | 4204         | 3851         |
| RUPNAGAR                 | 717           | 326          | 84           | 118          |
| SANGRUR                  | 11860         | 8345         | 7763         | 6357         |
| SAS NAGAR                | 115           | 107          | 104          | 150          |
| TARN TARAN               | 4494          | 3167         | 2664         | 3263         |
| <b>Total</b>             | <b>102092</b> | <b>63600</b> | <b>58594</b> | <b>49787</b> |

**(b) Haryana**

| Districts    | 01Oct-21 Nov |              |             |             |
|--------------|--------------|--------------|-------------|-------------|
|              | 2016         | 2017         | 2018        | 2019        |
| AMBALA       | 530          | 494          | 328         | 337         |
| BHIWANI      | 74           | 31           | 14          | 11          |
| FARIDABAD    | 286          | 341          | 185         | 10          |
| FATEHABAD    | 4771         | 3417         | 2354        | 1182        |
| GURUGRAM     | 0            | 0            | 0           | 4           |
| HISAR        | 386          | 175          | 179         | 114         |
| JHAJJAR      | 29           | 17           | 21          | 3           |
| JIND         | 853          | 931          | 846         | 572         |
| KAITHAL      | 1747         | 1512         | 1288        | 1256        |
| KARNAL       | 1625         | 1500         | 846         | 1080        |
| KURUKSHETRA  | 1078         | 1144         | 680         | 738         |
| MAHENDRAGARH | 0            | 0            | 0           | 2           |
| MEWAT        | 0            | 0            | 0           | 3           |
| PALWAL       | 0            | 0            | 0           | 188         |
| PANCHKULA    | 0            | 0            | 3           | 21          |
| PANIPAT      | 82           | 82           | 57          | 37          |
| REWARI       | 0            | 0            | 0           | 3           |
| ROHTAK       | 85           | 62           | 28          | 19          |
| SIRSA        | 3377         | 1577         | 1457        | 399         |
| SONIPAT      | 81           | 61           | 30          | 31          |
| YAMUNANAGAR  | 239          | 310          | 191         | 250         |
| <b>Total</b> | <b>15243</b> | <b>11654</b> | <b>8507</b> | <b>6260</b> |

(c) Uttar Pradesh

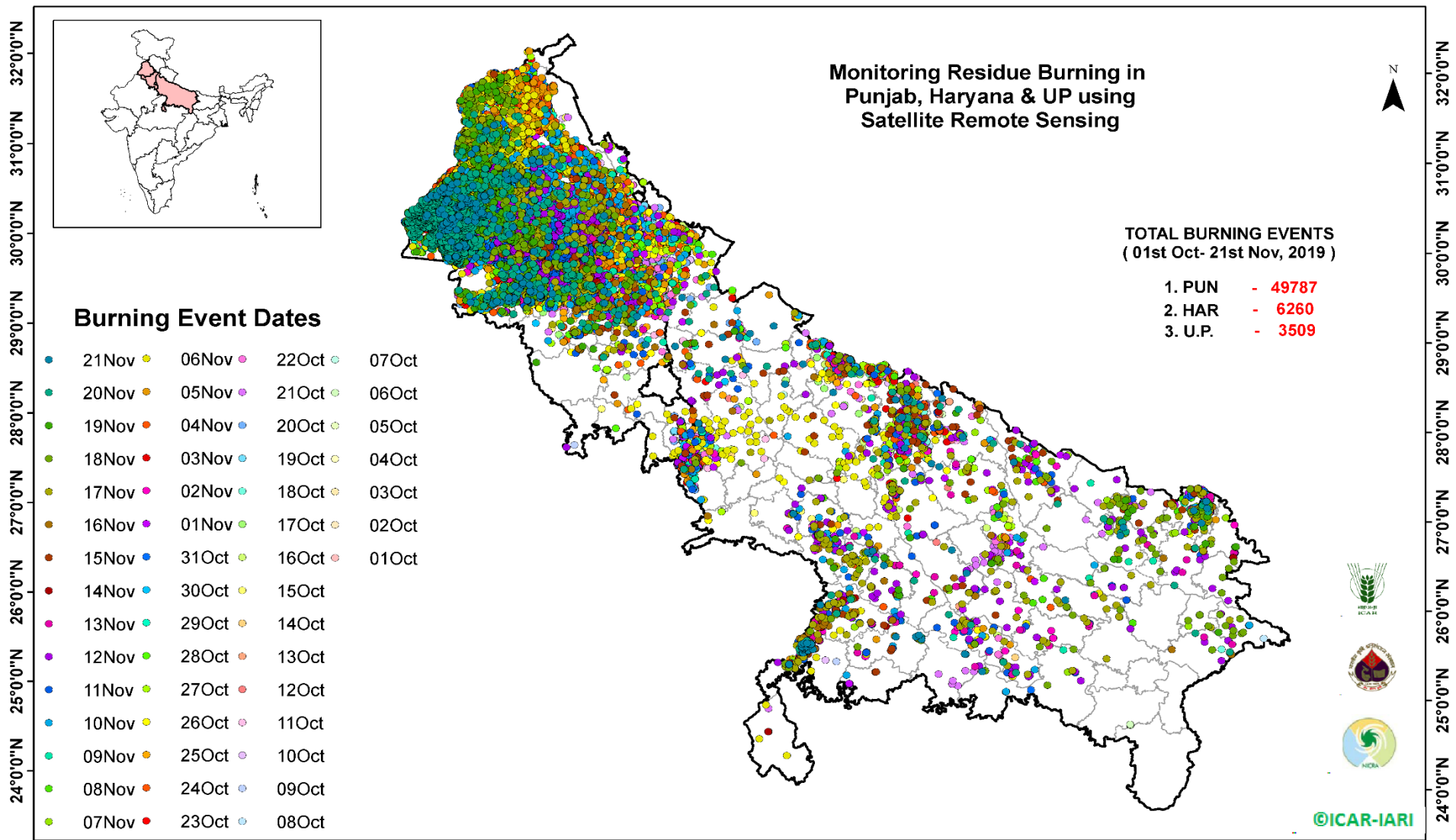
| Districts     | 01Oct-21 Nov |      |      |      |
|---------------|--------------|------|------|------|
|               | 2016         | 2017 | 2018 | 2019 |
| AGRA          | 0            | 0    | 0    | 4    |
| ALIGARH       | 53           | 78   | 92   | 90   |
| ALLAHABAD     | 5            | 8    | 13   | 9    |
| AMBEDKARNAGAR | 67           | 34   | 15   | 7    |
| AMETHI        | 0            | 0    | 0    | 6    |
| AMROHA        | 0            | 0    | 0    | 8    |
| AURAIYA       | 217          | 197  | 56   | 42   |
| AZAMGARH      | 33           | 28   | 24   | 2    |
| BADAUN        | 6            | 7    | 10   | 22   |
| BAGHPAT       | 0            | 0    | 0    | 11   |
| BAHRAICH      | 65           | 39   | 57   | 44   |
| BALLIA        | 17           | 26   | 16   | 16   |
| BALRAMPUR     | 34           | 27   | 40   | 6    |
| BANDA         | 2            | 14   | 8    | 11   |
| BARABANKI     | 214          | 158  | 171  | 60   |
| BAREILLY      | 244          | 204  | 114  | 110  |
| BASTI         | 140          | 180  | 112  | 22   |
| BHADOHI       | 0            | 0    | 0    | 0    |
| BIJNOR        | 54           | 47   | 10   | 15   |
| BULANDSAHAR   | 29           | 30   | 13   | 23   |
| CHANDALI      | 8            | 7    | 1    | 0    |
| CHITRAKOOT    | 0            | 0    | 0    | 5    |
| DEORIA        | 57           | 59   | 51   | 5    |
| ETAH          | 17           | 31   | 25   | 4    |
| ETAWAH        | 129          | 107  | 46   | 48   |
| FAIZABAD      | 13           | 10   | 8    | 5    |
| FARRUKHABAD   | 0            | 0    | 0    | 6    |
| FATEHPUR      | 58           | 43   | 75   | 54   |
| FIROZABAD     | 23           | 18   | 9    | 16   |

|                 |      |      |      |     |
|-----------------|------|------|------|-----|
| GAUTAMBUDHNAGAR | 21   | 37   | 12   | 19  |
| GAZIPUR         | 13   | 11   | 16   | 11  |
| GHAZIABAD       | 68   | 46   | 28   | 14  |
| GONDA           | 46   | 33   | 18   | 8   |
| GORAKHPUR       | 62   | 104  | 114  | 13  |
| HAMIRPUR        | 0    | 0    | 1    | 35  |
| HAPUR           | 0    | 0    | 0    | 12  |
| HARDOI          | 236  | 196  | 109  | 79  |
| HATHRAS         | 0    | 0    | 0    | 1   |
| JALAUN          | 0    | 0    | 0    | 115 |
| JAUNPUR         | 15   | 15   | 16   | 6   |
| JHANSI          | 0    | 0    | 2    | 155 |
| KANNAUJ         | 30   | 15   | 6    | 8   |
| KANPUR          | 14   | 8    | 13   | 7   |
| KANPUR DEHAT    | 51   | 53   | 19   | 34  |
| KASGANJ         | 0    | 0    | 0    | 5   |
| KAUSHAMBI       | 20   | 42   | 39   | 15  |
| KHERI           | 426  | 260  | 195  | 174 |
| KUSHINAGAR      | 45   | 105  | 108  | 20  |
| LALITPUR        | 0    | 0    | 0    | 6   |
| LUCKNOW         | 60   | 30   | 26   | 22  |
| MAHARAJGANJ     | 605  | 924  | 915  | 217 |
| MAHOBA          | 0    | 0    | 0    | 9   |
| MAINPURI        | 81   | 85   | 45   | 39  |
| MATHURA         | 1442 | 1082 | 1048 | 462 |
| MAU             | 12   | 12   | 11   | 6   |
| MEERUT          | 74   | 75   | 18   | 27  |
| MIRZAPUR        | 4    | 12   | 6    | 3   |
| MORADABAD       | 49   | 35   | 11   | 15  |
| MUZAFARNAGAR    | 123  | 133  | 40   | 25  |
| PILHIBHIT       | 933  | 719  | 428  | 351 |
| PRATAPGARH      | 36   | 38   | 28   | 15  |

|                       |             |             |             |             |
|-----------------------|-------------|-------------|-------------|-------------|
| RAE BARELI            | 80          | 69          | 41          | 18          |
| RAMPUR                | 618         | 622         | 221         | 313         |
| SHARANPUR             | 98          | 115         | 58          | 66          |
| SAMBHAL               | 0           | 0           | 0           | 9           |
| SANTKABIRNAGAR        | 54          | 59          | 50          | 11          |
| SHAHJAHANPUR          | 1130        | 678         | 375         | 341         |
| SHAMALI               | 0           | 0           | 0           | 24          |
| SHRAWASTI             | 32          | 29          | 36          | 20          |
| SIDDHARTHANAGAR       | 238         | 171         | 459         | 43          |
| SITAPUR               | 121         | 72          | 40          | 40          |
| SONBHADRA             | 15          | 13          | 11          | 0           |
| SULTANPUR             | 61          | 30          | 31          | 15          |
| UNNAO                 | 61          | 51          | 39          | 30          |
| VARANASI              | 1           | 0           | 0           | 0           |
| JYOTIBAPHULE<br>NAGAR | 10          | 13          | 4           | 0           |
| MAHAMAYANAGAR         | 2           | 2           | 8           | 0           |
| <b>Total</b>          | <b>8472</b> | <b>7346</b> | <b>5611</b> | <b>3509</b> |



## Map of Cumulative Burning Events (01 Oct – 21 Nov 2019)



**Details of residue burning events in Punjab on 21-Nov-2019**

| <b>S. No.</b> | <b>District</b> | <b>Tehsil / Block</b> | <b>Satellite</b> | <b>Longitude</b> | <b>Latitude</b> | <b>Time (IST)</b> | <b>Day / Night</b> | <b>Fire Power (W/m2)</b> |
|---------------|-----------------|-----------------------|------------------|------------------|-----------------|-------------------|--------------------|--------------------------|
| 1             | BARNALA         | BARNALA               | S-NPP            | 75.40168         | 30.44514        | 13:36:00          | D                  | 2.40                     |
| 2             | BARNALA         | BARNALA               | S-NPP            | 75.44176         | 30.52762        | 13:36:00          | D                  | 2.10                     |
| 3             | BARNALA         | TAPPA                 | S-NPP            | 75.68201         | 30.25470        | 13:36:00          | D                  | 11.30                    |
| 4             | BARNALA         | TAPPA                 | S-NPP            | 75.68139         | 30.25807        | 13:36:00          | D                  | 11.30                    |
| 5             | BATHINDA        | BATHINDA              | S-NPP            | 74.79616         | 30.00262        | 13:36:00          | D                  | 3.30                     |
| 6             | BATHINDA        | BATHINDA              | S-NPP            | 74.66038         | 30.11492        | 13:36:00          | D                  | 3.20                     |
| 7             | BATHINDA        | BATHINDA              | S-NPP            | 74.66438         | 30.11551        | 13:36:00          | D                  | 3.20                     |
| 8             | BATHINDA        | BATHINDA              | S-NPP            | 75.05722         | 30.31378        | 13:36:00          | D                  | 5.20                     |
| 9             | BATHINDA        | BATHINDA              | S-NPP            | 75.06154         | 30.33493        | 13:36:00          | D                  | 4.20                     |
| 10            | BATHINDA        | RAMPURA PHUL          | S-NPP            | 75.19374         | 30.27294        | 13:36:00          | D                  | 2.70                     |
| 11            | BATHINDA        | RAMPURA PHUL          | S-NPP            | 75.23847         | 30.34984        | 13:36:00          | D                  | 5.30                     |
| 12            | BATHINDA        | RAMPURA PHUL          | S-NPP            | 75.21897         | 30.45494        | 13:36:00          | D                  | 1.30                     |
| 13            | BATHINDA        | RAMPURA PHUL          | S-NPP            | 75.21835         | 30.45828        | 13:36:00          | D                  | 2.20                     |
| 14            | BATHINDA        | RAMPURA PHUL          | S-NPP            | 75.19286         | 30.48213        | 13:36:00          | D                  | 1.30                     |
| 15            | BATHINDA        | TALWANDI SABO         | S-NPP            | 74.91452         | 30.03013        | 13:36:00          | D                  | 3.10                     |
| 16            | BATHINDA        | TALWANDI SABO         | S-NPP            | 74.92191         | 30.03462        | 13:36:00          | D                  | 3.70                     |
| 17            | FARIDKOT        | FARIDKOT              | S-NPP            | 74.79298         | 30.48178        | 13:36:00          | D                  | 2.50                     |
| 18            | FARIDKOT        | FARIDKOT              | S-NPP            | 74.84248         | 30.52649        | 13:36:00          | D                  | 6.20                     |
| 19            | FARIDKOT        | FARIDKOT              | S-NPP            | 74.77145         | 30.55032        | 13:36:00          | D                  | 5.00                     |
| 20            | FARIDKOT        | FARIDKOT              | S-NPP            | 74.66690         | 30.60212        | 13:36:00          | D                  | 2.80                     |
| 21            | FARIDKOT        | FARIDKOT              | S-NPP            | 74.67094         | 30.60270        | 13:36:00          | D                  | 2.80                     |
| 22            | FARIDKOT        | FARIDKOT              | S-NPP            | 74.69980         | 30.60350        | 13:36:00          | D                  | 6.40                     |
| 23            | FARIDKOT        | FARIDKOT              | S-NPP            | 74.77439         | 30.60408        | 13:36:00          | D                  | 3.80                     |
| 24            | FARIDKOT        | FARIDKOT              | S-NPP            | 74.66240         | 30.62533        | 13:36:00          | D                  | 3.70                     |
| 25            | FARIDKOT        | FARIDKOT              | S-NPP            | 74.88798         | 30.64097        | 13:36:00          | D                  | 4.40                     |
| 26            | FARIDKOT        | FARIDKOT              | S-NPP            | 74.66257         | 30.64581        | 13:36:00          | D                  | 1.80                     |
| 27            | FARIDKOT        | FARIDKOT              | S-NPP            | 74.63580         | 30.65553        | 13:36:00          | D                  | 3.80                     |
| 28            | FARIDKOT        | FARIDKOT              | S-NPP            | 74.58490         | 30.66170        | 13:36:00          | D                  | 2.10                     |
| 29            | FARIDKOT        | FARIDKOT              | S-NPP            | 74.82568         | 30.68323        | 13:36:00          | D                  | 2.10                     |
| 30            | FARIDKOT        | FARIDKOT              | S-NPP            | 74.86686         | 30.68578        | 13:36:00          | D                  | 9.40                     |

|    |                 |                 |       |          |          |          |   |       |
|----|-----------------|-----------------|-------|----------|----------|----------|---|-------|
| 31 | FARIDKOT        | FARIDKOT        | S-NPP | 74.87092 | 30.68637 | 13:36:00 | D | 9.40  |
| 32 | FARIDKOT        | FARIDKOT        | S-NPP | 74.86623 | 30.68911 | 13:36:00 | D | 9.40  |
| 33 | FARIDKOT        | FARIDKOT        | S-NPP | 74.87028 | 30.68969 | 13:36:00 | D | 9.40  |
| 34 | FARIDKOT        | FARIDKOT        | S-NPP | 74.52909 | 30.73961 | 02:18:00 | N | 0.30  |
| 35 | FARIDKOT        | FARIDKOT        | S-NPP | 74.72128 | 30.79556 | 13:36:00 | D | 7.20  |
| 36 | FARIDKOT        | JAITO           | S-NPP | 74.76685 | 30.40034 | 13:36:00 | D | 3.80  |
| 37 | FARIDKOT        | JAITO           | S-NPP | 74.99715 | 30.43361 | 13:36:00 | D | 3.00  |
| 38 | FARIDKOT        | JAITO           | S-NPP | 74.76868 | 30.45519 | 13:36:00 | D | 6.40  |
| 39 | FARIDKOT        | JAITO           | S-NPP | 74.93089 | 30.47536 | 13:36:00 | D | 1.90  |
| 40 | FARIDKOT        | JAITO           | S-NPP | 74.93494 | 30.47594 | 13:36:00 | D | 1.90  |
| 41 | FARIDKOT        | JAITO           | S-NPP | 74.85021 | 30.48415 | 13:36:00 | D | 2.50  |
| 42 | FARIDKOT        | JAITO           | S-NPP | 74.85426 | 30.48474 | 13:36:00 | D | 3.00  |
| 43 | FARIDKOT        | JAITO           | S-NPP | 74.86228 | 30.48836 | 13:36:00 | D | 7.70  |
| 44 | FARIDKOT        | JAITO           | S-NPP | 74.81867 | 30.49914 | 13:36:00 | D | 2.30  |
| 45 | FARIDKOT        | JAITO           | S-NPP | 74.84228 | 30.50596 | 13:36:00 | D | 3.40  |
| 46 | FATEHGARH SAHIB | FATEHGARH SAHIB | S-NPP | 76.35699 | 30.51000 | 13:36:00 | D | 2.40  |
| 47 | FATEHGARH SAHIB | FATEHGARH SAHIB | S-NPP | 76.41891 | 30.64701 | 13:36:00 | D | 3.70  |
| 48 | FAZILKA         | ABOHAR          | S-NPP | 74.33503 | 30.22871 | 13:36:00 | D | 3.50  |
| 49 | FAZILKA         | FAZILKA         | S-NPP | 74.16026 | 30.42931 | 13:36:00 | D | 2.00  |
| 50 | FAZILKA         | FAZILKA         | S-NPP | 74.17559 | 30.45541 | 13:36:00 | D | 16.50 |
| 51 | FAZILKA         | JALALABAD       | S-NPP | 74.32861 | 30.47149 | 13:36:00 | D | 3.40  |
| 52 | FAZILKA         | JALALABAD       | S-NPP | 74.32265 | 30.48081 | 13:36:00 | D | 5.80  |
| 53 | FAZILKA         | JALALABAD       | S-NPP | 74.32339 | 30.49793 | 13:36:00 | D | 4.50  |
| 54 | FAZILKA         | JALALABAD       | S-NPP | 74.35172 | 30.52515 | 13:36:00 | D | 5.70  |
| 55 | FAZILKA         | JALALABAD       | S-NPP | 74.39399 | 30.60286 | 13:36:00 | D | 1.70  |
| 56 | FAZILKA         | JALALABAD       | S-NPP | 74.41348 | 30.62958 | 13:36:00 | D | 4.30  |
| 57 | FAZILKA         | JALALABAD       | S-NPP | 74.16526 | 30.63642 | 13:36:00 | D | 3.20  |
| 58 | FAZILKA         | JALALABAD       | S-NPP | 74.21199 | 30.67061 | 13:36:00 | D | 3.70  |
| 59 | FAZILKA         | JALALABAD       | S-NPP | 74.21600 | 30.67121 | 13:36:00 | D | 3.70  |
| 60 | FAZILKA         | JALALABAD       | S-NPP | 74.28136 | 30.67415 | 13:36:00 | D | 8.20  |
| 61 | FAZILKA         | JALALABAD       | S-NPP | 74.36552 | 30.70706 | 13:36:00 | D | 4.80  |
| 62 | FAZILKA         | JALALABAD       | S-NPP | 74.36086 | 30.70977 | 13:36:00 | D | 10.30 |
| 63 | FAZILKA         | JALALABAD       | S-NPP | 74.34024 | 30.71012 | 13:36:00 | D | 4.30  |

|    |           |            |       |          |          |          |   |       |
|----|-----------|------------|-------|----------|----------|----------|---|-------|
| 64 | FAZILKA   | JALALABAD  | S-NPP | 74.36021 | 30.71308 | 13:36:00 | D | 7.20  |
| 65 | FAZILKA   | JALALABAD  | S-NPP | 74.43040 | 30.71325 | 13:36:00 | D | 2.30  |
| 66 | FAZILKA   | JALALABAD  | S-NPP | 74.32320 | 30.73397 | 13:36:00 | D | 4.80  |
| 67 | FAZILKA   | JALALABAD  | S-NPP | 74.35997 | 30.75642 | 13:36:00 | D | 5.30  |
| 68 | FAZILKA   | JALALABAD  | S-NPP | 74.44498 | 30.76554 | 13:36:00 | D | 11.90 |
| 69 | FAZILKA   | JALALABAD  | S-NPP | 74.35801 | 30.76634 | 13:36:00 | D | 3.00  |
| 70 | FIROZPUR  | FIROZPUR   | S-NPP | 74.46664 | 30.80278 | 13:36:00 | D | 2.20  |
| 71 | FIROZPUR  | FIROZPUR   | S-NPP | 74.52848 | 30.82548 | 13:36:00 | D | 9.20  |
| 72 | FIROZPUR  | FIROZPUR   | S-NPP | 74.57104 | 30.97081 | 13:36:00 | D | 2.10  |
| 73 | FIROZPUR  | ZIRA       | S-NPP | 75.35167 | 30.86325 | 13:36:00 | D | 3.20  |
| 74 | FIROZPUR  | ZIRA       | S-NPP | 75.14993 | 30.87725 | 13:36:00 | D | 5.10  |
| 75 | FIROZPUR  | ZIRA       | S-NPP | 75.24257 | 30.87995 | 13:36:00 | D | 4.60  |
| 76 | FIROZPUR  | ZIRA       | S-NPP | 75.23304 | 30.88549 | 13:36:00 | D | 2.20  |
| 77 | FIROZPUR  | ZIRA       | S-NPP | 75.27637 | 30.92600 | 13:36:00 | D | 2.90  |
| 78 | FIROZPUR  | ZIRA       | S-NPP | 75.12144 | 30.93848 | 13:36:00 | D | 5.30  |
| 79 | JALANDHAR | NAKODAR    | S-NPP | 75.46978 | 31.06119 | 13:36:00 | D | 1.80  |
| 80 | JALANDHAR | NAKODAR    | S-NPP | 75.44779 | 31.11003 | 13:36:00 | D | 1.70  |
| 81 | JALANDHAR | NAKODAR    | S-NPP | 75.44467 | 31.11011 | 13:36:00 | D | 2.40  |
| 82 | JALANDHAR | PHILLAUR   | S-NPP | 75.77940 | 31.05145 | 13:36:00 | D | 11.10 |
| 83 | JALANDHAR | PHILLAUR   | S-NPP | 75.53450 | 31.08401 | 13:36:00 | D | 5.00  |
| 84 | JALANDHAR | PHILLAUR   | S-NPP | 75.53388 | 31.08739 | 13:36:00 | D | 5.00  |
| 85 | JALANDHAR | PHILLAUR   | S-NPP | 75.60924 | 31.20206 | 13:36:00 | D | 2.20  |
| 86 | LUDHIANA  | JAGRAON    | S-NPP | 75.54784 | 30.86650 | 13:36:00 | D | 3.30  |
| 87 | LUDHIANA  | JAGRAON    | S-NPP | 75.52583 | 30.96427 | 13:36:00 | D | 3.80  |
| 88 | MANSA     | BUDHLADA   | S-NPP | 75.44909 | 29.81038 | 13:36:00 | D | 5.20  |
| 89 | MANSA     | BUDHLADA   | S-NPP | 75.44847 | 29.81372 | 13:36:00 | D | 5.20  |
| 90 | MANSA     | MANSA      | S-NPP | 75.49911 | 30.08981 | 13:36:00 | D | 4.10  |
| 91 | MANSA     | MANSA      | S-NPP | 75.50322 | 30.09039 | 13:36:00 | D | 3.70  |
| 92 | MANSA     | SARDULGARH | S-NPP | 75.23932 | 29.54694 | 13:36:00 | D | 4.20  |
| 93 | MANSA     | SARDULGARH | S-NPP | 75.24085 | 29.56084 | 13:36:00 | D | 3.20  |
| 94 | MANSA     | SARDULGARH | S-NPP | 75.28172 | 29.56332 | 13:36:00 | D | 55.20 |
| 95 | MANSA     | SARDULGARH | S-NPP | 75.34949 | 29.66726 | 13:36:00 | D | 2.30  |
| 96 | MANSA     | SARDULGARH | S-NPP | 75.33955 | 29.67611 | 13:36:00 | D | 2.30  |

|     |         |              |       |          |          |          |   |       |
|-----|---------|--------------|-------|----------|----------|----------|---|-------|
| 97  | MANSA   | SARDULGARH   | S-NPP | 75.28680 | 29.69806 | 13:36:00 | D | 2.50  |
| 98  | MANSA   | SARDULGARH   | S-NPP | 75.37928 | 29.71462 | 13:36:00 | D | 3.00  |
| 99  | MANSA   | SARDULGARH   | S-NPP | 75.38428 | 29.73248 | 13:36:00 | D | 3.20  |
| 100 | MANSA   | SARDULGARH   | S-NPP | 75.38366 | 29.73583 | 13:36:00 | D | 3.20  |
| 101 | MANSA   | SARDULGARH   | S-NPP | 75.34002 | 29.79134 | 13:36:00 | D | 4.20  |
| 102 | MANSA   | SARDULGARH   | S-NPP | 75.33940 | 29.79468 | 13:36:00 | D | 2.60  |
| 103 | MOGA    | BAGHA PURANA | S-NPP | 74.94523 | 30.73691 | 13:36:00 | D | 1.90  |
| 104 | MUKTSAR | GIDDARBAHA   | S-NPP | 74.63898 | 30.14145 | 13:36:00 | D | 5.80  |
| 105 | MUKTSAR | GIDDARBAHA   | S-NPP | 74.70299 | 30.23600 | 13:36:00 | D | 2.20  |
| 106 | MUKTSAR | GIDDARBAHA   | S-NPP | 74.54331 | 30.29706 | 13:36:00 | D | 2.50  |
| 107 | MUKTSAR | GIDDARBAHA   | S-NPP | 74.54267 | 30.30037 | 13:36:00 | D | 5.90  |
| 108 | MUKTSAR | GIDDARBAHA   | S-NPP | 74.67855 | 30.40792 | 13:36:00 | D | 13.40 |
| 109 | MUKTSAR | MALAUT       | S-NPP | 74.45488 | 29.98623 | 13:36:00 | D | 2.10  |
| 110 | MUKTSAR | MALAUT       | S-NPP | 74.54567 | 30.00314 | 13:36:00 | D | 3.80  |
| 111 | MUKTSAR | MALAUT       | S-NPP | 74.54964 | 30.00373 | 13:36:00 | D | 3.70  |
| 112 | MUKTSAR | MALAUT       | S-NPP | 74.58180 | 30.09652 | 13:36:00 | D | 2.20  |
| 113 | MUKTSAR | MALAUT       | S-NPP | 74.55195 | 30.10230 | 13:36:00 | D | 2.30  |
| 114 | MUKTSAR | MALAUT       | S-NPP | 74.57125 | 30.10857 | 13:36:00 | D | 3.40  |
| 115 | MUKTSAR | MALAUT       | S-NPP | 74.57794 | 30.11636 | 13:36:00 | D | 15.30 |
| 116 | MUKTSAR | MALAUT       | S-NPP | 74.58193 | 30.11695 | 13:36:00 | D | 15.30 |
| 117 | MUKTSAR | MALAUT       | S-NPP | 74.48632 | 30.16658 | 13:36:00 | D | 18.50 |
| 118 | MUKTSAR | MALAUT       | S-NPP | 74.40167 | 30.28626 | 13:36:00 | D | 3.40  |
| 119 | MUKTSAR | MALAUT       | S-NPP | 74.40102 | 30.28957 | 13:36:00 | D | 3.40  |
| 120 | MUKTSAR | MALAUT       | S-NPP | 74.43759 | 30.29160 | 13:36:00 | D | 3.80  |
| 121 | MUKTSAR | MALAUT       | S-NPP | 74.35692 | 30.32643 | 13:36:00 | D | 6.10  |
| 122 | MUKTSAR | MALAUT       | S-NPP | 74.45924 | 30.32800 | 13:36:00 | D | 5.20  |
| 123 | MUKTSAR | MALAUT       | S-NPP | 74.45460 | 30.33072 | 13:36:00 | D | 5.20  |
| 124 | MUKTSAR | MALAUT       | S-NPP | 74.36629 | 30.34143 | 13:36:00 | D | 8.40  |
| 125 | MUKTSAR | MALAUT       | S-NPP | 74.38030 | 30.35372 | 13:36:00 | D | 18.30 |
| 126 | MUKTSAR | MUKTSAR      | S-NPP | 74.49804 | 30.36096 | 13:36:00 | D | 2.70  |
| 127 | MUKTSAR | MUKTSAR      | S-NPP | 74.41763 | 30.37287 | 13:36:00 | D | 4.80  |
| 128 | MUKTSAR | MUKTSAR      | S-NPP | 74.45416 | 30.37488 | 13:36:00 | D | 1.90  |
| 129 | MUKTSAR | MUKTSAR      | S-NPP | 74.41698 | 30.37618 | 13:36:00 | D | 2.40  |

|     |            |               |       |          |          |          |   |       |
|-----|------------|---------------|-------|----------|----------|----------|---|-------|
| 130 | MUKTSAR    | MUKTSAR       | S-NPP | 74.49892 | 30.39853 | 13:36:00 | D | 2.80  |
| 131 | MUKTSAR    | MUKTSAR       | S-NPP | 74.51363 | 30.40751 | 13:36:00 | D | 2.90  |
| 132 | MUKTSAR    | MUKTSAR       | S-NPP | 74.51764 | 30.40810 | 13:36:00 | D | 2.90  |
| 133 | MUKTSAR    | MUKTSAR       | S-NPP | 74.46172 | 30.42025 | 13:36:00 | D | 5.60  |
| 134 | MUKTSAR    | MUKTSAR       | S-NPP | 74.48508 | 30.42711 | 13:36:00 | D | 4.10  |
| 135 | MUKTSAR    | MUKTSAR       | S-NPP | 74.48908 | 30.42770 | 13:36:00 | D | 4.10  |
| 136 | MUKTSAR    | MUKTSAR       | S-NPP | 74.57256 | 30.44345 | 13:36:00 | D | 2.90  |
| 137 | MUKTSAR    | MUKTSAR       | S-NPP | 74.56643 | 30.45560 | 13:36:00 | D | 5.90  |
| 138 | MUKTSAR    | MUKTSAR       | S-NPP | 74.38849 | 30.45998 | 13:36:00 | D | 5.90  |
| 139 | MUKTSAR    | MUKTSAR       | S-NPP | 74.53260 | 30.54841 | 13:36:00 | D | 1.50  |
| 140 | MUKTSAR    | MUKTSAR       | S-NPP | 74.59559 | 30.56444 | 13:36:00 | D | 2.80  |
| 141 | MUKTSAR    | MUKTSAR       | S-NPP | 74.57420 | 30.56813 | 13:36:00 | D | 3.90  |
| 142 | MUKTSAR    | MUKTSAR       | S-NPP | 74.56150 | 30.56968 | 13:36:00 | D | 3.70  |
| 143 | MUKTSAR    | MUKTSAR       | S-NPP | 74.57355 | 30.57145 | 13:36:00 | D | 3.90  |
| 144 | MUKTSAR    | MUKTSAR       | S-NPP | 74.58561 | 30.57321 | 13:36:00 | D | 1.90  |
| 145 | MUKTSAR    | MUKTSAR       | S-NPP | 74.59301 | 30.57770 | 13:36:00 | D | 3.60  |
| 146 | NAWASHAHR  | NAWASHAHR     | S-NPP | 75.97695 | 31.10246 | 13:36:00 | D | 2.10  |
| 147 | PATIALA    | PATIALA       | S-NPP | 76.32384 | 30.24884 | 13:36:00 | D | 16.00 |
| 148 | TARN TARAN | KHADOOR SAHIB | S-NPP | 74.86296 | 31.42167 | 13:36:00 | D | 4.90  |
| 149 | TARN TARAN | KHADOOR SAHIB | S-NPP | 74.95503 | 31.47742 | 13:36:00 | D | 2.20  |
| 150 | TARN TARAN | PATTI         | S-NPP | 74.68713 | 31.15284 | 13:36:00 | D | 2.90  |
| 151 | TARN TARAN | PATTI         | S-NPP | 74.73921 | 31.20822 | 13:36:00 | D | 2.70  |

**Details of residue burning events in Haryana on 21-Nov-2019**

| S. No. | District  | Tehsil / Block | Satellite | Longitude | Latitude | Time (IST) | Day / Night | Fire Power (W/m <sup>2</sup> ) |
|--------|-----------|----------------|-----------|-----------|----------|------------|-------------|--------------------------------|
| 1      | FATEHABAD | FATEHABAD      | S-NPP     | 75.48546  | 29.51328 | 02:18:00   | N           | 3.10                           |
| 2      | FATEHABAD | FATEHABAD      | S-NPP     | 75.49471  | 29.51521 | 02:18:00   | N           | 1.00                           |
| 3      | FATEHABAD | FATEHABAD      | S-NPP     | 75.47509  | 29.52570 | 02:18:00   | N           | 1.30                           |
| 4      | FATEHABAD | FATEHABAD      | S-NPP     | 75.47587  | 29.52909 | 02:18:00   | N           | 1.30                           |
| 5      | FATEHABAD | FATEHABAD      | S-NPP     | 75.49358  | 29.52955 | 02:18:00   | N           | 2.20                           |
| 6      | FATEHABAD | FATEHABAD      | S-NPP     | 75.44627  | 29.53422 | 02:18:00   | N           | 0.50                           |
| 7      | FATEHABAD | FATEHABAD      | S-NPP     | 75.44205  | 29.53496 | 02:18:00   | N           | 0.70                           |
| 8      | FATEHABAD | FATEHABAD      | S-NPP     | 75.44705  | 29.53762 | 02:18:00   | N           | 1.40                           |
| 9      | FATEHABAD | FATEHABAD      | S-NPP     | 75.44783  | 29.54102 | 02:18:00   | N           | 1.40                           |
| 10     | FATEHABAD | FATEHABAD      | S-NPP     | 75.44360  | 29.54175 | 02:18:00   | N           | 3.70                           |
| 11     | FATEHABAD | FATEHABAD      | S-NPP     | 75.60307  | 29.56956 | 02:18:00   | N           | 0.50                           |
| 12     | FATEHABAD | FATEHABAD      | S-NPP     | 75.74654  | 29.62268 | 13:36:00   | D           | 4.50                           |
| 13     | FATEHABAD | FATEHABAD      | S-NPP     | 75.49857  | 29.62668 | 13:36:00   | D           | 5.00                           |
| 14     | FATEHABAD | FATEHABAD      | S-NPP     | 75.51707  | 29.63961 | 13:36:00   | D           | 5.80                           |
| 15     | FATEHABAD | RATIA          | S-NPP     | 75.60502  | 29.59237 | 13:36:00   | D           | 2.90                           |
| 16     | FATEHABAD | RATIA          | S-NPP     | 75.60440  | 29.59572 | 13:36:00   | D           | 16.80                          |
| 17     | FATEHABAD | RATIA          | S-NPP     | 75.59970  | 29.59849 | 13:36:00   | D           | 16.80                          |
| 18     | FATEHABAD | RATIA          | S-NPP     | 75.59909  | 29.60185 | 13:36:00   | D           | 2.70                           |
| 19     | FATEHABAD | RATIA          | S-NPP     | 75.47515  | 29.64055 | 13:36:00   | D           | 7.80                           |
| 20     | FATEHABAD | RATIA          | S-NPP     | 75.47453  | 29.64390 | 13:36:00   | D           | 3.10                           |
| 21     | FATEHABAD | RATIA          | S-NPP     | 75.60600  | 29.67966 | 13:36:00   | D           | 2.80                           |
| 22     | FATEHABAD | RATIA          | S-NPP     | 75.46644  | 29.71664 | 13:36:00   | D           | 2.80                           |
| 23     | JIND      | SAFIDON        | S-NPP     | 76.56587  | 29.40480 | 13:36:00   | D           | 1.90                           |
| 24     | KAITHAL   | KAITHAL        | S-NPP     | 76.38740  | 29.53317 | 13:36:00   | D           | 2.10                           |
| 25     | KAITHAL   | KAITHAL        | S-NPP     | 76.43015  | 29.64339 | 13:36:00   | D           | 4.00                           |
| 26     | KAITHAL   | KAITHAL        | S-NPP     | 76.37766  | 29.66794 | 13:36:00   | D           | 1.90                           |
| 27     | PANIPAT   | PANIPAT        | S-NPP     | 76.78953  | 29.39230 | 13:36:00   | D           | 2.50                           |
| 28     | SIRSA     | ELLENABAD      | S-NPP     | 74.74788  | 29.49937 | 02:18:00   | N           | 0.50                           |
| 29     | SIRSA     | SIRSA          | S-NPP     | 75.02343  | 29.49172 | 13:36:00   | D           | 2.70                           |
| 30     | SIRSA     | SIRSA          | S-NPP     | 75.11471  | 29.50840 | 13:36:00   | D           | 2.60                           |

|    |         |         |       |          |          |          |   |      |
|----|---------|---------|-------|----------|----------|----------|---|------|
| 31 | SIRSA   | SIRSA   | S-NPP | 75.07102 | 29.51762 | 02:18:00 | N | 0.40 |
| 32 | SIRSA   | SIRSA   | S-NPP | 75.21832 | 29.52681 | 13:36:00 | D | 5.40 |
| 33 | SIRSA   | SIRSA   | S-NPP | 75.28235 | 29.55999 | 13:36:00 | D | 3.00 |
| 34 | SIRSA   | SIRSA   | S-NPP | 75.21548 | 29.56401 | 13:36:00 | D | 2.40 |
| 35 | SIRSA   | SIRSA   | S-NPP | 74.95609 | 29.56599 | 13:36:00 | D | 2.90 |
| 36 | SIRSA   | SIRSA   | S-NPP | 74.95084 | 29.57204 | 13:36:00 | D | 9.80 |
| 37 | SONIPAT | SONIPAT | S-NPP | 76.90197 | 29.08053 | 13:36:00 | D | 3.80 |



**Details of residue burning events in Uttar Pradesh on 21-Nov-2019**

| <b>S. No.</b> | <b>District</b> | <b>Tehsil / Block</b> | <b>Satellite</b> | <b>Longitude</b> | <b>Latitude</b> | <b>Time (IST)</b> | <b>Day / Night</b> | <b>Fire Power (W/m<sup>2</sup>)</b> |
|---------------|-----------------|-----------------------|------------------|------------------|-----------------|-------------------|--------------------|-------------------------------------|
| 1             | AURAIYA         | BIDHUNA               | S-NPP            | 79.64299         | 26.77198        | 02:18:00          | N                  | 0.70                                |
| 2             | AURAIYA         | BIDHUNA               | S-NPP            | 79.61800         | 26.79087        | 02:18:00          | N                  | 0.50                                |
| 3             | AURAIYA         | BIDHUNA               | S-NPP            | 79.67674         | 26.80323        | 13:36:00          | D                  | 3.50                                |
| 4             | BAGHPAT         | BARAUT                | TERRA            | 77.26400         | 29.07000        | 11:10:00          | D                  | 5.50                                |
| 5             | BAHRAICH        | NANPARA               | S-NPP            | 81.37815         | 27.79229        | 13:36:00          | D                  | 1.40                                |
| 6             | BANDA           | BABERU                | S-NPP            | 80.78403         | 25.64154        | 13:36:00          | D                  | 2.30                                |
| 7             | BANDA           | BABERU                | S-NPP            | 80.77561         | 25.64467        | 13:36:00          | D                  | 2.90                                |
| 8             | BARABANKI       | FATEHPUR              | S-NPP            | 81.19232         | 27.20535        | 13:36:00          | D                  | 4.20                                |
| 9             | BAREILLY        | BAHERI                | S-NPP            | 79.51814         | 28.79720        | 13:36:00          | D                  | 3.80                                |
| 10            | BASTI           | BHANPUR               | S-NPP            | 82.64518         | 26.95296        | 02:18:00          | N                  | 0.60                                |
| 11            | BASTI           | BHANPUR               | S-NPP            | 82.68533         | 27.04208        | 02:18:00          | N                  | 0.90                                |
| 12            | BIJNOR          | CHANDPUR              | S-NPP            | 78.17464         | 29.22710        | 13:36:00          | D                  | 1.90                                |
| 13            | BIJNOR          | DHAMPUR               | S-NPP            | 78.46236         | 29.31103        | 13:36:00          | D                  | 2.70                                |
| 14            | CHITRAKOOT      | KARWI                 | S-NPP            | 80.98006         | 25.44637        | 13:36:00          | D                  | 2.00                                |
| 15            | FIROZABAD       | JASRANA               | S-NPP            | 78.72274         | 27.21455        | 02:18:00          | N                  | 0.60                                |
| 16            | FIROZABAD       | JASRANA               | S-NPP            | 78.72512         | 27.21658        | 02:18:00          | N                  | 0.50                                |
| 17            | GAUTAMBUDHNAGAR | JEVAR                 | S-NPP            | 77.60172         | 28.14341        | 02:18:00          | N                  | 1.40                                |
| 18            | GAUTAMBUDHNAGAR | JEVAR                 | S-NPP            | 77.56621         | 28.21248        | 02:18:00          | N                  | 1.20                                |
| 19            | GAUTAMBUDHNAGAR | JEVAR                 | S-NPP            | 77.56405         | 28.21375        | 02:18:00          | N                  | 1.00                                |
| 20            | HAMIRPUR        | HAMIRPUR              | S-NPP            | 80.26102         | 25.81302        | 13:36:00          | D                  | 3.40                                |
| 21            | HAMIRPUR        | HAMIRPUR              | S-NPP            | 79.95748         | 25.84099        | 13:36:00          | D                  | 4.20                                |
| 22            | HAMIRPUR        | HAMIRPUR              | S-NPP            | 80.19507         | 25.84140        | 13:36:00          | D                  | 4.30                                |
| 23            | HAMIRPUR        | HAMIRPUR              | S-NPP            | 80.23213         | 25.85774        | 13:36:00          | D                  | 3.70                                |
| 24            | HAPUR           | GARHMUKTESAR          | S-NPP            | 78.13091         | 28.82227        | 13:36:00          | D                  | 2.90                                |
| 25            | JALAUN          | MADHOGARH             | S-NPP            | 79.05747         | 26.19734        | 13:36:00          | D                  | 2.20                                |
| 26            | JHANSI          | JHANSI                | S-NPP            | 78.68790         | 25.52354        | 13:36:00          | D                  | 4.60                                |
| 27            | JHANSI          | JHANSI                | S-NPP            | 78.69195         | 25.52773        | 13:36:00          | D                  | 6.10                                |
| 28            | JHANSI          | MOTH                  | S-NPP            | 78.84923         | 25.65526        | 13:36:00          | D                  | 12.10                               |
| 29            | JHANSI          | MOTH                  | S-NPP            | 78.85393         | 25.65585        | 13:36:00          | D                  | 7.60                                |
| 30            | JHANSI          | MOTH                  | S-NPP            | 78.91243         | 25.68181        | 13:36:00          | D                  | 11.00                               |

|    |              |             |       |          |          |          |   |       |
|----|--------------|-------------|-------|----------|----------|----------|---|-------|
| 31 | JHANSI       | MOTH        | S-NPP | 78.91187 | 25.68547 | 13:36:00 | D | 4.40  |
| 32 | JHANSI       | MOTH        | S-NPP | 78.85249 | 25.69657 | 13:36:00 | D | 12.70 |
| 33 | JHANSI       | MOTH        | S-NPP | 78.97301 | 25.69690 | 13:36:00 | D | 3.10  |
| 34 | JHANSI       | MOTH        | S-NPP | 78.84724 | 25.69962 | 13:36:00 | D | 5.70  |
| 35 | JHANSI       | MOTH        | S-NPP | 78.85027 | 25.71116 | 13:36:00 | D | 6.10  |
| 36 | JHANSI       | MOTH        | S-NPP | 78.84971 | 25.71481 | 13:36:00 | D | 3.50  |
| 37 | JHANSI       | MOTH        | S-NPP | 78.89213 | 25.72025 | 13:36:00 | D | 8.30  |
| 38 | JHANSI       | MOTH        | S-NPP | 78.84391 | 25.72151 | 13:36:00 | D | 13.60 |
| 39 | JHANSI       | MOTH        | S-NPP | 78.89157 | 25.72390 | 13:36:00 | D | 8.30  |
| 40 | JHANSI       | MOTH        | S-NPP | 78.86272 | 25.72392 | 13:36:00 | D | 8.30  |
| 41 | JHANSI       | MOTH        | S-NPP | 78.84336 | 25.72515 | 13:36:00 | D | 13.60 |
| 42 | JHANSI       | MOTH        | S-NPP | 78.91940 | 25.73120 | 13:36:00 | D | 5.40  |
| 43 | JHANSI       | MOTH        | S-NPP | 78.89046 | 25.73122 | 13:36:00 | D | 8.80  |
| 44 | JHANSI       | MOTH        | S-NPP | 78.95149 | 25.75281 | 13:36:00 | D | 7.70  |
| 45 | JHANSI       | MOTH        | S-NPP | 78.92715 | 25.75354 | 13:36:00 | D | 6.20  |
| 46 | JHANSI       | MOTH        | S-NPP | 78.89185 | 25.75377 | 13:36:00 | D | 4.10  |
| 47 | JHANSI       | MOTH        | S-NPP | 78.94983 | 25.75380 | 13:36:00 | D | 7.10  |
| 48 | JHANSI       | MOTH        | S-NPP | 78.84039 | 25.75394 | 13:36:00 | D | 6.50  |
| 49 | JHANSI       | MOTH        | S-NPP | 78.93028 | 25.75501 | 13:36:00 | D | 4.60  |
| 50 | JHANSI       | MOTH        | S-NPP | 78.95093 | 25.75648 | 13:36:00 | D | 7.70  |
| 51 | JHANSI       | MOTH        | S-NPP | 78.86282 | 25.76418 | 13:36:00 | D | 6.20  |
| 52 | JHANSI       | MOTH        | S-NPP | 78.90120 | 25.76525 | 13:36:00 | D | 5.00  |
| 53 | KANPUR DEHAT | RASULABAD   | S-NPP | 79.81432 | 26.64051 | 02:18:00 | N | 0.90  |
| 54 | KHERI        | LAKHIMPUR   | S-NPP | 80.76205 | 28.08197 | 13:36:00 | D | 3.40  |
| 55 | KHERI        | MOHMADI     | S-NPP | 80.38646 | 27.78087 | 13:36:00 | D | 6.60  |
| 56 | KHERI        | PALIA KALAN | S-NPP | 80.51746 | 28.50736 | 13:36:00 | D | 2.70  |
| 57 | KHERI        | PALIA KALAN | S-NPP | 80.51746 | 28.50874 | 13:36:00 | D | 2.70  |
| 58 | MAHARAJGANJ  | MAHARAJGANJ | S-NPP | 83.62345 | 27.07331 | 13:36:00 | D | 7.20  |
| 59 | MAHARAJGANJ  | MAHARAJGANJ | S-NPP | 83.53707 | 27.21598 | 13:36:00 | D | 3.20  |
| 60 | MAHARAJGANJ  | NICHLAUL    | S-NPP | 83.69789 | 27.23613 | 13:36:00 | D | 5.50  |
| 61 | MAHARAJGANJ  | NICHLAUL    | AQUA  | 83.68800 | 27.31400 | 12:45:00 | D | 15.80 |
| 62 | MEERUT       | MAWANA      | S-NPP | 77.87730 | 28.93257 | 02:18:00 | N | 0.70  |
| 63 | MEERUT       | MAWANA      | S-NPP | 77.84200 | 29.17895 | 13:36:00 | D | 5.40  |
| 64 | MEERUT       | MAWANA      | S-NPP | 78.04677 | 29.18549 | 13:36:00 | D | 5.20  |

|    |              |           |         |          |          |          |   |      |
|----|--------------|-----------|---------|----------|----------|----------|---|------|
| 65 | MEERUT       | MAWANA    | S-NPP   | 78.04959 | 29.18619 | 13:36:00 | D | 4.80 |
| 66 | MORADABAD    | MORADABAD | S-NPP   | 78.82596 | 28.89139 | 13:36:00 | D | 4.90 |
| 67 | PILHIBHIT    | PURANPUR  | S-NPP   | 80.09737 | 28.46943 | 02:18:00 | N | 0.70 |
| 68 | PILHIBHIT    | PURANPUR  | S-NPP   | 79.95380 | 28.49459 | 02:18:00 | N | 0.40 |
| 69 | PILHIBHIT    | PURANPUR  | S-NPP   | 79.95123 | 28.49615 | 02:18:00 | N | 0.70 |
| 70 | PILHIBHIT    | PURANPUR  | S-NPP   | 80.11503 | 28.49756 | 02:18:00 | N | 0.50 |
| 71 | PILHIBHIT    | PURANPUR  | S-NPP   | 80.08662 | 28.52178 | 02:18:00 | N | 0.90 |
| 72 | PILHIBHIT    | PURANPUR  | S-NPP   | 80.08191 | 28.52277 | 02:18:00 | N | 1.60 |
| 73 | RAMPUR       | BILASPUR  | S-NPP   | 79.39531 | 28.94157 | 13:36:00 | D | 3.20 |
| 74 | RAMPUR       | MILAK     | S-NPP   | 79.19598 | 28.57645 | 13:36:00 | D | 6.80 |
| 75 | SAMBHAL      | SAMBHAL   | S-NPP   | 78.60970 | 28.66561 | 02:18:00 | N | 0.50 |
| 76 | SHAHJAHANPUR | PUWANYA   | S-NPP   | 80.06367 | 27.95654 | 02:18:00 | N | 0.50 |
| 77 | SHAHJAHANPUR | PUWANYA   | S-NPP   | 80.21666 | 28.25200 | 02:18:00 | N | 0.70 |
| 78 | SHAHJAHANPUR | PUWANYA   | NOAA-18 | 79.99589 | 28.27770 | 20:27:00 | N | 8.00 |
| 79 | SHAHJAHANPUR | PUWANYA   | S-NPP   | 80.02792 | 28.30129 | 02:18:00 | N | 0.50 |
| 80 | SHAMLI       | SHAMLI    | S-NPP   | 77.33784 | 29.61377 | 02:18:00 | N | 2.10 |
| 81 | SITAPUR      | MISRIK    | S-NPP   | 80.48153 | 27.74638 | 13:36:00 | D | 4.20 |
| 82 | SULTANPUR    | SULTANPUR | S-NPP   | 81.97928 | 26.23864 | 13:36:00 | D | 4.10 |
| 83 | UNNAO        | HASANGANJ | S-NPP   | 80.62685 | 26.81182 | 13:36:00 | D | 1.00 |
| 84 | UNNAO        | PURWA     | S-NPP   | 80.80183 | 26.55201 | 13:36:00 | D | 1.50 |

**The study used images received from following Satellites at IARI Satellite Ground Station**

| S. No. | Satellite Name | Sensor | Resolution (meter) | Day / Night Passes |
|--------|----------------|--------|--------------------|--------------------|
| 1.     | Suomi NPP      | VIIRS  | 375 / 1000         | Both               |
| 2.     | Terra          | MODIS  | 1000               | Both               |
| 3.     | Aqua           | MODIS  | 1000               | Both               |
| 4.     | NOAA – 18      | AVHRR  | 1000               | Night              |
| 5.     | NOAA – 19      | AVHRR  | 1000               | Night              |
| 6.     | Metop - 1      | AVHRR  | 1000               | Night              |
| 7.     | Metop - 2      | AVHRR  | 1000               | Night              |

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|              |                     |                                  |  |
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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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