



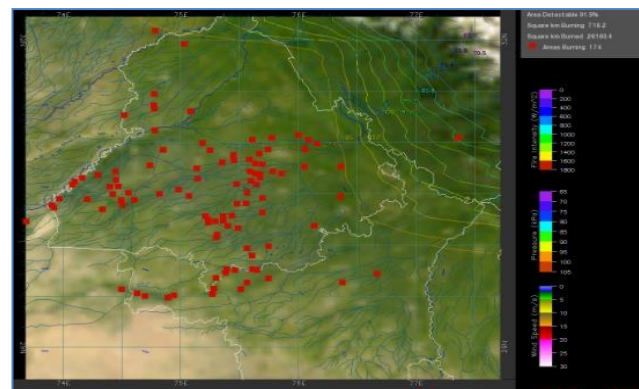
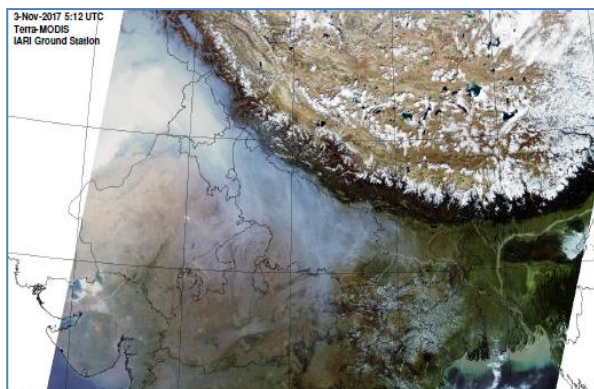
Bulletin No. 14

Events Date:
14-Oct-2019

Issued on:
15-Oct-2019



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



Prepared by:

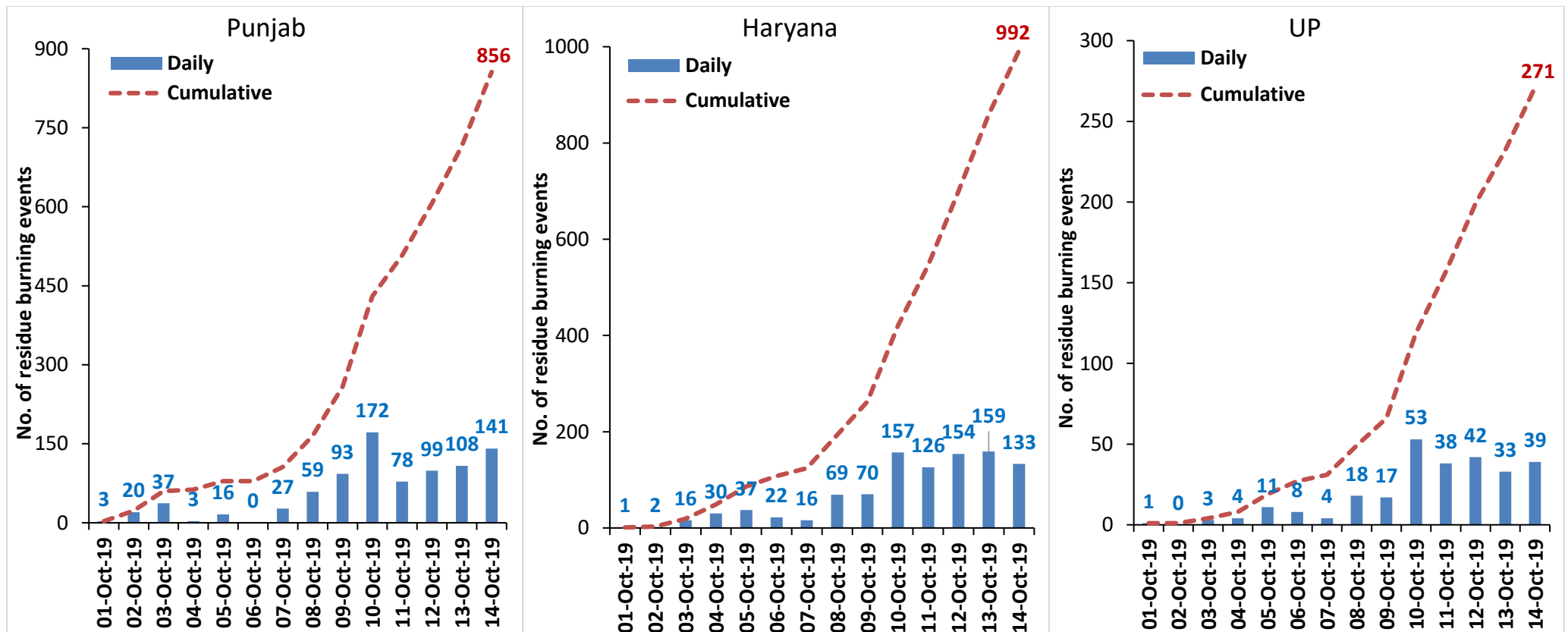
Consortium for Research on Agroecosystem Monitoring and Modeling from Space (CREAMS) Laboratory,
Division of Agricultural Physics, ICAR – Indian Agricultural Research Institute, New Delhi – 110012

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

Highlights for 14-October-2019

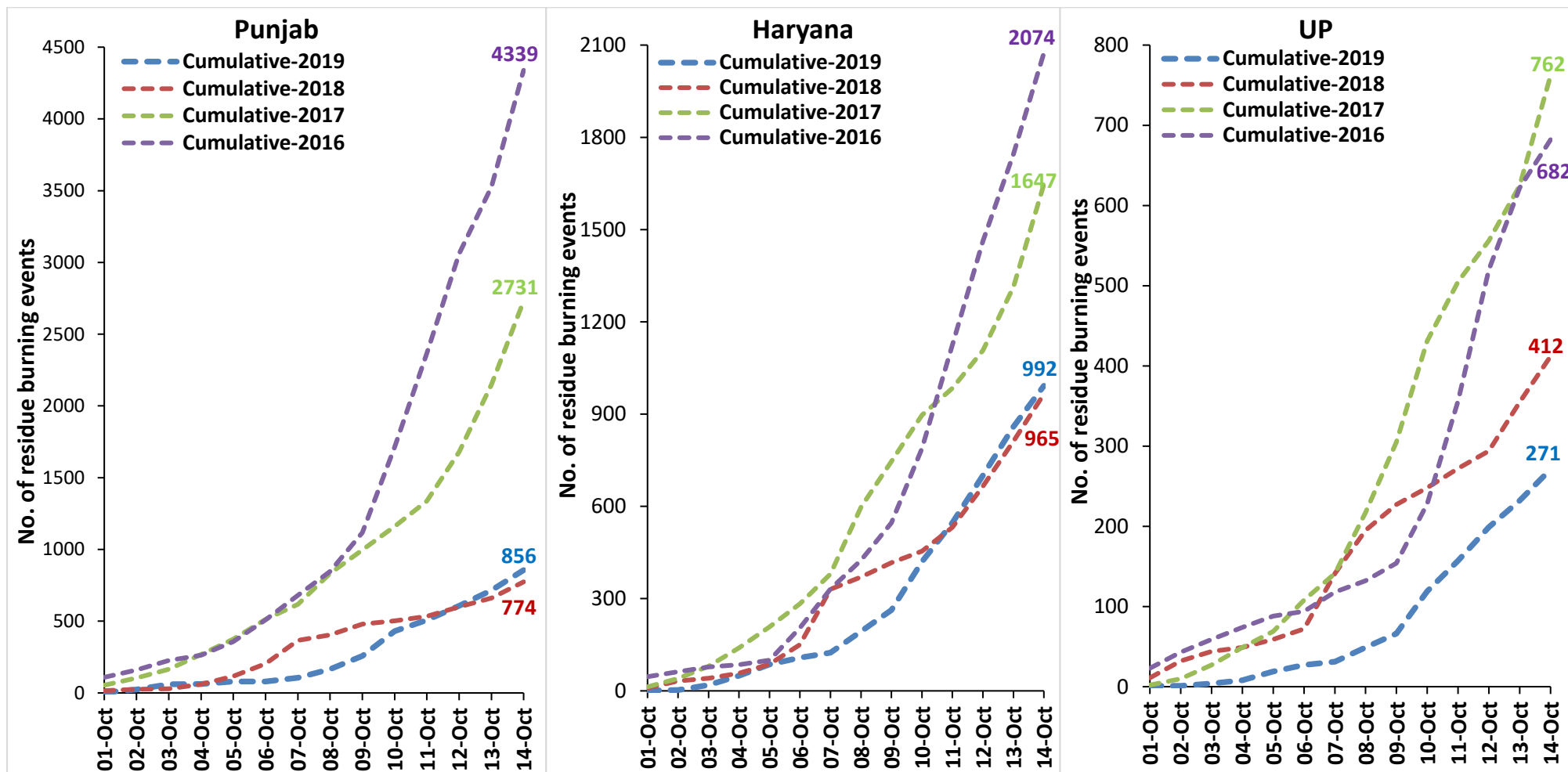
- Satellites detected **313** residue burning events in the three study States on 14-Oct-2019.
- The burning events detected on **14-Oct-2019** are **141**, **133** and **39** in Punjab, Haryana and UP, respectively.
- The number of events has marginally increased from **300** on **13-Oct-2019** to **313** on **14-Oct-2019** in the three states.
- Total **2119** burning events were detected in the three States between **01-Oct-2019** and **14-Oct-2019**, which are distributed as **856**, **992** and **271** in Punjab, Haryana and UP, respectively.
- Overall, the total burning events recorded in the three states are **1.5%** less than in 2018 till date. UP recorded **34.2%** reduction while Punjab and Haryana recorded **10.5%** and **2.8%** increase, respectively, in the current season than in 2018.

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

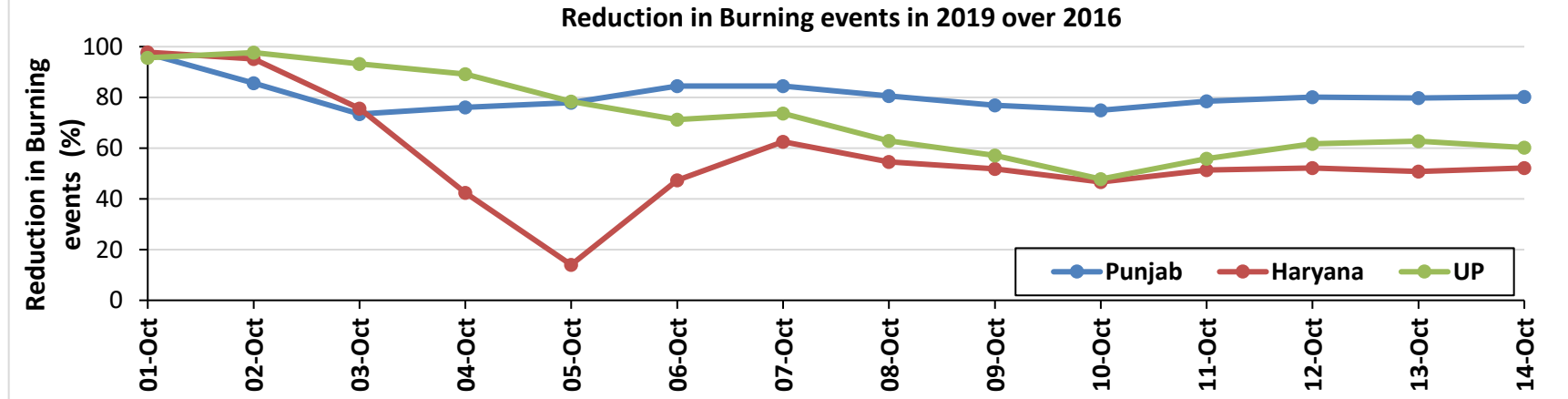
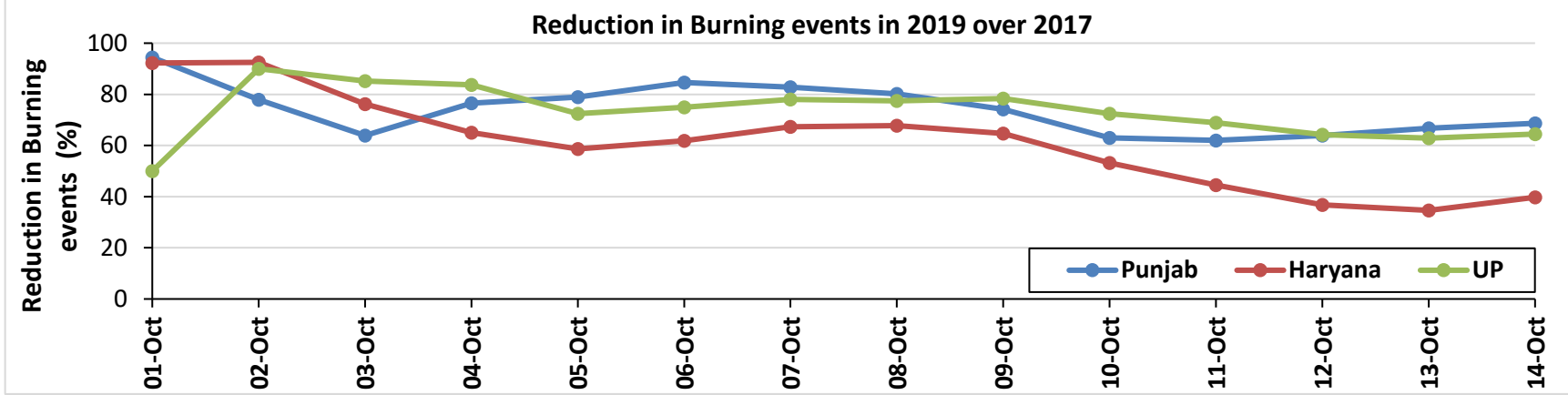
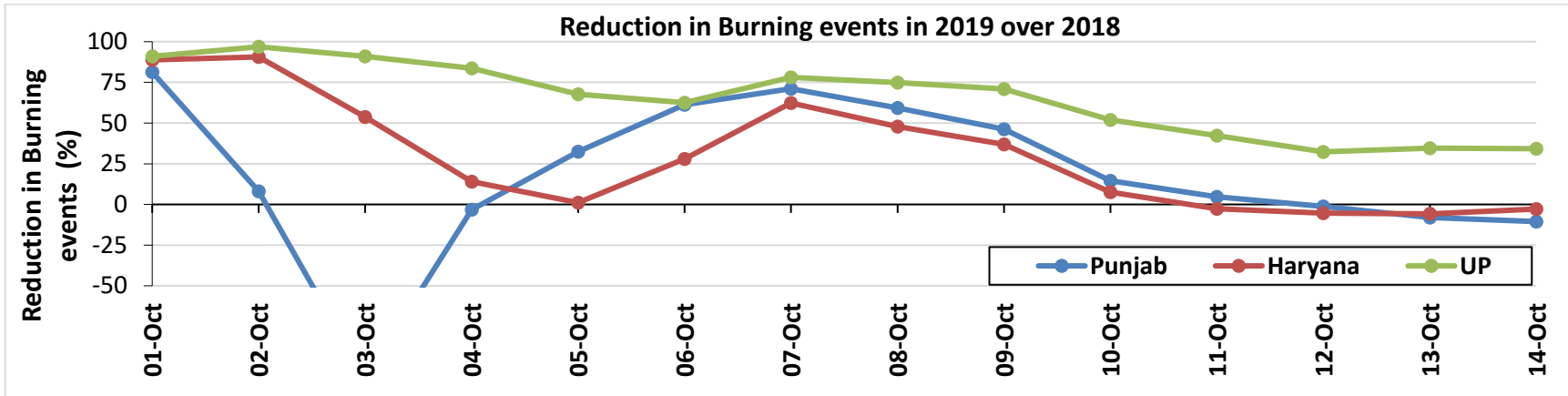


Comparison of residue burning events in current year (2019) with previous years (2018, 2017 & 2016) for the three study States

(01-Oct to 14-Oct)

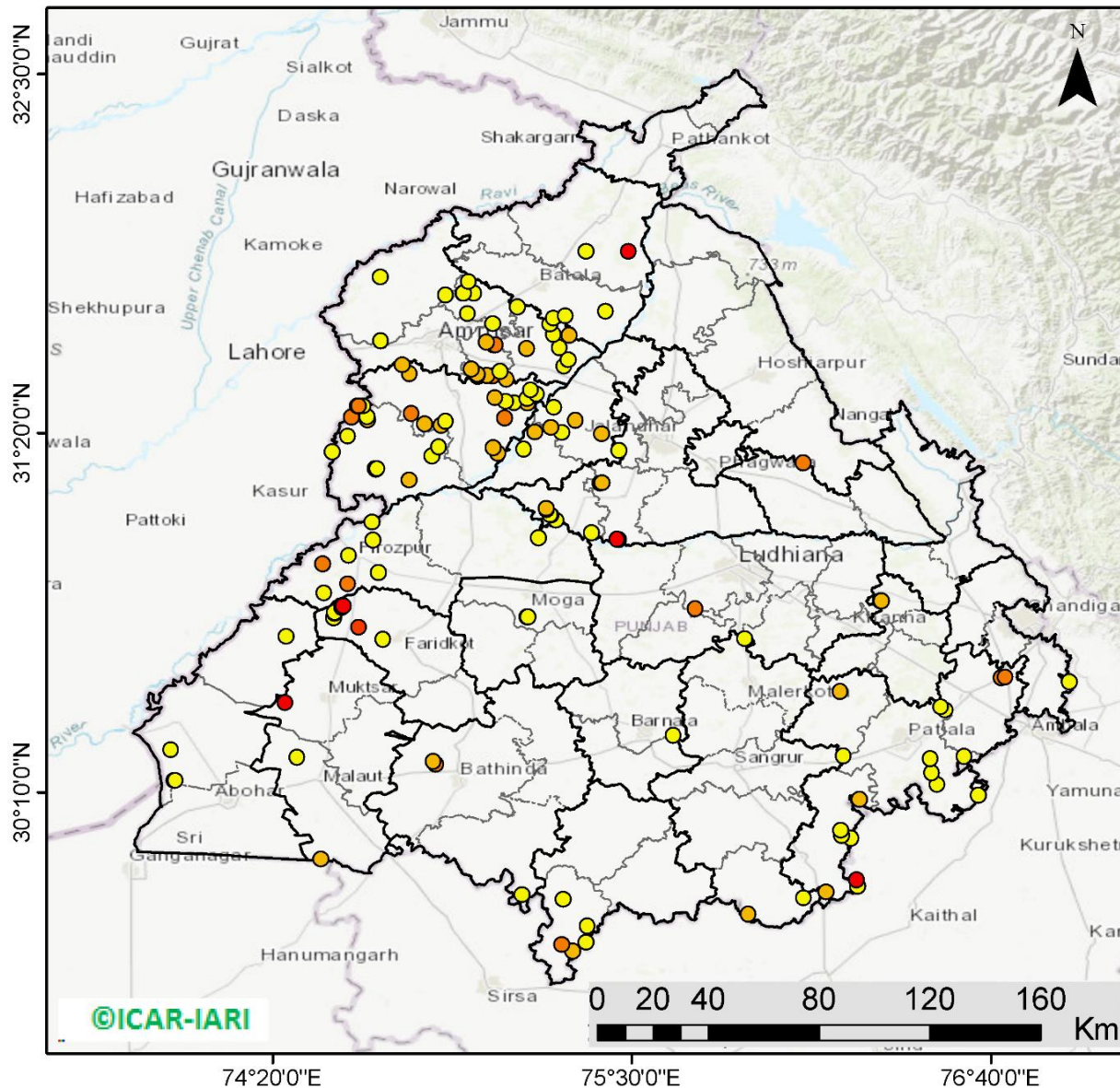


Percent Reduction in Burning events in 2019 over 2018, 2017 and 2016 (Daily Cumulative)



(a) Punjab

RICE RESIDUE BURNING IN PUNJAB



141 burning events detected in Punjab on 14th October 2019

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/>

Details of residue burning events in Punjab on 14-Oct-2019

S. No.	District	Tehsil / Block	Satellite	Longitude	Latitude	Time (IST)	Day / Night	Fire Power (W/m2)
1	AMRITSAR	AMRITSAR I	S-NPP	74.99892	31.51780	13:48:00	D	5.90
2	AMRITSAR	AMRITSAR I	S-NPP	75.04755	31.51963	13:48:00	D	12.70
3	AMRITSAR	AMRITSAR I	S-NPP	74.99833	31.52157	13:48:00	D	6.40
4	AMRITSAR	AMRITSAR I	S-NPP	74.99773	31.52534	13:48:00	D	6.40
5	AMRITSAR	AMRITSAR I	S-NPP	75.07263	31.53410	13:48:00	D	3.10
6	AMRITSAR	AMRITSAR I	S-NPP	74.97883	31.54229	13:48:00	D	6.10
7	AMRITSAR	BABA BAKALA	S-NPP	75.28027	31.55036	13:48:00	D	1.70
8	AMRITSAR	BABA BAKALA	S-NPP	75.29385	31.57139	13:48:00	D	3.60
9	AMRITSAR	BABA BAKALA	S-NPP	75.15764	31.60876	13:48:00	D	7.20
10	AMRITSAR	BABA BAKALA	S-NPP	75.26536	31.61091	13:48:00	D	3.80
11	AMRITSAR	AMRITSAR I	S-NPP	75.05137	31.61976	13:48:00	D	9.90
12	AMRITSAR	AMRITSAR I	S-NPP	75.05675	31.62038	13:48:00	D	14.90
13	AMRITSAR	AMRITSAR I	S-NPP	75.02811	31.62861	13:48:00	D	8.50
14	AMRITSAR	AJNALA	S-NPP	74.68422	31.63356	13:48:00	D	1.50
15	AMRITSAR	BABA BAKALA	S-NPP	75.29610	31.65169	13:48:00	D	6.30
16	AMRITSAR	BABA BAKALA	S-NPP	75.24531	31.65368	13:48:00	D	4.20
17	AMRITSAR	AMRITSAR I	S-NPP	75.04892	31.68786	13:48:00	D	4.00
18	AMRITSAR	AMRITSAR I	S-NPP	74.96723	31.72080	13:48:00	D	2.20
19	AMRITSAR	AMRITSAR I	S-NPP	75.12851	31.74329	13:48:00	D	3.80
20	AMRITSAR	AJNALA	S-NPP	74.89543	31.78160	13:48:00	D	4.90
21	AMRITSAR	AMRITSAR I	S-NPP	74.95123	31.78804	13:48:00	D	2.20
22	AMRITSAR	AMRITSAR I	S-NPP	74.98692	31.78819	13:48:00	D	2.70
23	AMRITSAR	AMRITSAR I	S-NPP	74.95414	31.78831	13:48:00	D	3.60
24	AMRITSAR	AMRITSAR I	S-NPP	74.97025	31.82474	13:48:00	D	3.40
25	AMRITSAR	AJNALA	S-NPP	74.68246	31.84044	13:48:00	D	3.10
26	BARNALA	BARNALA	S-NPP	75.63498	30.35251	13:48:00	D	4.70
27	BATHINDA	TALWANDI SABO	S-NPP	75.14383	29.83402	13:48:00	D	4.90
28	BATHINDA	BATHINDA	AQUA	74.86300	30.25900	13:20:00	D	12.50
29	BATHINDA	BATHINDA	AQUA	74.85600	30.26700	13:20:00	D	9.10
30	FARIDKOT	FARIDKOT	S-NPP	74.69273	30.66418	13:48:00	D	1.90

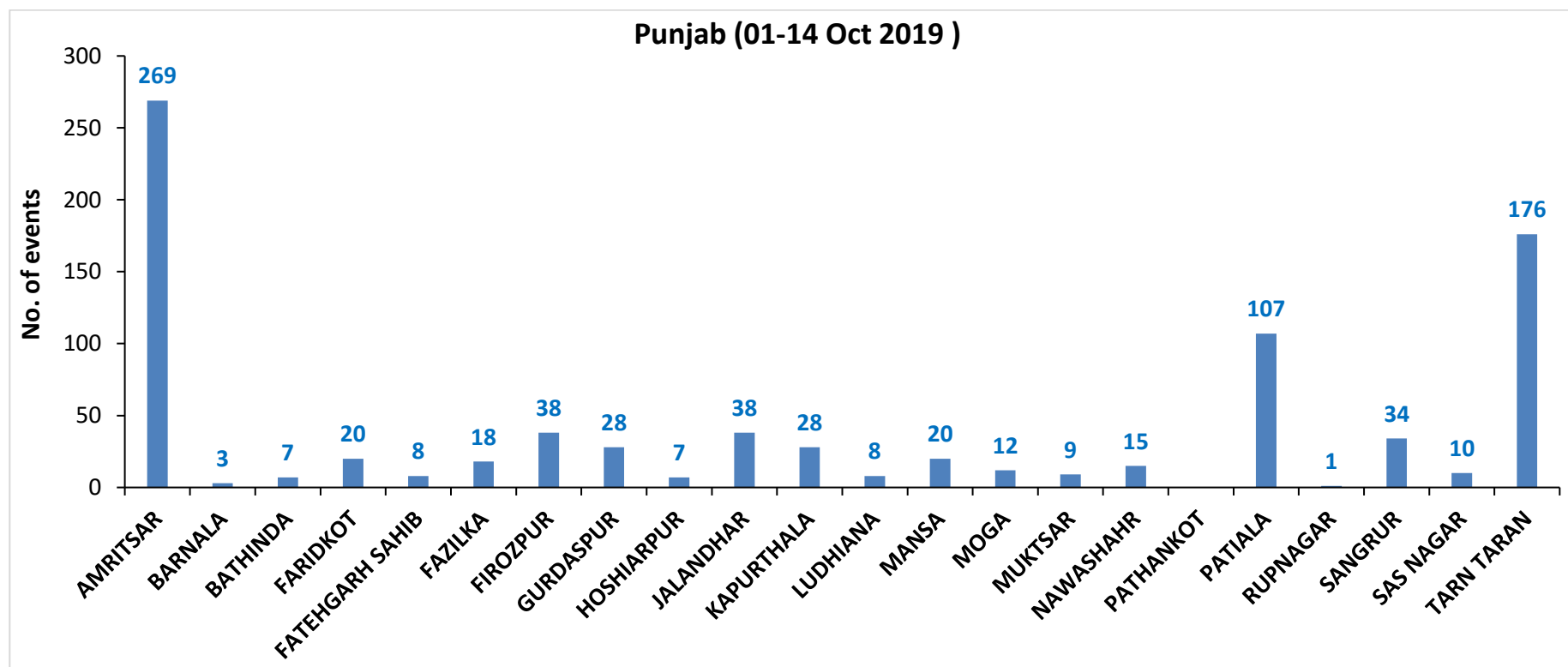
31	FARIDKOT	FARIDKOT	S-NPP	74.61272	30.70215	13:48:00	D	15.20
32	FARIDKOT	FARIDKOT	S-NPP	74.53199	30.73329	13:48:00	D	2.20
33	FARIDKOT	FARIDKOT	S-NPP	74.53456	30.74850	13:48:00	D	3.30
34	FARIDKOT	FARIDKOT	S-NPP	74.53397	30.75215	13:48:00	D	3.20
35	FARIDKOT	FARIDKOT	AQUA	74.55900	30.76800	13:20:00	D	14.40
36	FARIDKOT	FARIDKOT	AQUA	74.56300	30.77200	13:20:00	D	21.30
37	FATEHGARH SAHIB	KHAMANOH	S-NPP	76.30743	30.78872	13:48:00	D	4.30
38	FATEHGARH SAHIB	KHAMANOH	S-NPP	76.31145	30.78916	13:48:00	D	6.70
39	FAZILKA	FAZILKA	S-NPP	74.01290	30.20514	13:48:00	D	4.20
40	FAZILKA	FAZILKA	S-NPP	74.01752	30.20573	13:48:00	D	4.20
41	FAZILKA	FAZILKA	S-NPP	74.00237	30.30392	13:48:00	D	4.20
42	FAZILKA	JALALABAD	S-NPP	74.37714	30.67341	13:48:00	D	2.40
43	FIROZPUR	FIROZPUR	S-NPP	74.50059	30.81432	13:48:00	D	2.60
44	FIROZPUR	FIROZPUR	AQUA	74.57700	30.84300	13:20:00	D	12.70
45	FIROZPUR	FIROZPUR	S-NPP	74.67770	30.88092	13:48:00	D	4.70
46	FIROZPUR	FIROZPUR	AQUA	74.49600	30.90900	13:20:00	D	12.70
47	FIROZPUR	FIROZPUR	S-NPP	74.58018	30.93538	13:48:00	D	2.70
48	FIROZPUR	FIROZPUR	S-NPP	74.65888	30.98623	13:48:00	D	2.30
49	FIROZPUR	ZIRA	S-NPP	75.19641	30.99352	13:48:00	D	3.00
50	FIROZPUR	FIROZPUR	S-NPP	74.65672	31.04428	13:48:00	D	3.10
51	GURDASPUR	BATALA	S-NPP	75.23450	31.68745	13:48:00	D	4.30
52	GURDASPUR	BATALA	S-NPP	75.24578	31.70611	13:48:00	D	3.10
53	GURDASPUR	BATALA	S-NPP	75.28387	31.71425	13:48:00	D	4.90
54	GURDASPUR	BATALA	S-NPP	75.41484	31.72796	13:48:00	D	4.80
55	GURDASPUR	GURDASPUR	S-NPP	75.35166	31.92315	13:48:00	D	4.70
56	GURDASPUR	GURDASPUR	S-NPP	75.49002	31.92323	13:48:00	D	21.30
57	HOSHIARPUR	GARHSHANKAR	S-NPP	76.05611	31.23750	13:48:00	D	10.40
58	JALANDHAR	NAKODAR	S-NPP	75.45638	30.98834	13:48:00	D	18.20
59	JALANDHAR	NAKODAR	S-NPP	75.45193	30.98971	13:48:00	D	34.70
60	JALANDHAR	SHAHKOT	S-NPP	75.36958	31.00964	13:48:00	D	4.90
61	JALANDHAR	SHAHKOT	S-NPP	75.25312	31.05033	13:48:00	D	2.70
62	JALANDHAR	SHAHKOT	S-NPP	75.23686	31.06652	13:48:00	D	4.70
63	JALANDHAR	SHAHKOT	S-NPP	75.23409	31.06739	13:48:00	D	4.10
64	JALANDHAR	SHAHKOT	S-NPP	75.22318	31.08426	13:48:00	D	5.40

65	JALANDHAR	SHAHKOT	S-NPP	75.22259	31.08805	13:48:00	D	5.80
66	JALANDHAR	NAKODAR	S-NPP	75.39795	31.17043	13:48:00	D	7.30
67	JALANDHAR	NAKODAR	S-NPP	75.40344	31.17107	13:48:00	D	7.30
68	KAPURTHALA	KAPURTHALA	S-NPP	75.45811	31.27694	13:48:00	D	3.30
69	KAPURTHALA	SULTANPUR LODHI	S-NPP	75.14909	31.28235	13:48:00	D	2.90
70	KAPURTHALA	KAPURTHALA	S-NPP	75.40227	31.33055	13:48:00	D	9.20
71	KAPURTHALA	SULTANPUR LODHI	S-NPP	75.27308	31.33526	13:48:00	D	3.10
72	KAPURTHALA	SULTANPUR LODHI	S-NPP	75.18450	31.33661	13:48:00	D	10.00
73	KAPURTHALA	KAPURTHALA	AQUA	75.23700	31.35100	13:20:00	D	7.80
74	KAPURTHALA	KAPURTHALA	S-NPP	75.31699	31.37533	13:48:00	D	6.00
75	KAPURTHALA	KAPURTHALA	S-NPP	75.24708	31.41636	13:48:00	D	3.60
76	LUDHIANA	LUDHIANA WEST	AQUA	75.70600	30.76400	13:20:00	D	10.80
77	MANSA	SARDULGARH	S-NPP	75.30836	29.65071	13:48:00	D	9.50
78	MANSA	SARDULGARH	AQUA	75.27200	29.67200	13:20:00	D	15.00
79	MANSA	SARDULGARH	S-NPP	75.35139	29.67886	13:48:00	D	4.10
80	MANSA	SARDULGARH	S-NPP	75.35629	29.73333	13:48:00	D	3.10
81	MANSA	SARDULGARH	S-NPP	75.27673	29.81952	13:48:00	D	2.20
82	MOGA	MOGA	S-NPP	75.15965	30.73649	13:48:00	D	5.30
83	MOGA	MOGA	S-NPP	75.16210	30.73667	13:48:00	D	4.70
84	MUKTSAR	MALAUT	S-NPP	74.49065	29.94988	13:48:00	D	7.10
85	MUKTSAR	MALAUT	S-NPP	74.41345	30.28128	13:48:00	D	3.70
86	MUKTSAR	MUKTSAR	AQUA	74.37500	30.45700	13:20:00	D	38.30
87	PATIALA	SAMANA	S-NPP	76.13099	29.84300	13:48:00	D	8.50
88	PATIALA	SAMANA	S-NPP	76.23316	29.86263	13:48:00	D	4.10
89	PATIALA	SAMANA	S-NPP	76.23032	29.88236	13:48:00	D	28.30
90	PATIALA	SAMANA	S-NPP	76.21206	30.01813	13:48:00	D	4.70
91	PATIALA	SAMANA	S-NPP	76.18136	30.02676	13:48:00	D	4.70
92	PATIALA	SAMANA	S-NPP	76.17906	30.04254	13:48:00	D	4.80
93	PATIALA	SAMANA	S-NPP	76.23878	30.14388	13:48:00	D	6.90
94	PATIALA	PATIALA	S-NPP	76.62518	30.15718	13:48:00	D	2.40
95	PATIALA	PATIALA	S-NPP	76.49244	30.19206	13:48:00	D	2.50
96	PATIALA	PATIALA	S-NPP	76.47466	30.23093	13:48:00	D	2.10
97	PATIALA	PATIALA	S-NPP	76.46955	30.27625	13:48:00	D	1.80
98	PATIALA	PATIALA	S-NPP	76.57970	30.28402	13:48:00	D	2.10

99	PATIALA	PATIALA	S-NPP	76.51711	30.43312	13:48:00	D	3.00
100	PATIALA	RAJPURA	S-NPP	76.50319	30.44388	13:48:00	D	4.90
101	PATIALA	NABHA	S-NPP	76.17677	30.49432	13:48:00	D	8.60
102	PATIALA	RAJPURA	AQUA	76.70000	30.53900	13:20:00	D	10.60
103	PATIALA	RAJPURA	AQUA	76.71300	30.54100	13:20:00	D	14.10
104	SANGRUR	MOONAK	S-NPP	75.87913	29.77081	13:48:00	D	6.10
105	SANGRUR	MOONAK	S-NPP	76.05891	29.82285	13:48:00	D	4.10
106	SANGRUR	SANGRUR	S-NPP	76.18768	30.28560	13:48:00	D	4.90
107	SANGRUR	MALERKOTLA	S-NPP	75.86610	30.66535	13:48:00	D	3.20
108	SAS NAGAR	DERABASSI	S-NPP	76.92120	30.52518	13:48:00	D	3.20
109	TARN TARAN	PATTI	S-NPP	74.77742	31.18139	13:48:00	D	6.70
110	TARN TARAN	PATTI	S-NPP	74.66999	31.21536	13:48:00	D	7.20
111	TARN TARAN	PATTI	S-NPP	74.66752	31.21710	13:48:00	D	3.40
112	TARN TARAN	PATTI	S-NPP	74.67260	31.21772	13:48:00	D	4.20
113	TARN TARAN	PATTI	S-NPP	74.85153	31.25938	13:48:00	D	2.90
114	TARN TARAN	KHADOOR SAHIB	S-NPP	75.06411	31.26877	13:48:00	D	6.40
115	TARN TARAN	PATTI	S-NPP	74.52666	31.27323	13:48:00	D	3.10
116	TARN TARAN	KHADOOR SAHIB	S-NPP	75.05051	31.28639	13:48:00	D	6.90
117	TARN TARAN	PATTI	S-NPP	74.87339	31.28856	13:48:00	D	3.10
118	TARN TARAN	PATTI	S-NPP	74.57745	31.32320	13:48:00	D	2.80
119	TARN TARAN	PATTI	S-NPP	74.88090	31.35885	13:48:00	D	7.90
120	TARN TARAN	KHADOOR SAHIB	S-NPP	74.82697	31.36396	13:48:00	D	7.20
121	TARN TARAN	KHADOOR SAHIB	S-NPP	74.89482	31.37189	13:48:00	D	4.60
122	TARN TARAN	PATTI	S-NPP	74.64140	31.37597	13:48:00	D	5.50
123	TARN TARAN	KHADOOR SAHIB	AQUA	75.08700	31.38200	13:20:00	D	10.70
124	TARN TARAN	PATTI	TERRA	74.58900	31.38600	11:45:00	D	12.40
125	TARN TARAN	PATTI	S-NPP	74.63963	31.38705	13:48:00	D	4.00
126	TARN TARAN	KHADOOR SAHIB	S-NPP	74.78472	31.39692	13:48:00	D	14.50
127	TARN TARAN	PATTI	S-NPP	74.61149	31.41925	13:48:00	D	9.30
128	TARN TARAN	PATTI	S-NPP	74.60822	31.42088	13:48:00	D	5.90
129	TARN TARAN	PATTI	S-NPP	74.62679	31.42105	13:48:00	D	4.30
130	TARN TARAN	PATTI	S-NPP	74.61330	31.42151	13:48:00	D	11.00
131	TARN TARAN	KHADOOR SAHIB	S-NPP	75.16204	31.42981	13:48:00	D	5.60
132	TARN TARAN	KHADOOR SAHIB	S-NPP	75.11772	31.43238	13:48:00	D	3.10

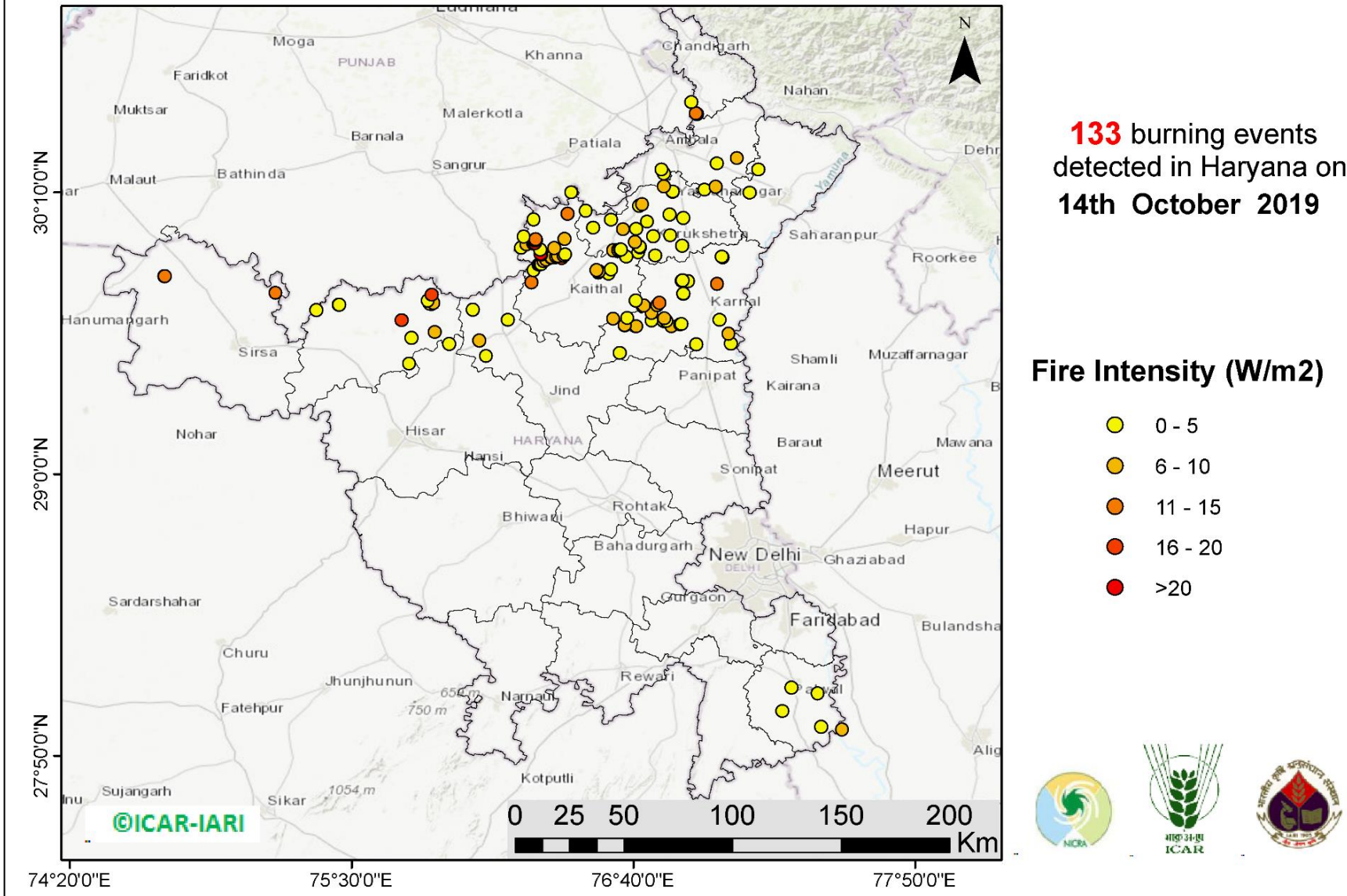
133	TARN TARAN	KHADOOR SAHIB	S-NPP	75.08970	31.43682	13:48:00	D	2.40
134	TARN TARAN	KHADOOR SAHIB	S-NPP	75.15968	31.44500	13:48:00	D	3.60
135	TARN TARAN	KHADOOR SAHIB	S-NPP	75.05524	31.44815	13:48:00	D	6.60
136	TARN TARAN	KHADOOR SAHIB	S-NPP	75.19041	31.46019	13:48:00	D	4.00
137	TARN TARAN	KHADOOR SAHIB	S-NPP	75.17179	31.47349	13:48:00	D	2.70
138	TARN TARAN	KHADOOR SAHIB	S-NPP	75.09287	31.50947	13:48:00	D	7.10
139	TARN TARAN	KHADOOR SAHIB	AQUA	75.02900	31.52100	13:20:00	D	10.00
140	TARN TARAN	KHADOOR SAHIB	S-NPP	74.77794	31.52596	13:48:00	D	6.10
141	TARN TARAN	KHADOOR SAHIB	S-NPP	74.75488	31.55480	13:48:00	D	5.60

District-wise cumulative number of residue burning events in Punjab (01 to 14-Oct 2019)



(b) Haryana

RICE RESIDUE BURNING IN HARYANA



Details of residue burning events in Haryana on 14-Oct-2019

S. No.	District	Tehsil / Block	Satellite	Longitude	Latitude	Time (IST)	Day / Night	Fire Power (W/m ²)
1	AMBALA	AMBALA	S-NPP	76.79350	30.24549	13:48:00	D	3.50
2	AMBALA	AMBALA	S-NPP	76.78285	30.26096	13:48:00	D	3.10
3	AMBALA	BARARA	S-NPP	76.96135	30.17801	13:48:00	D	2.40
4	AMBALA	BARARA	AQUA	77.00700	30.19000	13:20:00	D	8.00
5	AMBALA	BARARA	S-NPP	77.01224	30.28589	13:48:00	D	4.50
6	AMBALA	BARARA	AQUA	77.09500	30.30900	13:20:00	D	6.20
7	FATEHABAD	FATEHABAD	S-NPP	75.73869	29.45653	13:48:00	D	2.00
8	FATEHABAD	FATEHABAD	S-NPP	75.74732	29.56495	13:48:00	D	2.80
9	FATEHABAD	RATIA	S-NPP	75.35400	29.67952	13:48:00	D	4.40
10	FATEHABAD	RATIA	S-NPP	75.44617	29.70171	13:48:00	D	3.00
11	FATEHABAD	RATIA	S-NPP	75.44859	29.70220	13:48:00	D	4.10
12	FATEHABAD	TOHANA	S-NPP	75.84333	29.58784	13:48:00	D	9.30
13	FATEHABAD	TOHANA	S-NPP	75.70735	29.63614	13:48:00	D	16.80
14	FATEHABAD	TOHANA	AQUA	75.83000	29.70500	13:20:00	D	19.10
15	FATEHABAD	TOHANA	AQUA	75.82400	29.70700	13:20:00	D	9.90
16	FATEHABAD	TOHANA	AQUA	75.84000	29.71000	13:20:00	D	9.70
17	FATEHABAD	TOHANA	S-NPP	75.81641	29.71907	13:48:00	D	4.80
18	FATEHABAD	TOHANA	AQUA	75.83200	29.74200	13:20:00	D	15.80
19	HISAR	HISAR	S-NPP	75.90318	29.53843	13:48:00	D	3.00
20	JIND	NARWANA	S-NPP	76.05676	29.48933	13:48:00	D	4.70
21	JIND	NARWANA	S-NPP	76.03031	29.55349	13:48:00	D	9.50
22	JIND	NARWANA	S-NPP	76.02801	29.55383	13:48:00	D	9.40
23	JIND	NARWANA	S-NPP	76.14705	29.63873	13:48:00	D	3.90
24	JIND	NARWANA	S-NPP	76.00185	29.68144	13:48:00	D	4.10
25	KAITHAL	GUHLA	S-NPP	76.27994	29.93050	13:48:00	D	3.20
26	KAITHAL	GUHLA	S-NPP	76.33843	29.93695	13:48:00	D	6.20
27	KAITHAL	GUHLA	S-NPP	76.20222	29.93792	13:48:00	D	3.30
28	KAITHAL	GUHLA	S-NPP	76.22363	29.95235	13:48:00	D	8.90
29	KAITHAL	GUHLA	S-NPP	76.25263	29.95561	13:48:00	D	7.90
30	KAITHAL	GUHLA	S-NPP	76.25845	29.95627	13:48:00	D	30.00

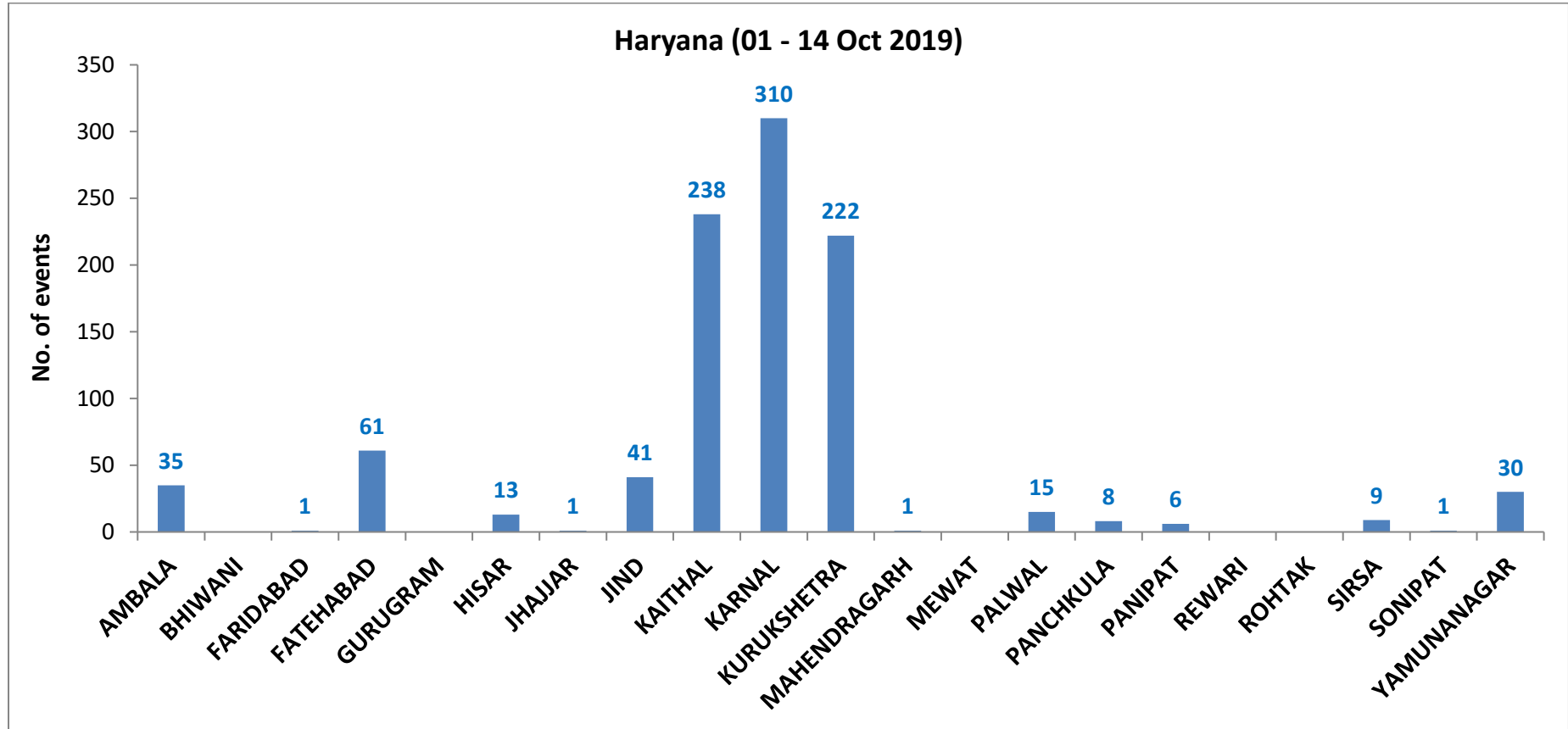
31	KAITHAL	GUHLA	AQUA	76.25800	29.96800	13:20:00	D	13.10
32	KAITHAL	GUHLA	S-NPP	76.26256	29.96879	13:48:00	D	11.60
33	KAITHAL	GUHLA	S-NPP	76.26198	29.97276	13:48:00	D	11.60
34	KAITHAL	GUHLA	S-NPP	76.38099	29.97401	13:48:00	D	7.90
35	KAITHAL	GUHLA	S-NPP	76.21327	29.98328	13:48:00	D	3.70
36	KAITHAL	GUHLA	S-NPP	76.25400	30.05492	13:48:00	D	2.60
37	KAITHAL	GUHLA	S-NPP	76.39415	30.07859	13:48:00	D	11.20
38	KAITHAL	GUHLA	S-NPP	76.40963	30.16670	13:48:00	D	3.60
39	KAITHAL	KAITHAL	AQUA	76.58400	29.64300	13:20:00	D	9.80
40	KAITHAL	KAITHAL	S-NPP	76.67688	29.71907	13:48:00	D	2.10
41	KAITHAL	KAITHAL	AQUA	76.24500	29.79500	13:20:00	D	12.50
42	KAITHAL	KAITHAL	S-NPP	76.56418	29.83040	13:48:00	D	2.20
43	KAITHAL	KAITHAL	AQUA	76.52100	29.83500	13:20:00	D	9.90
44	KAITHAL	KAITHAL	AQUA	76.52500	29.84000	13:20:00	D	8.10
45	KAITHAL	KAITHAL	S-NPP	76.25337	29.84485	13:48:00	D	4.50
46	KAITHAL	KAITHAL	S-NPP	76.51331	29.84529	13:48:00	D	6.20
47	KAITHAL	KAITHAL	S-NPP	76.57393	29.84778	13:48:00	D	2.90
48	KAITHAL	KAITHAL	S-NPP	76.27372	29.86723	13:48:00	D	4.40
49	KAITHAL	KAITHAL	S-NPP	76.27953	29.86789	13:48:00	D	4.70
50	KAITHAL	KAITHAL	S-NPP	76.28534	29.86854	13:48:00	D	4.70
51	KAITHAL	KAITHAL	S-NPP	76.29527	29.88174	13:48:00	D	5.40
52	KAITHAL	KAITHAL	S-NPP	76.30634	29.88704	13:48:00	D	5.20
53	KAITHAL	KAITHAL	S-NPP	76.37077	29.89437	13:48:00	D	16.60
54	KAITHAL	KAITHAL	S-NPP	76.32658	29.89532	13:48:00	D	6.80
55	KAITHAL	KAITHAL	S-NPP	76.34417	29.89722	13:48:00	D	13.30
56	KAITHAL	KAITHAL	S-NPP	76.32858	29.89764	13:48:00	D	5.80
57	KAITHAL	KAITHAL	S-NPP	76.63628	29.89962	13:48:00	D	3.40
58	KAITHAL	KAITHAL	S-NPP	76.34615	29.89964	13:48:00	D	6.40
59	KAITHAL	KAITHAL	S-NPP	76.35535	29.90246	13:48:00	D	5.20
60	KAITHAL	KAITHAL	AQUA	76.37900	29.90300	13:20:00	D	11.40
61	KAITHAL	KAITHAL	S-NPP	76.28545	29.90880	13:48:00	D	13.20
62	KAITHAL	KAITHAL	S-NPP	76.38425	29.90962	13:48:00	D	2.80
63	KAITHAL	KAITHAL	S-NPP	76.28281	29.91070	13:48:00	D	25.00
64	KAITHAL	KAITHAL	S-NPP	76.68747	29.91759	13:48:00	D	3.20

65	KARNAL	ASSANDH	S-NPP	76.60966	29.50159	13:48:00	D	3.20
66	KARNAL	ASSANDH	S-NPP	76.67530	29.61169	13:48:00	D	5.00
67	KARNAL	ASSANDH	S-NPP	76.67934	29.61215	13:48:00	D	6.70
68	KARNAL	ASSANDH	S-NPP	76.62998	29.61477	13:48:00	D	11.70
69	KARNAL	ASSANDH	S-NPP	76.63009	29.61567	13:48:00	D	8.50
70	KARNAL	ASSANDH	S-NPP	76.64216	29.64559	13:48:00	D	4.20
71	KARNAL	GHARAUNDA	S-NPP	76.92656	29.53718	13:48:00	D	4.00
72	KARNAL	GHARAUNDA	S-NPP	77.07071	29.54056	13:48:00	D	4.40
73	KARNAL	GHARAUNDA	AQUA	77.06100	29.58100	13:20:00	D	9.90
74	KARNAL	INDRI	S-NPP	77.03782	29.89707	13:48:00	D	8.30
75	KARNAL	INDRI	S-NPP	77.03297	29.90076	13:48:00	D	4.30
76	KARNAL	KARNAL	S-NPP	76.82401	29.61180	13:48:00	D	6.80
77	KARNAL	KARNAL	S-NPP	76.86051	29.61997	13:48:00	D	5.00
78	KARNAL	KARNAL	S-NPP	76.86463	29.62042	13:48:00	D	5.00
79	KARNAL	KARNAL	S-NPP	76.79236	29.63290	13:48:00	D	4.10
80	KARNAL	KARNAL	S-NPP	76.79193	29.63301	13:48:00	D	3.50
81	KARNAL	KARNAL	S-NPP	76.80422	29.63438	13:48:00	D	5.00
82	KARNAL	KARNAL	S-NPP	76.74216	29.63582	13:48:00	D	4.80
83	KARNAL	KARNAL	S-NPP	77.02326	29.63783	13:48:00	D	3.00
84	KARNAL	KARNAL	S-NPP	76.79474	29.64553	13:48:00	D	5.90
85	KARNAL	KARNAL	S-NPP	76.74168	29.66868	13:48:00	D	7.00
86	KARNAL	KARNAL	S-NPP	76.70461	29.69752	13:48:00	D	9.30
87	KARNAL	KARNAL	S-NPP	76.70866	29.69796	13:48:00	D	6.70
88	KARNAL	KARNAL	S-NPP	76.76630	29.70020	13:48:00	D	8.30
89	KARNAL	KARNAL	S-NPP	76.77337	29.70922	13:48:00	D	12.50
90	KARNAL	KARNAL	S-NPP	76.87306	29.74507	13:48:00	D	3.60
91	KARNAL	KARNAL	S-NPP	76.87377	29.74801	13:48:00	D	4.50
92	KARNAL	KARNAL	AQUA	77.01400	29.78900	13:20:00	D	12.90
93	KARNAL	NILOKHERI	S-NPP	76.89194	29.79978	13:48:00	D	2.50
94	KARNAL	NILOKHERI	S-NPP	76.86636	29.80118	13:48:00	D	3.90
95	KARNAL	NILOKHERI	S-NPP	76.87052	29.80163	13:48:00	D	4.10
96	KURUKSHETRA	PEHOWA	AQUA	76.60200	29.92400	13:20:00	D	28.80
97	KURUKSHETRA	PEHOWA	S-NPP	76.58324	29.92650	13:48:00	D	6.90
98	KURUKSHETRA	PEHOWA	S-NPP	76.60342	29.92877	13:48:00	D	4.20

99	KURUKSHETRA	PEHOWA	S-NPP	76.61150	29.92967	13:48:00	D	3.20
100	KURUKSHETRA	PEHOWA	S-NPP	76.61555	29.93012	13:48:00	D	3.20
101	KURUKSHETRA	PEHOWA	S-NPP	76.69283	29.93877	13:48:00	D	1.30
102	KURUKSHETRA	PEHOWA	S-NPP	76.69231	29.94247	13:48:00	D	2.30
103	KURUKSHETRA	PEHOWA	S-NPP	76.67310	29.96101	13:48:00	D	6.50
104	KURUKSHETRA	PEHOWA	S-NPP	76.62436	30.01325	13:48:00	D	8.20
105	KURUKSHETRA	PEHOWA	S-NPP	76.67797	30.01504	13:48:00	D	2.50
106	KURUKSHETRA	PEHOWA	S-NPP	76.50050	30.01991	13:48:00	D	2.80
107	KURUKSHETRA	PEHOWA	S-NPP	76.57368	30.05332	13:48:00	D	1.60
108	KURUKSHETRA	PEHOWA	S-NPP	76.47024	30.09109	13:48:00	D	4.10
109	KURUKSHETRA	PEHOWA	S-NPP	76.68987	30.11106	13:48:00	D	2.10
110	KURUKSHETRA	PEHOWA	AQUA	76.70300	30.11700	13:20:00	D	7.90
111	KURUKSHETRA	SHAHABAD	S-NPP	76.82961	30.16777	13:48:00	D	3.40
112	KURUKSHETRA	SHAHABAD	S-NPP	76.82951	30.17031	13:48:00	D	3.50
113	KURUKSHETRA	SHAHABAD	S-NPP	76.79256	30.19138	13:48:00	D	7.40
114	KURUKSHETRA	THANESAR	S-NPP	76.75592	29.90448	13:48:00	D	4.90
115	KURUKSHETRA	THANESAR	S-NPP	76.86815	29.94575	13:48:00	D	1.80
116	KURUKSHETRA	THANESAR	S-NPP	76.74887	29.98560	13:48:00	D	3.00
117	KURUKSHETRA	THANESAR	S-NPP	76.81995	29.98904	13:48:00	D	2.80
118	KURUKSHETRA	THANESAR	S-NPP	76.72385	30.04485	13:48:00	D	1.40
119	KURUKSHETRA	THANESAR	S-NPP	76.87362	30.06137	13:48:00	D	2.90
120	KURUKSHETRA	THANESAR	S-NPP	76.81699	30.07496	13:48:00	D	2.00
121	PALWAL	HATHIN	S-NPP	77.28386	28.01804	13:48:00	D	2.20
122	PALWAL	HODAL	S-NPP	77.53066	27.94206	13:48:00	D	6.80
123	PALWAL	HODAL	S-NPP	77.44357	27.95361	13:48:00	D	3.90
124	PALWAL	PALWAL	S-NPP	77.42973	28.09267	13:48:00	D	2.10
125	PALWAL	PALWAL	S-NPP	77.32074	28.11616	13:48:00	D	2.90
126	PANCHKULA	PANCHKULA	S-NPP	76.92962	30.49054	13:48:00	D	5.00
127	PANCHKULA	PANCHKULA	AQUA	76.92500	30.49500	13:20:00	D	11.00
128	PANCHKULA	PANCHKULA	S-NPP	76.90598	30.54040	13:48:00	D	3.00
129	SIRSA	DABWALI	S-NPP	74.72474	29.81978	13:48:00	D	12.60
130	SIRSA	DABWALI	S-NPP	74.72675	29.81983	13:48:00	D	12.50
131	SIRSA	SIRSA	S-NPP	75.18575	29.75091	13:48:00	D	14.90
132	YAMUNANAGAR	JAGADHRI	S-NPP	77.14731	30.16420	13:48:00	D	3.00

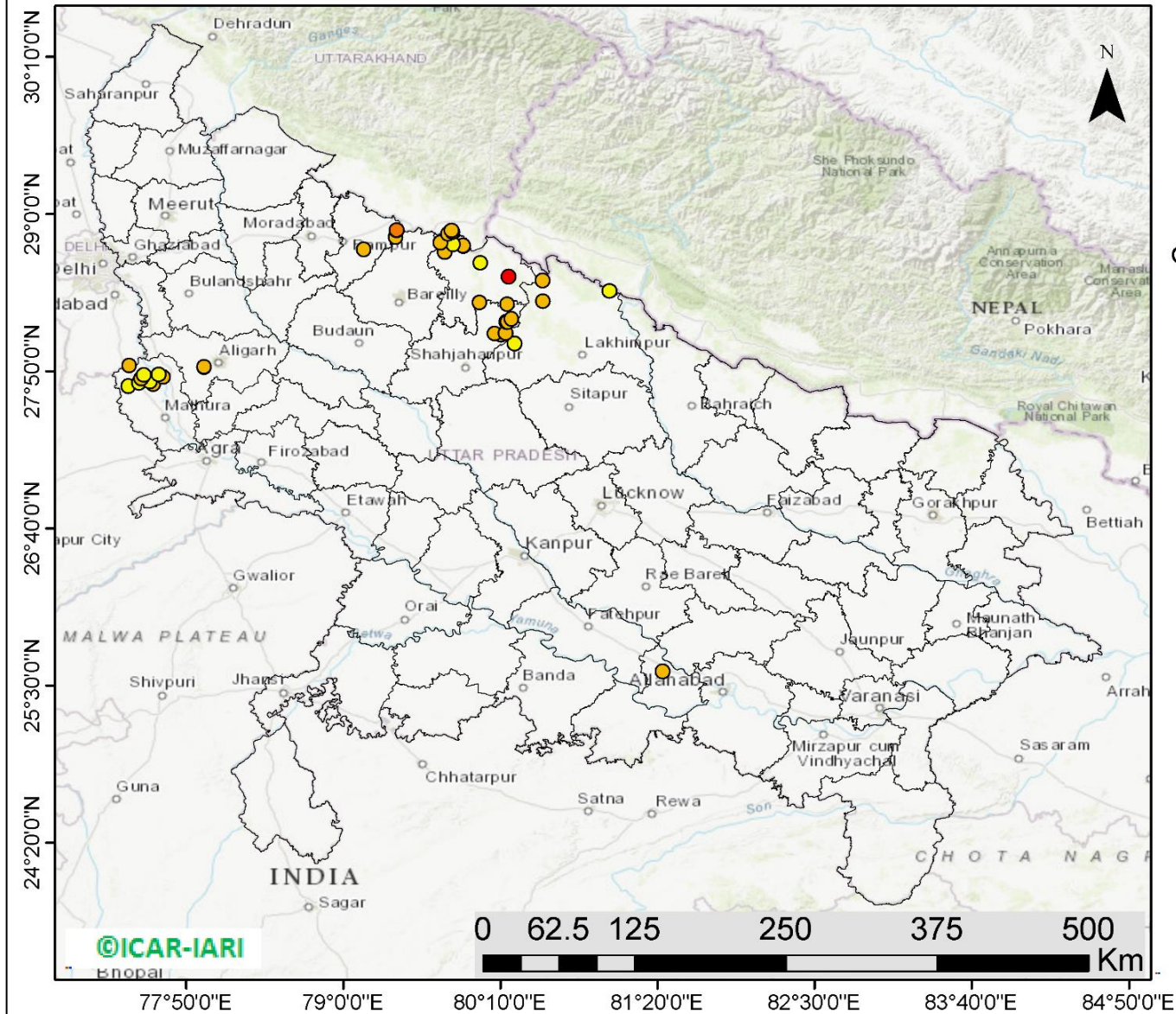
133	YAMUNANAGAR	JAGADHRI	S-NPP	77.18368	30.26175	13:48:00	D	3.50
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District-wise cumulative number of residue burning events in Haryana (01 to 14-Oct 2019)



(c) UP

RICE RESIDUE BURNING IN UTTAR PRADESH



39 burning events detected in Uttar Pradesh on **14th October 2019**

Fire Intensity (W/m²)

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



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

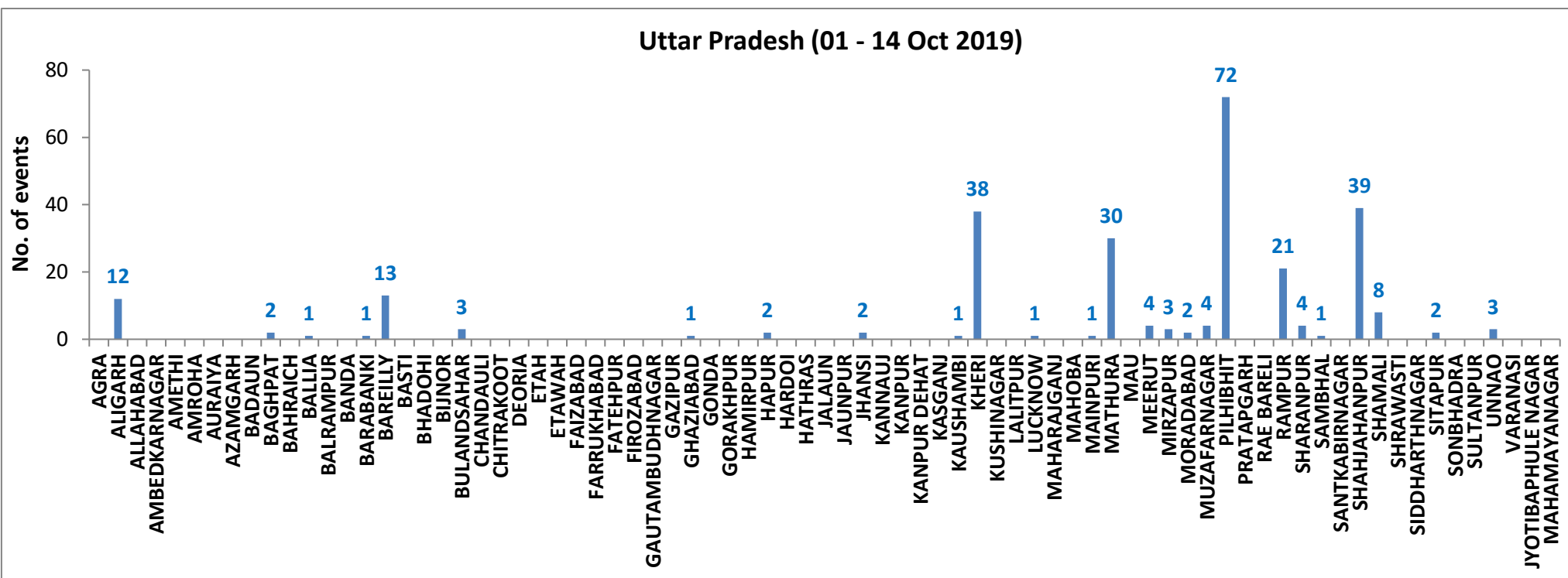
Details of residue burning events in Uttar Pradesh on 14-Oct-2019

S. No.	District	Tehsil / Block	Satellite	Longitude	Latitude	Time (IST)	Day / Night	Fire Power (W/m ²)
1	ALIGARH	KOL	AQUA	77.96700	27.86200	13:20:00	D	8.20
2	ALIGARH	KOL	S-NPP	77.96750	27.86480	13:48:00	D	6.00
3	BAREILLY	BAHERI	AQUA	79.38900	28.83000	13:20:00	D	5.90
4	BAREILLY	BAHERI	S-NPP	79.39722	28.87859	13:48:00	D	10.70
5	KAUSHAMBI	SIRATHU	AQUA	81.37000	25.60300	13:20:00	D	5.30
6	KHERI	MOHMADI	S-NPP	80.27065	28.03831	13:48:00	D	3.60
7	KHERI	PALIA KALAN	S-NPP	80.48400	28.34984	13:48:00	D	6.70
8	KHERI	NIGHASAN	S-NPP	80.97736	28.42833	13:48:00	D	1.40
9	KHERI	PALIA KALAN	AQUA	80.48100	28.50500	13:20:00	D	7.20
10	MATHURA	CHHATA	S-NPP	77.40568	27.72324	13:48:00	D	1.70
11	MATHURA	CHHATA	S-NPP	77.58606	27.73874	13:48:00	D	6.50
12	MATHURA	CHHATA	S-NPP	77.48236	27.74843	13:48:00	D	3.00
13	MATHURA	CHHATA	S-NPP	77.56635	27.75768	13:48:00	D	2.70
14	MATHURA	CHHATA	S-NPP	77.49937	27.77971	13:48:00	D	8.40
15	MATHURA	CHHATA	AQUA	77.65900	27.78900	13:20:00	D	8.40
16	MATHURA	CHHATA	S-NPP	77.51778	27.80467	13:48:00	D	3.40
17	MATHURA	MAT	S-NPP	77.62923	27.80803	13:48:00	D	1.50
18	MATHURA	CHHATA	S-NPP	77.41103	27.87270	13:48:00	D	5.10
19	PILHIBHIT	PURANPUR	AQUA	80.21700	28.32800	13:20:00	D	6.30
20	PILHIBHIT	PURANPUR	AQUA	80.22800	28.53300	13:20:00	D	28.30
21	PILHIBHIT	PURANPUR	S-NPP	80.01950	28.63626	13:48:00	D	4.60
22	PILHIBHIT	PILHIBHIT	S-NPP	79.75417	28.71844	13:48:00	D	6.50
23	PILHIBHIT	PILHIBHIT	S-NPP	79.89198	28.76302	13:48:00	D	10.40
24	PILHIBHIT	PILHIBHIT	S-NPP	79.88812	28.76496	13:48:00	D	6.90
25	PILHIBHIT	PILHIBHIT	S-NPP	79.81745	28.77618	13:48:00	D	2.40
26	PILHIBHIT	PILHIBHIT	S-NPP	79.71992	28.78709	13:48:00	D	5.30
27	PILHIBHIT	PILHIBHIT	AQUA	79.77700	28.85200	13:20:00	D	7.40
28	PILHIBHIT	PILHIBHIT	S-NPP	79.81198	28.86232	13:48:00	D	7.90
29	PILHIBHIT	PILHIBHIT	S-NPP	79.81373	28.86388	13:48:00	D	10.40
30	PILHIBHIT	PILHIBHIT	AQUA	79.80500	28.87500	13:20:00	D	7.70
31	RAMPUR	MILAK	AQUA	79.15200	28.73600	13:20:00	D	7.10
32	RAMPUR	BILASPUR	AQUA	79.39600	28.87600	13:20:00	D	6.40
33	SHAHJAHANPUR	PUWANYA	AQUA	80.17400	28.10000	13:20:00	D	6.60

34	SHAHJAHANPUR	PUWANYA	S-NPP	80.12371	28.11128	13:48:00	D	5.60
35	SHAHJAHANPUR	PUWANYA	S-NPP	80.20426	28.11358	13:48:00	D	5.80
36	SHAHJAHANPUR	PUWANYA	AQUA	80.21200	28.19800	13:20:00	D	6.70
37	SHAHJAHANPUR	PUWANYA	AQUA	80.22200	28.20000	13:20:00	D	8.70
38	SHAHJAHANPUR	PUWANYA	AQUA	80.25000	28.22200	13:20:00	D	9.50
39	SHAHJAHANPUR	PUWANYA	AQUA	80.01200	28.34300	13:20:00	D	6.50

District-wise cumulative number of residue burning events in Uttar Pradesh (01 to 14-Oct 2019)

Uttar Pradesh (01 - 14 Oct 2019)



State-wise, date-wise and district-wise number of residue burning events detected in 2016, 2017, 2018 and 2019
(Period: 01-Oct to 14-Oct)

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
Total	856	774	2731	4339	992	965	1647	2074	271	412	762	682	2119	2151	5140	7095

(a) Punjab

Districts	01-14 Oct			
	2016	2017	2018	2019
AMRITSAR	649	442	345	269
BARNALA	11	8	1	3
BATHINDA	229	127	15	7
FARIDKOT	304	393	16	20
FATEHGARH SAHIB	247	88	13	8
FAZILKA	0	0	0	18
FIROZPUR	365	326	44	38
GURDASPUR	178	70	28	28
HOSHIARPUR	33	6	3	7
JALANDHAR	275	96	4	38
KAPURTHALA	237	34	3	28
LUDHIANA	200	165	23	8
MANSA	21	46	4	20
MOGA	61	39	0	12
MUKTSAR	318	59	5	9
NAWASHAHR (SBS Nagar)	50	27	10	15
PATHANKOT	0	0	0	0
PATIALA	396	327	73	107
RUPNAGAR	46	5	0	1
SANGRUR	71	110	39	34
SAS NAGAR	29	35	25	10
TARN TARAN	619	328	123	176
Total	4339	2731	774	856

(b) Haryana

Districts	01-14 Oct			
	2016	2017	2018	2019
AMBALA	124	118	39	35
BHIWANI	0	2	2	0
FARIDABAD	5	20	31	1
FATEHABAD	67	68	30	61
GURUGRAM	0	0	0	0
HISAR	13	14	8	13
JHAJJAR	4	0	3	1
JIND	45	81	42	41
KAITHAL	561	368	204	238
KARNAL	736	536	326	310
KURUKSHETRA	421	347	209	222
MAHENDRAGARH	0	0	0	1
MEWAT	0	0	0	0
PALWAL	0	0	0	15
PANCHKULA	0	0	3	8
PANIPAT	17	22	31	6
REWARI	0	0	0	0
ROHTAK	1	1	0	0
SIRSA	35	15	7	9
SONIPAT	3	8	8	1
YAMUNANAGAR	42	47	22	30
Total	2074	1647	965	992

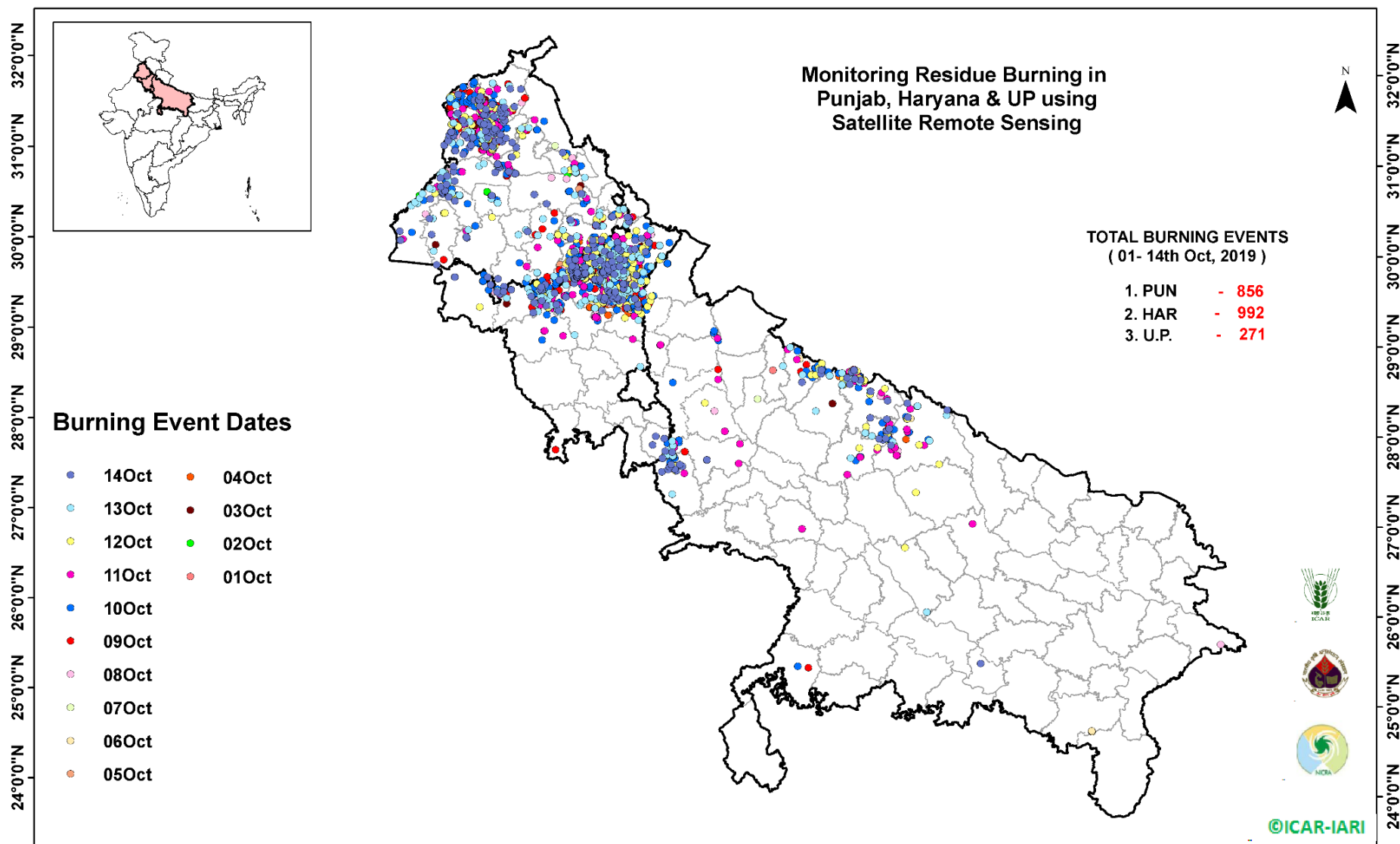
(c) Uttar Pradesh

Districts	01-14 Oct			
	2016	2017	2018	2019
AGRA	0	0	0	0
ALIGARH	0	10	10	12
ALLAHABAD	0	0	3	0
AMBEDKARNAGAR	0	1	0	0
AMETHI	0	0	0	0
AMROHA	0	0	0	0
AURAIYA	35	33	14	0
AZAMGARH	0	0	0	0
BADAUN	0	1	0	0
BAGHPAT	0	0	0	2
BAHRAICH	0	0	2	0
BALLIA	0	0	0	1
BALRAMPUR	0	0	0	0
BANDA	0	0	1	0
BARABANKI	13	17	39	1
BAREILLY	36	21	7	13
BASTI	0	0	0	0
BHADOHI	0	0	0	0
BIJNOR	1	0	1	0
BULANDSAHAR	0	4	5	3
CHANDAULI	0	0	0	0
CHITRAKOOT	0	0	0	0
DEORIA	0	0	0	0
ETAH	0	2	7	0
ETAWAH	0	3	1	0
FAIZABAD	0	1	0	0
FARRUKHABAD	0	0	0	0
FATEHPUR	1	4	4	0
FIROZABAD	0	0	0	0

GAUTAMBUDHNAGAR	1	1	2	0
GAZIPUR	0	0	0	0
GHAZIABAD	6	1	2	1
GONDA	0	0	0	0
GORAKHPUR	0	2	4	0
HAMIRPUR	0	0	1	0
HAPUR	0	0	0	2
HARDOI	5	2	2	0
HATHRAS	0	0	0	0
JALAUN	0	0	0	0
JAUNPUR	0	0	2	0
JHANSI	0	0	0	2
KANNAUJ	0	0	1	0
KANPUR	0	0	0	0
KANPUR DEHAT	0	1	0	0
KASGANJ	0	0	0	0
KAUSHAMBI	0	2	7	1
KHERI	62	74	29	38
KUSHINAGAR	0	1	0	0
LALITPUR	0	0	0	0
LUCKNOW	2	4	0	1
MAHARAJGANJ	0	5	3	0
MAHOBA	0	0	0	0
MAINPURI	0	2	4	1
MATHURA	8	20	60	30
MAU	1	0	0	0
MEERUT	4	5	0	4
MIRZAPUR	0	1	1	3
MORADABAD	1	6	2	2
MUZAFARNAGAR	13	34	11	4
PILHIBHIT	121	137	56	72
PRATAPGARH	0	0	2	0

RAE BARELI	0	0	0	0
RAMPUR	144	100	33	21
SHARANPUR	9	13	7	4
SAMBHAL	0	0	0	1
SANTKABIRNAGAR	0	0	0	0
SHAHJAHANPUR	200	249	78	39
SHAMALI	0	0	0	8
SHRAWASTI	0	0	0	0
SIDDHARTHANAGAR	1	0	0	0
SITAPUR	12	4	4	2
SONBHADRA	3	1	4	0
SULTANPUR	0	0	0	0
UNNAO	3	0	1	3
VARANASI	0	0	0	0
JYOTIBAPHULE NAGAR	0	0	1	0
MAHAMAYANAGAR	0	0	1	0
Total	682	762	412	271

Map of Cumulative Burning Events (01 – 14 Oct 2019)



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

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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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)
