

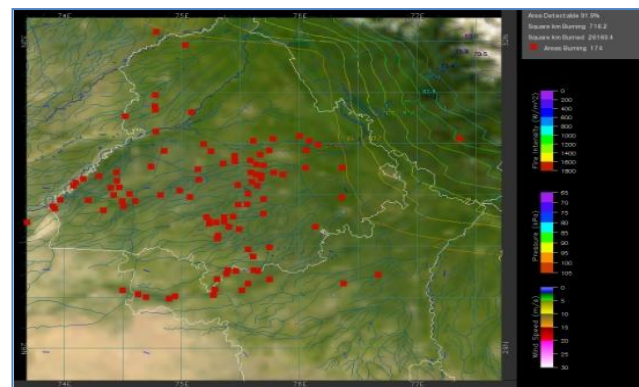
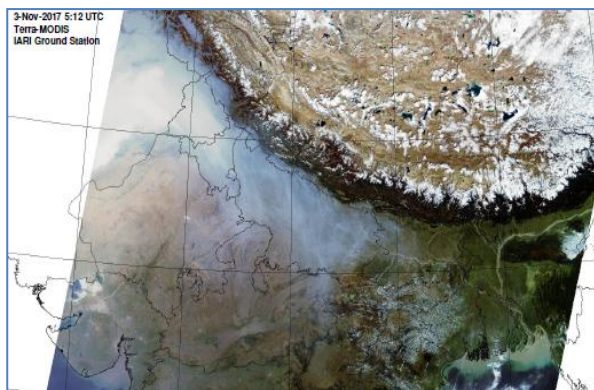


**Bulletin
No. 6**

**Events Date:
06-Oct-2018**

**Issued on:
07-Oct-2018**

MONITORING PADDY RESIDUE BURNING IN NORTH INDIA USING SATELLITE REMOTE SENSING DURING 2018



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**

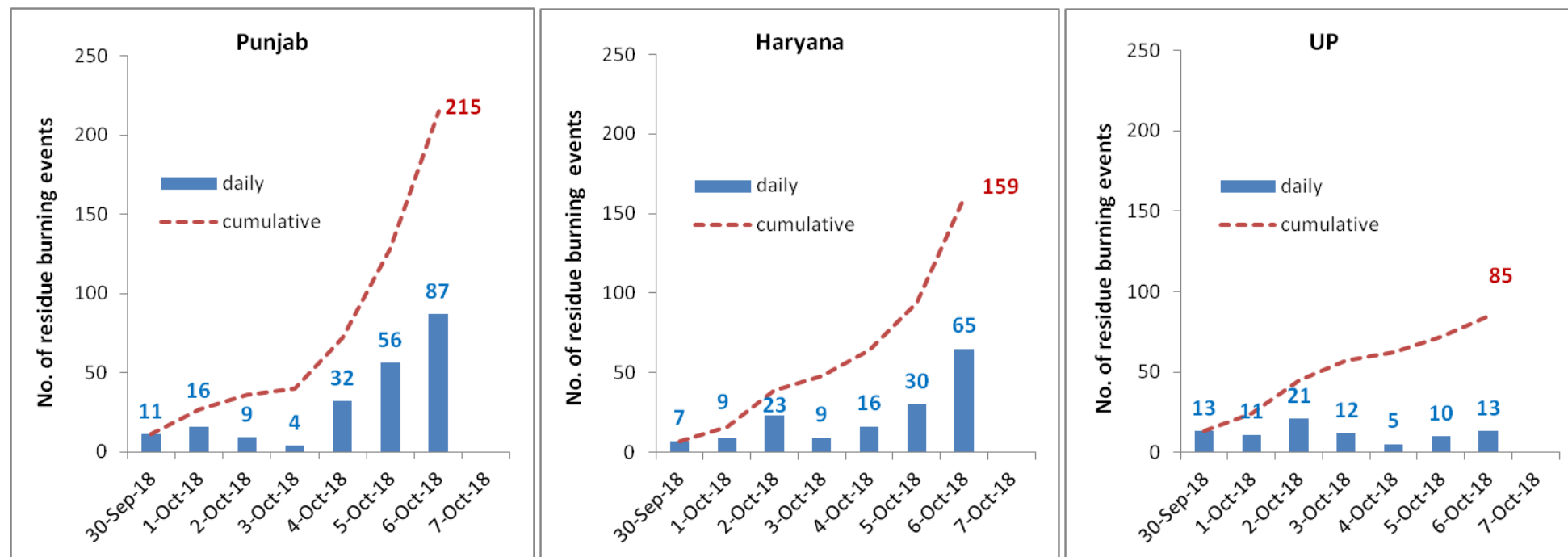
<http://creams.iari.res.in>



Highlights for 06-October-2018

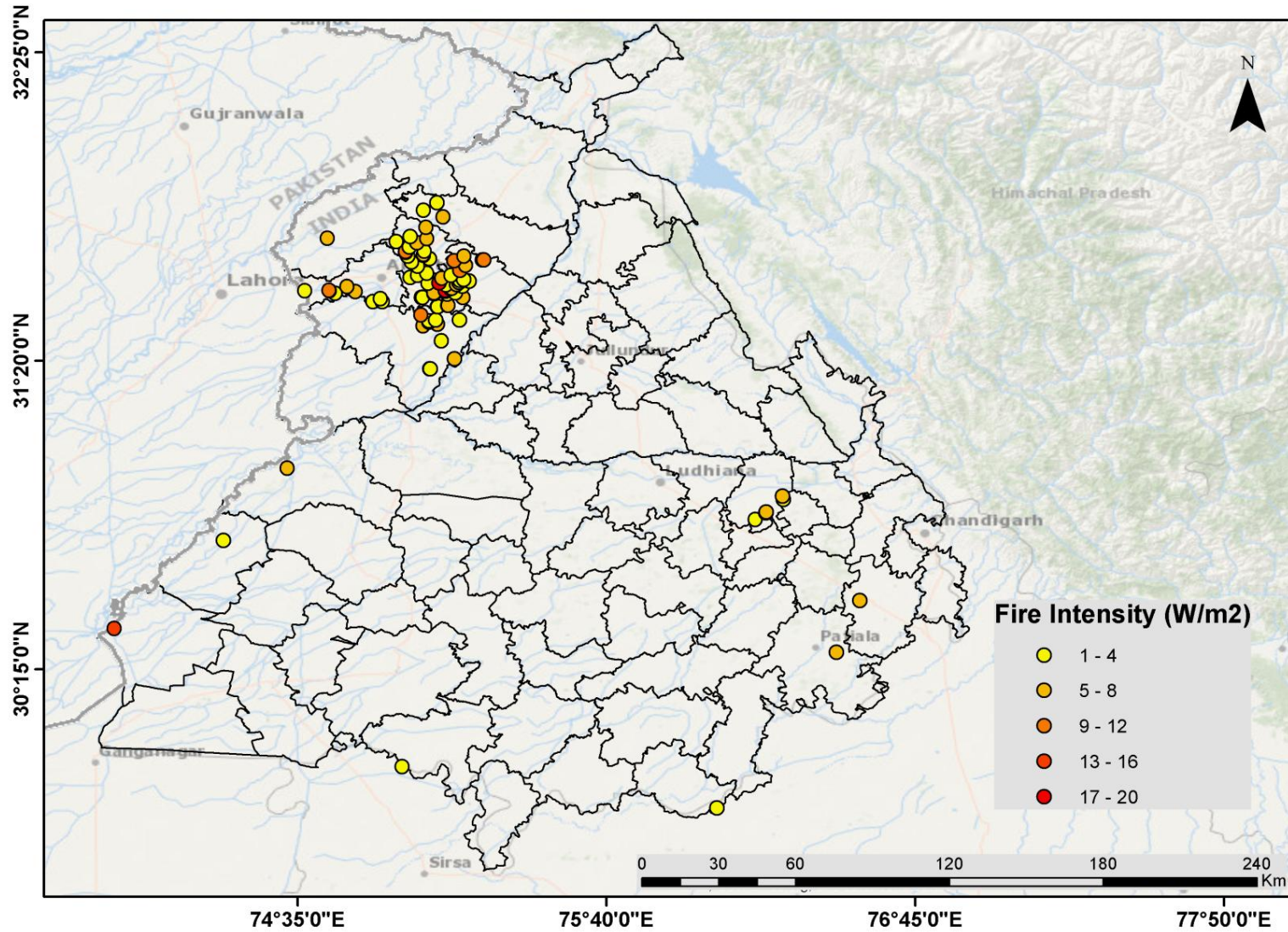
- Satellites detected 165 residue burning events in the three States (Punjab, Haryana & UP) on 06-Oct-2018.
- The burning events detected on 06-Oct-2018 are 87, 65 and 13 in Punjab, Haryana, and UP, respectively.
- The number of events increased from 56 on 05-Oct-2018 to 165 on 06-Oct-2018 in the three States.
- Total 459 burning events were detected in three States between 30-Sept-2018 and 06-Oct-2018, which were distributed as 215, 159 and 85 in Punjab, Haryana and UP, respectively.
- A spurt in burning events was observed on 06-Oct-2018, especially in Punjab and Haryana

Temporal distribution of residue burning events for the three study States



(a) Punjab

Paddy Residue Burning in Punjab on 6th Oct 2018



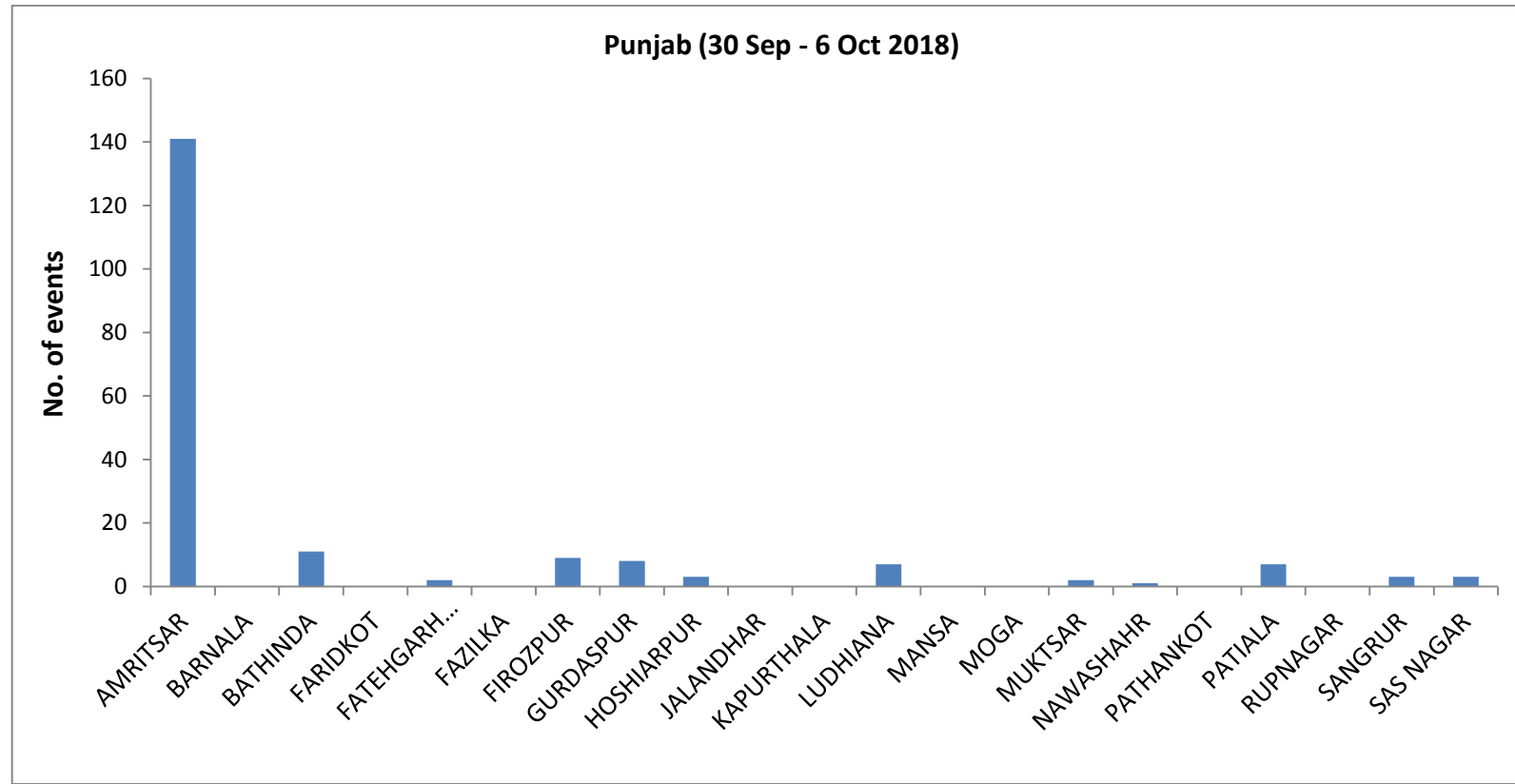
Details of residue burning events in Punjab on 06-Oct-2018

Event S. No.	District	Tehsil / Block	Satellite	Longitude	Latitude	Time (IST)	Day / Night	Fire Power (W/m2)
1	AMRITSAR	AJNALA	S-NPP	74.68645	31.76413	13:42:00	D	5.5
2	AMRITSAR	AMRITSAR I	S-NPP	75.0164	31.55591	13:42:00	D	7.7
3	AMRITSAR	AMRITSAR I	S-NPP	75.02098	31.5565	13:42:00	D	4
4	AMRITSAR	AMRITSAR I	S-NPP	75.10824	31.56767	13:42:00	D	3.9
5	AMRITSAR	AMRITSAR I	S-NPP	75.06101	31.56881	13:42:00	D	7
6	AMRITSAR	AMRITSAR I	S-NPP	75.06039	31.57233	13:42:00	D	7
7	AMRITSAR	AMRITSAR I	S-NPP	75.04053	31.60568	13:42:00	D	2.8
8	AMRITSAR	AMRITSAR I	S-NPP	75.07789	31.60693	13:42:00	D	17.9
9	AMRITSAR	AMRITSAR I	S-NPP	74.97728	31.62607	13:42:00	D	3.4
10	AMRITSAR	AMRITSAR I	S-NPP	75.00413	31.63307	13:42:00	D	2.2
11	AMRITSAR	AMRITSAR I	S-NPP	75.03562	31.64066	13:42:00	D	2.1
12	AMRITSAR	AMRITSAR I	S-NPP	75.00319	31.66524	13:42:00	D	2.8
13	AMRITSAR	AMRITSAR I	S-NPP	75.04545	31.69222	13:42:00	D	2.5
14	AMRITSAR	AMRITSAR I	S-NPP	74.96136	31.71721	13:42:00	D	10.9
15	AMRITSAR	AMRITSAR I	S-NPP	75.02676	31.71856	13:42:00	D	3.3
16	AMRITSAR	AMRITSAR I	S-NPP	74.97469	31.7336	13:42:00	D	3.2
17	AMRITSAR	AMRITSAR I	S-NPP	75.00039	31.74763	13:42:00	D	4.6
18	AMRITSAR	AMRITSAR I	S-NPP	74.9292	31.75289	13:42:00	D	3
19	AMRITSAR	AMRITSAR I	S-NPP	75.03538	31.76286	13:42:00	D	5.8
20	AMRITSAR	AMRITSAR I	S-NPP	74.97772	31.76986	13:42:00	D	3.2
21	AMRITSAR	AMRITSAR I	S-NPP	75.03326	31.80215	13:42:00	D	5.3
22	AMRITSAR	AMRITSAR II	S-NPP	74.84715	31.54119	13:42:00	D	3.1
23	AMRITSAR	AMRITSAR II	S-NPP	74.87301	31.55169	13:42:00	D	3.5
24	AMRITSAR	AMRITSAR II	S-NPP	74.71349	31.56989	13:42:00	D	2.8
25	AMRITSAR	AMRITSAR II	S-NPP	74.78577	31.5759	13:42:00	D	6.3
26	AMRITSAR	AMRITSAR II	S-NPP	74.60806	31.57851	13:42:00	D	1
27	AMRITSAR	AMRITSAR II	S-NPP	74.69451	31.57911	13:42:00	D	9.5
28	AMRITSAR	AMRITSAR II	S-NPP	74.69318	31.58139	13:42:00	D	8.6
29	AMRITSAR	AMRITSAR II	S-NPP	74.75597	31.59415	13:42:00	D	7.1
30	AMRITSAR	AMRITSAR II	S-NPP	74.9818	31.68042	13:42:00	D	3.3

31	AMRITSAR	AMRITSAR II	S-NPP	74.96899	31.70027	13:42:00	D	2.8
32	AMRITSAR	AMRITSAR II	S-NPP	75.0246	31.70391	13:42:00	D	2.9
33	AMRITSAR	AMRITSAR II	S-NPP	75.024	31.70742	13:42:00	D	4.3
34	AMRITSAR	AMRITSAR II	S-NPP	74.96196	31.7137	13:42:00	D	10.9
35	AMRITSAR	BABA BAKALA	S-NPP	75.10878	31.52827	13:42:00	D	6.2
36	AMRITSAR	BABA BAKALA	S-NPP	75.11034	31.52836	13:42:00	D	6
37	AMRITSAR	BABA BAKALA	S-NPP	75.16211	31.5565	13:42:00	D	5.8
38	AMRITSAR	BABA BAKALA	S-NPP	75.13593	31.5712	13:42:00	D	3.9
39	AMRITSAR	BABA BAKALA	S-NPP	75.10181	31.57764	13:42:00	D	3.1
40	AMRITSAR	BABA BAKALA	S-NPP	75.1012	31.58116	13:42:00	D	17.1
41	AMRITSAR	BABA BAKALA	S-NPP	75.11903	31.58705	13:42:00	D	4.8
42	AMRITSAR	BABA BAKALA	S-NPP	75.12364	31.58764	13:42:00	D	4.8
43	AMRITSAR	BABA BAKALA	S-NPP	75.16003	31.5959	13:42:00	D	2.4
44	AMRITSAR	BABA BAKALA	S-NPP	75.10275	31.59935	13:42:00	D	3
45	AMRITSAR	BABA BAKALA	S-NPP	75.1403	31.60058	13:42:00	D	4.6
46	AMRITSAR	BABA BAKALA	S-NPP	75.14833	31.60882	13:42:00	D	2.8
47	AMRITSAR	BABA BAKALA	S-NPP	75.18542	31.61359	13:42:00	D	3.2
48	AMRITSAR	BABA BAKALA	S-NPP	75.15175	31.61648	13:42:00	D	2.6
49	AMRITSAR	BABA BAKALA	S-NPP	75.16564	31.61827	13:42:00	D	2.6
50	AMRITSAR	BABA BAKALA	S-NPP	75.08927	31.6228	13:42:00	D	7.7
51	AMRITSAR	BABA BAKALA	S-NPP	75.12165	31.63355	13:42:00	D	3
52	AMRITSAR	BABA BAKALA	S-NPP	75.12034	31.63404	13:42:00	D	2.8
53	AMRITSAR	BABA BAKALA	S-NPP	75.15166	31.65174	13:42:00	D	9.1
54	AMRITSAR	BABA BAKALA	S-NPP	75.17244	31.66879	13:42:00	D	7
55	AMRITSAR	BABA BAKALA	S-NPP	75.13164	31.68526	13:42:00	D	11
56	AMRITSAR	BABA BAKALA	S-NPP	75.16695	31.70059	13:42:00	D	7.8
57	BATHINDA	TALWANDI SABO	S-NPP	74.94889	29.90842	2:24:00	N	3.5
58	FIROZPUR	FAZILKA	TERRA-1	73.93954	30.39364	11:26:00	D	12.19
59	FIROZPUR	FIROZPUR	S-NPP	74.54649	30.9558	13:42:00	D	4.2
60	FIROZPUR	JALALABAD	S-NPP	74.32202	30.70299	13:42:00	D	1.3
61	GURDASPUR	BATALA	S-NPP	75.23123	31.68705	13:42:00	D	7.4
62	GURDASPUR	BATALA	S-NPP	75.23591	31.68764	13:42:00	D	8.7
63	GURDASPUR	BATALA	S-NPP	75.09312	31.83869	13:42:00	D	4.4

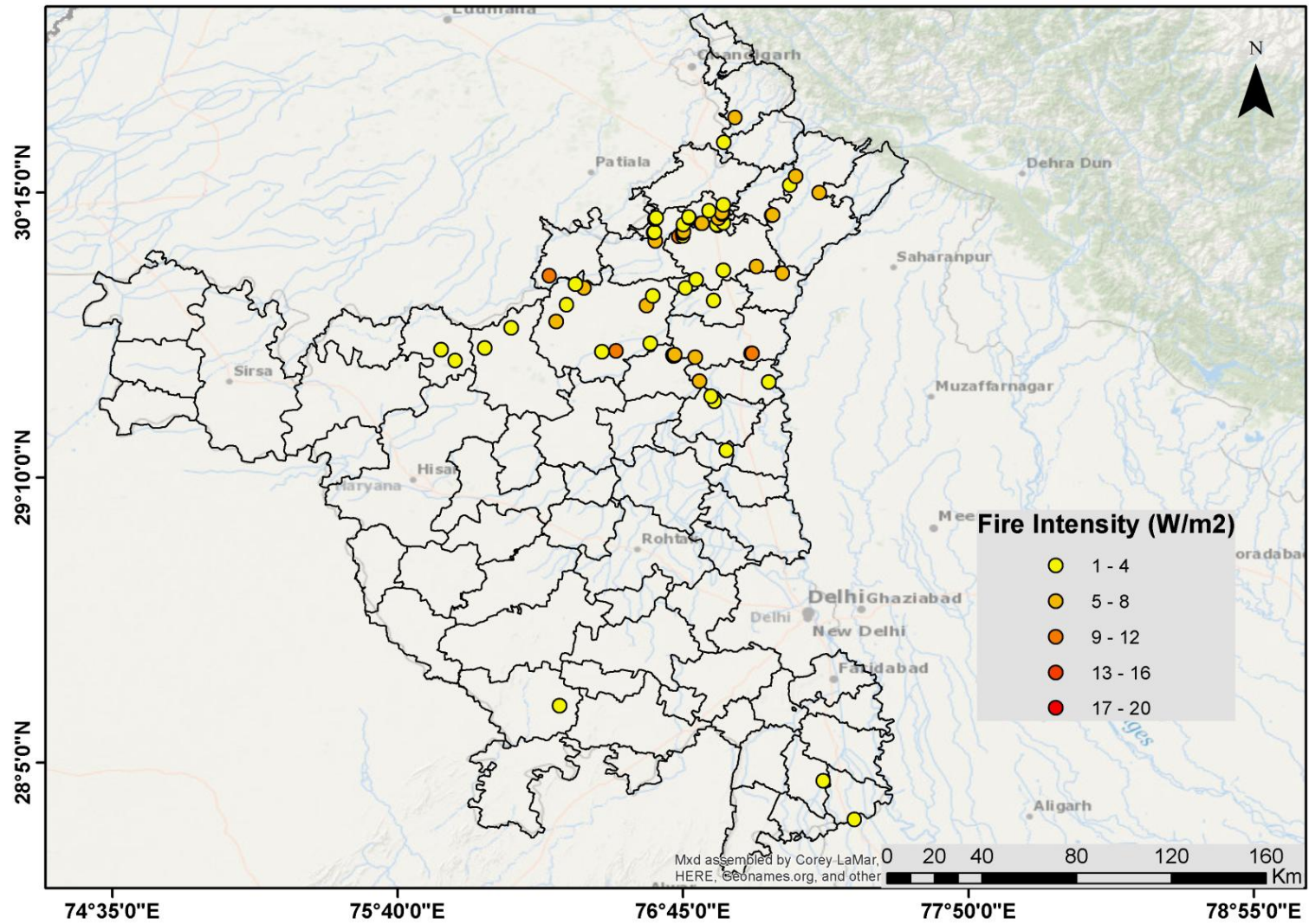
64	GURDASPUR	BATALA	S-NPP	75.02418	31.86165	13:42:00	D	2.6
65	GURDASPUR	BATALA	S-NPP	75.07144	31.88926	13:42:00	D	3.1
66	LUDHIANA	SAMRALA	S-NPP	76.18821	30.77582	13:42:00	D	2.4
67	LUDHIANA	SAMRALA	S-NPP	76.22501	30.79905	13:42:00	D	5.3
68	LUDHIANA	SAMRALA	S-NPP	76.22674	30.8022	13:42:00	D	6.4
69	LUDHIANA	SAMRALA	S-NPP	76.2859	30.8467	13:42:00	D	3.8
70	LUDHIANA	SAMRALA	S-NPP	76.28415	30.85774	13:42:00	D	4.3
71	PATIALA	PATIALA	S-NPP	76.47254	30.30971	13:42:00	D	4.6
72	PATIALA	RAJPURA	S-NPP	76.55541	30.49128	13:42:00	D	4.1
73	SANGRUR	MOONAK	S-NPP	76.05325	29.76257	13:42:00	D	2.1
74	TARN TARAN	KHADOOR SAHIB	S-NPP	75.04662	31.30483	13:42:00	D	2.7
75	TARN TARAN	KHADOOR SAHIB	S-NPP	75.04797	31.30535	13:42:00	D	3.8
76	TARN TARAN	KHADOOR SAHIB	NOAA-18	75.13322	31.33986	20:10:00	N	6
77	TARN TARAN	KHADOOR SAHIB	S-NPP	75.08691	31.40361	13:42:00	D	3.7
78	TARN TARAN	KHADOOR SAHIB	S-NPP	75.02295	31.45609	13:42:00	D	5.8
79	TARN TARAN	KHADOOR SAHIB	S-NPP	75.07323	31.46256	13:42:00	D	6.7
80	TARN TARAN	KHADOOR SAHIB	S-NPP	75.04395	31.46955	13:42:00	D	4.8
81	TARN TARAN	KHADOOR SAHIB	S-NPP	75.04333	31.47306	13:42:00	D	3.9
82	TARN TARAN	KHADOOR SAHIB	S-NPP	75.06622	31.47602	13:42:00	D	3.1
83	TARN TARAN	KHADOOR SAHIB	S-NPP	75.15076	31.4761	13:42:00	D	2.8
84	TARN TARAN	KHADOOR SAHIB	S-NPP	75.01622	31.49465	13:42:00	D	11.2
85	TARN TARAN	KHADOOR SAHIB	S-NPP	75.07204	31.52347	13:42:00	D	4
86	TARN TARAN	KHADOOR SAHIB	S-NPP	75.07355	31.52371	13:42:00	D	3.7
87	TARN TARAN	KHADOOR SAHIB	S-NPP	74.87937	31.54181	13:42:00	D	2.5

District-wise cumulative number of residue burning events in Punjab (30-Sep-2018 to 06-Oct-2018)



(b) Haryana

Paddy Residue Burning in Haryana on 6th Oct 2018



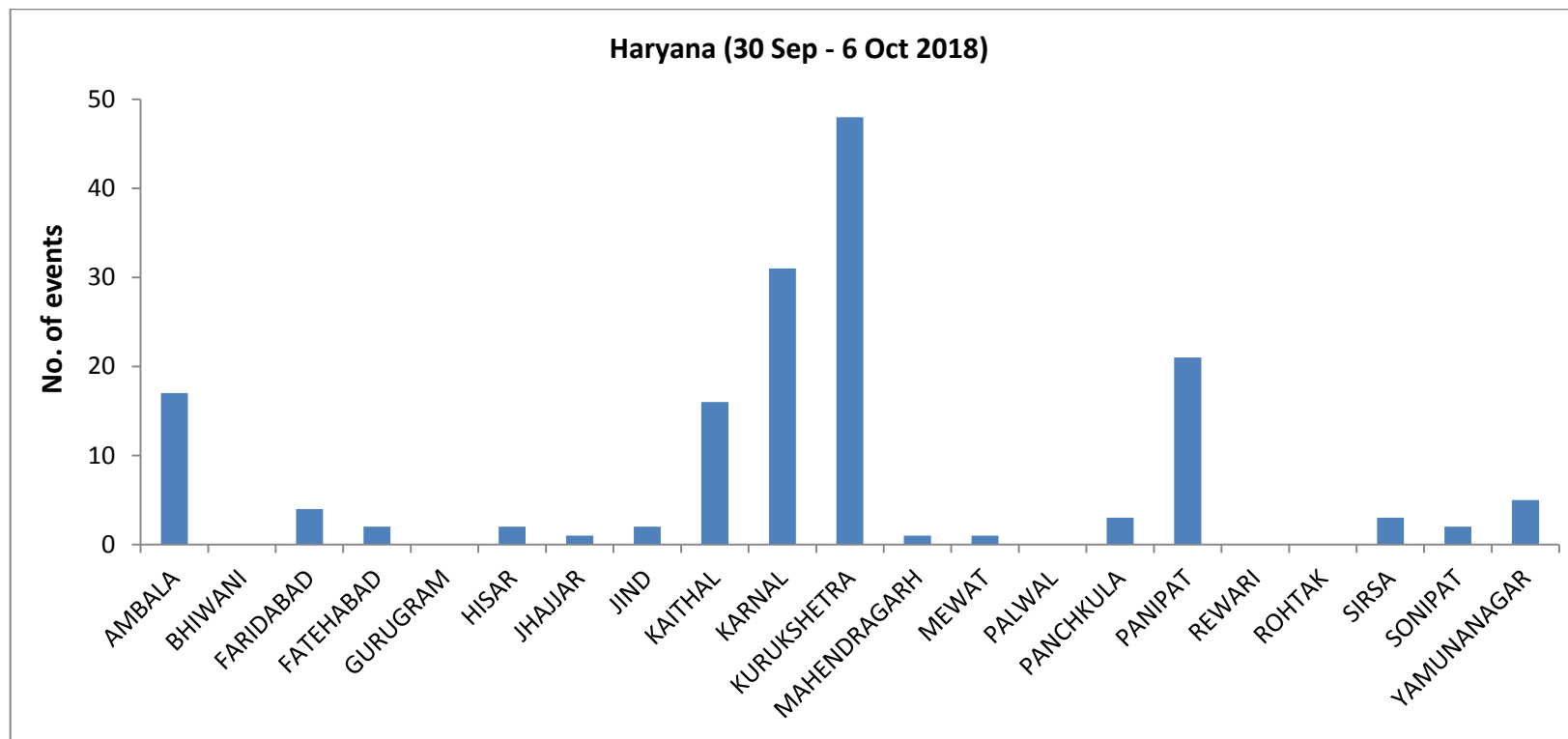
Details of residue burning events in Haryana on 06-Oct-2018

Events S. No.	District	Tehsil/ Block	Satellite	Longitude	Latitude	Time (IST)	Day / Night	Fire Power (W/m2)
1	AMBALA	AMBALA	S-NPP	76.63831	30.09847	13:42:00	D	3.2
2	AMBALA	AMBALA	S-NPP	76.64025	30.09993	13:42:00	D	3.6
3	AMBALA	AMBALA	S-NPP	76.64734	30.15373	13:42:00	D	3
4	AMBALA	AMBALA	S-NPP	76.90266	30.20327	13:42:00	D	3.4
5	AMBALA	BARARA	S-NPP	77.08922	30.16475	13:42:00	D	6.3
6	AMBALA	BARARA	S-NPP	77.17676	30.3118	13:42:00	D	7
7	FARIDABAD	HODAL	S-NPP	77.40039	27.8686	13:42:00	D	2.7
8	FATEHABAD	TOHANA	S-NPP	75.88501	29.61179	13:42:00	D	3.2
9	FATEHABAD	TOHANA	S-NPP	75.83109	29.65219	13:42:00	D	3.4
10	JIND	NARWANA	S-NPP	75.9963	29.6587	13:42:00	D	3.6
11	JIND	NARWANA	S-NPP	76.09647	29.7349	13:42:00	D	3.6
12	KAITHAL	GUHLA	S-NPP	76.24195	29.93406	13:42:00	D	9.8
13	KAITHAL	KAITHAL	S-NPP	76.4417	29.64446	13:42:00	D	2.9
14	KAITHAL	KAITHAL	S-NPP	76.49627	29.64755	13:42:00	D	10.6
15	KAITHAL	KAITHAL	S-NPP	76.62505	29.67669	13:42:00	D	2.2
16	KAITHAL	KAITHAL	S-NPP	76.26835	29.75976	13:42:00	D	5.2
17	KAITHAL	KAITHAL	S-NPP	76.60996	29.81998	13:42:00	D	4.4
18	KAITHAL	KAITHAL	S-NPP	76.30746	29.82394	13:42:00	D	2.3
19	KAITHAL	KAITHAL	S-NPP	76.63487	29.85691	13:42:00	D	3.9
20	KAITHAL	KAITHAL	S-NPP	76.37376	29.88718	13:42:00	D	4.9
21	KAITHAL	KAITHAL	S-NPP	76.34145	29.90184	13:42:00	D	3.9
22	KARNAL	ASSANDH	S-NPP	76.71227	29.62903	13:42:00	D	3.3
23	KARNAL	ASSANDH	S-NPP	76.71731	29.62964	13:42:00	D	5.3
24	KARNAL	ASSANDH	S-NPP	76.71169	29.63273	13:42:00	D	5.2
25	KARNAL	ASSANDH	S-NPP	76.71673	29.63334	13:42:00	D	6.3
26	KARNAL	GHARAUNDA	S-NPP	77.0749	29.53041	13:42:00	D	2.4
27	KARNAL	GHARAUNDA	S-NPP	76.81237	29.53357	13:42:00	D	5.8
28	KARNAL	INDRI	S-NPP	77.12741	29.94324	13:42:00	D	5.1
29	KARNAL	KARNAL	S-NPP	76.79552	29.62392	13:42:00	D	4.4
30	KARNAL	KARNAL	S-NPP	77.00802	29.63768	13:42:00	D	8.5

31	KARNAL	KARNAL	S-NPP	77.01321	29.63829	13:42:00	D	8.5
32	KARNAL	NILOKHERI	S-NPP	76.86595	29.83919	13:42:00	D	2.7
33	KURUKSHETRA	PEHOWA	S-NPP	76.64354	30.06507	13:42:00	D	5
34	KURUKSHETRA	PEHOWA	S-NPP	76.74779	30.09667	13:42:00	D	6.6
35	KURUKSHETRA	PEHOWA	S-NPP	76.74721	30.1004	13:42:00	D	6.6
36	KURUKSHETRA	PEHOWA	S-NPP	76.75043	30.12802	13:42:00	D	3.3
37	KURUKSHETRA	PEHOWA	S-NPP	76.64283	30.14941	13:42:00	D	2.4
38	KURUKSHETRA	SHAHABAD	S-NPP	76.81816	30.13213	13:42:00	D	5.4
39	KURUKSHETRA	SHAHABAD	S-NPP	76.82106	30.13225	13:42:00	D	5.4
40	KURUKSHETRA	SHAHABAD	S-NPP	76.88409	30.15128	13:42:00	D	7.2
41	KURUKSHETRA	SHAHABAD	S-NPP	76.77268	30.15347	13:42:00	D	2.3
42	KURUKSHETRA	SHAHABAD	S-NPP	76.7721	30.15721	13:42:00	D	2.3
43	KURUKSHETRA	SHAHABAD	S-NPP	76.89744	30.16816	13:42:00	D	4.8
44	KURUKSHETRA	SHAHABAD	S-NPP	76.89686	30.17192	13:42:00	D	4.8
45	KURUKSHETRA	SHAHABAD	S-NPP	76.84753	30.18141	13:42:00	D	3.4
46	KURUKSHETRA	THANESAR	S-NPP	76.75919	29.88722	13:42:00	D	4
47	KURUKSHETRA	THANESAR	S-NPP	76.79816	29.91912	13:42:00	D	3.4
48	KURUKSHETRA	THANESAR	S-NPP	76.90318	29.95435	13:42:00	D	2.7
49	KURUKSHETRA	THANESAR	S-NPP	77.02885	29.96909	13:42:00	D	5.8
50	KURUKSHETRA	THANESAR	S-NPP	76.73415	30.08362	13:42:00	D	9
51	KURUKSHETRA	THANESAR	S-NPP	76.74953	30.08548	13:42:00	D	3.3
52	KURUKSHETRA	THANESAR	S-NPP	76.75233	30.10103	13:42:00	D	6.6
53	KURUKSHETRA	THANESAR	S-NPP	76.88053	30.1242	13:42:00	D	3.8
54	KURUKSHETRA	THANESAR	S-NPP	76.87714	30.12751	13:42:00	D	2.1
55	KURUKSHETRA	THANESAR	S-NPP	76.9027	30.13429	13:42:00	D	3.2
56	MAHENDRAGARH	MAHENDRAGARH	S-NPP	76.28104	28.30055	13:42:00	D	3.7
57	MEWAT	HATHIN	S-NPP	77.28228	28.01524	13:42:00	D	2.7
58	PANCHKULA	PANCHKULA	S-NPP	76.90339	30.4409	13:42:00	D	3.9
59	PANCHKULA	PANCHKULA	S-NPP	76.94672	30.53421	13:42:00	D	4.9
60	PANIPAT	ISRANA	S-NPP	76.91308	29.26947	13:42:00	D	3.6
61	PANIPAT	PANIPAT	S-NPP	76.86902	29.45636	2:24:00	N	1.2
62	PANIPAT	PANIPAT	S-NPP	76.85627	29.47507	2:24:00	N	0.7
63	YAMUNANAGAR	JAGADHRI	S-NPP	77.08667	30.16312	13:42:00	D	4.2

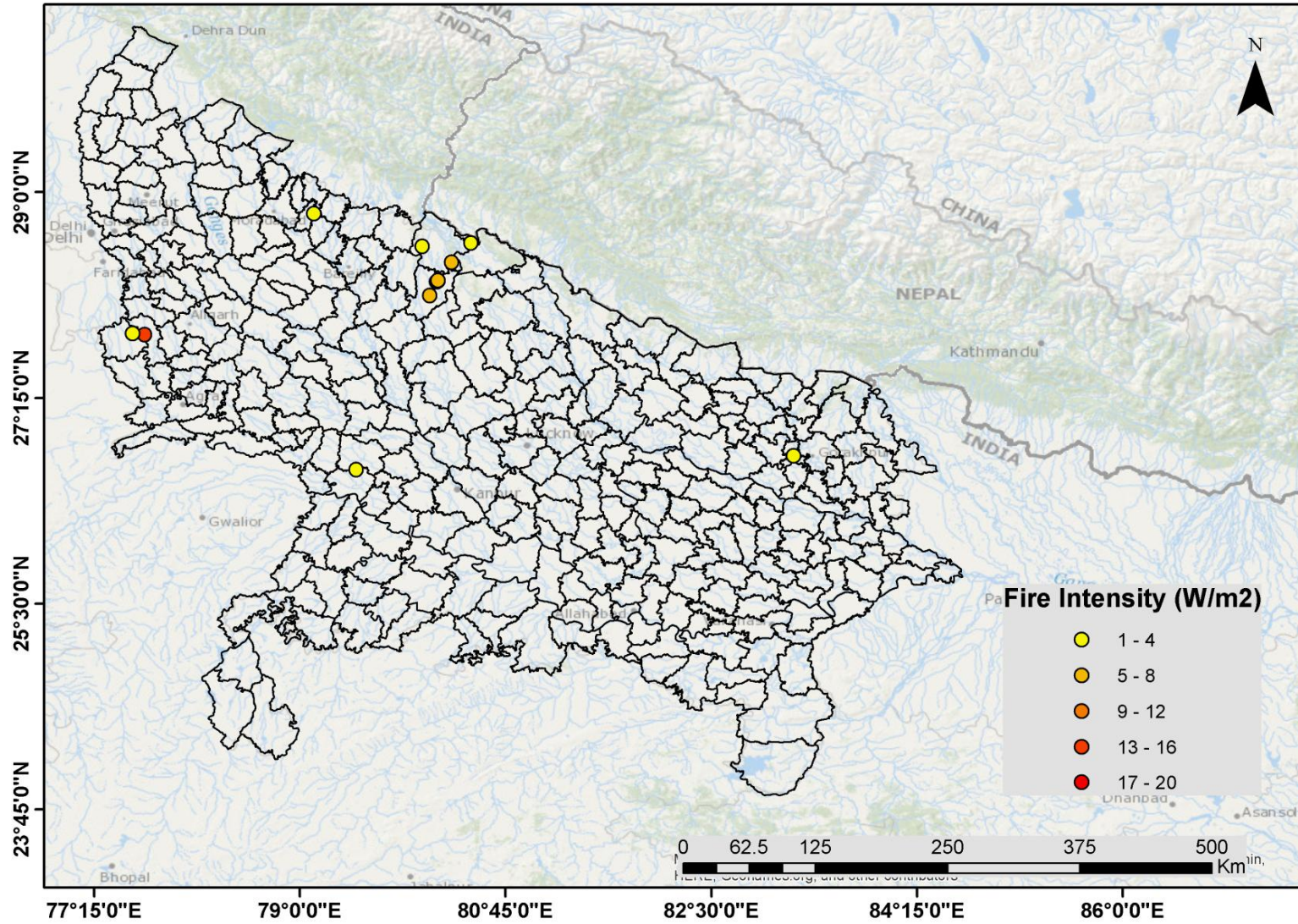
64	YAMUNANAGAR	JAGADHRI	S-NPP	77.26608	30.2499	13:42:00	D	7.4
65	YAMUNANAGAR	JAGADHRI	S-NPP	77.15432	30.27813	13:42:00	D	3.1

District-wise cumulative number of residue burning events in Haryana (30-Sep-2018 to 06-Oct-2018)



(c) Uttar Pradesh

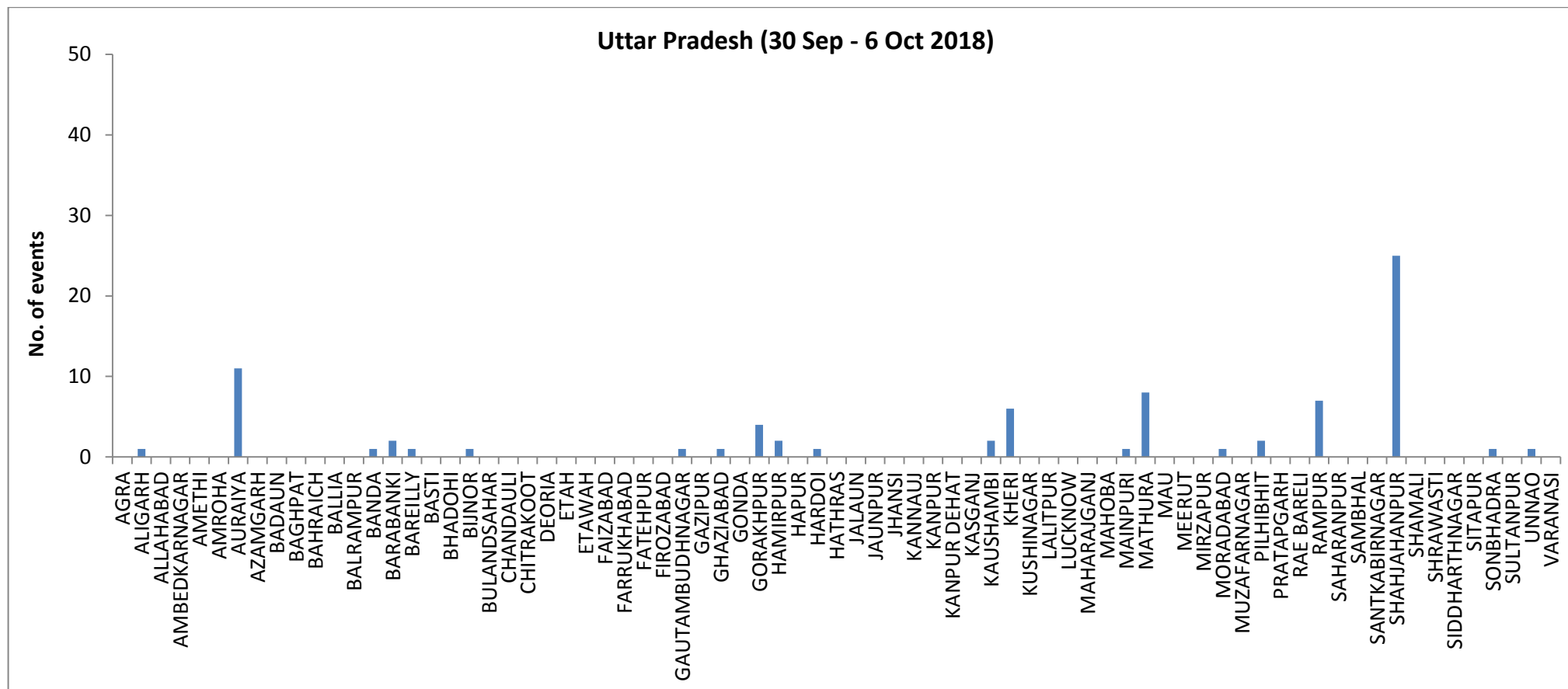
Paddy Residue Burning in Uttar Pradesh on 6th Oct 2018



Details of residue burning events in Uttar Pradesh on 06-Oct-2018

Events S. No.	District	Tehsil/Block	Satellite	Longitude	Latitude	Time (IST)	Day / Night	Fire Power (W/m²)
1	AURAIYA	BIDHUNA	S-NPP	79.48045	26.64213	2:24:00	N	1.3
2	GORAKHPUR	SAHJANWA	S-NPP	83.20027	26.76043	2:24:00	N	0.7
3	KHERI	PALIA KALAN	S-NPP	80.45422	28.56879	13:42:00	D	3.7
4	MATHURA	CHHATA	S-NPP	77.67931	27.78694	13:42:00	D	13.6
5	MATHURA	CHHATA	S-NPP	77.57651	27.79797	13:42:00	D	2.5
6	PILHIBHIT	PURANPUR	S-NPP	80.28948	28.40487	13:42:00	D	6.6
7	PILHIBHIT	PURANPUR	S-NPP	80.03989	28.5406	13:42:00	D	2.9
8	RAMPUR	RAMPUR	S-NPP	79.11626	28.81847	13:42:00	D	1.3
9	SHAHJAHANPUR	PUWANYA	S-NPP	80.10433	28.12122	13:42:00	D	6.8
10	SHAHJAHANPUR	PUWANYA	S-NPP	80.16056	28.23782	13:42:00	D	5
11	SHAHJAHANPUR	PUWANYA	S-NPP	80.17142	28.24657	13:42:00	D	7.7
12	SHAHJAHANPUR	PUWANYA	S-NPP	80.16928	28.24772	13:42:00	D	5.5
13	SHAHJAHANPUR	PUWANYA	S-NPP	80.17418	28.24823	13:42:00	D	5.5

District-wise cumulative number of residue burning events in Uttar Pradesh (30-Sep-2018 to 06-Oct-2018)



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

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/>

<http://creams.iari.res.in:8080/geoexplorer/composer/>
