



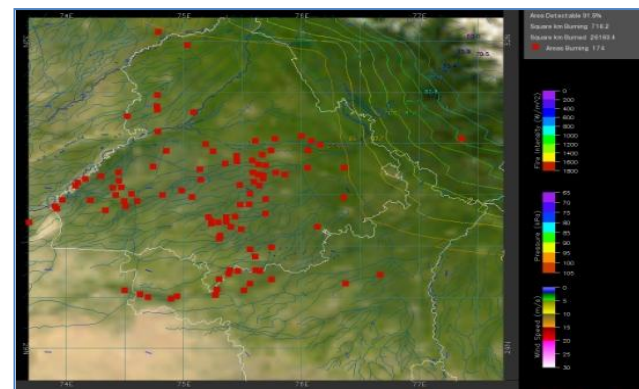
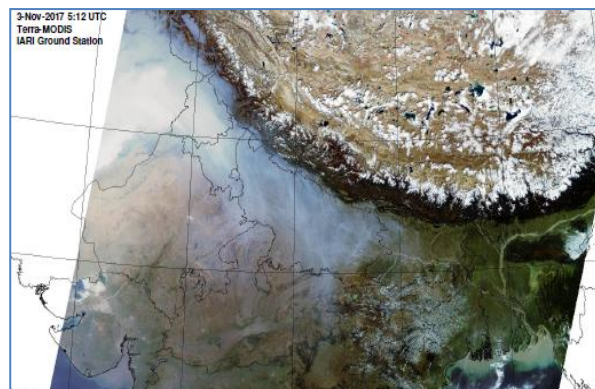
**Bulletin
No. 03**

**Events Date:
03-Oct-2019**

**Issued on:
04-Oct-2019**



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



Prepared by:

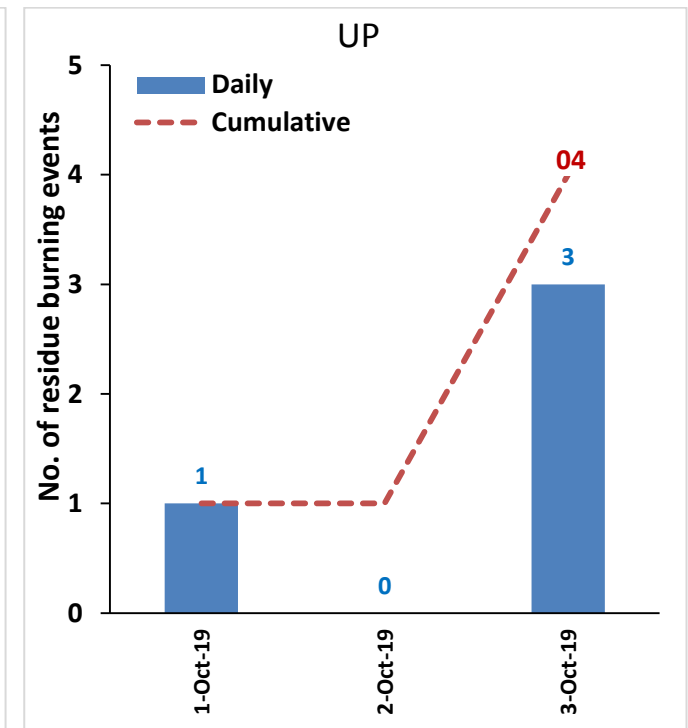
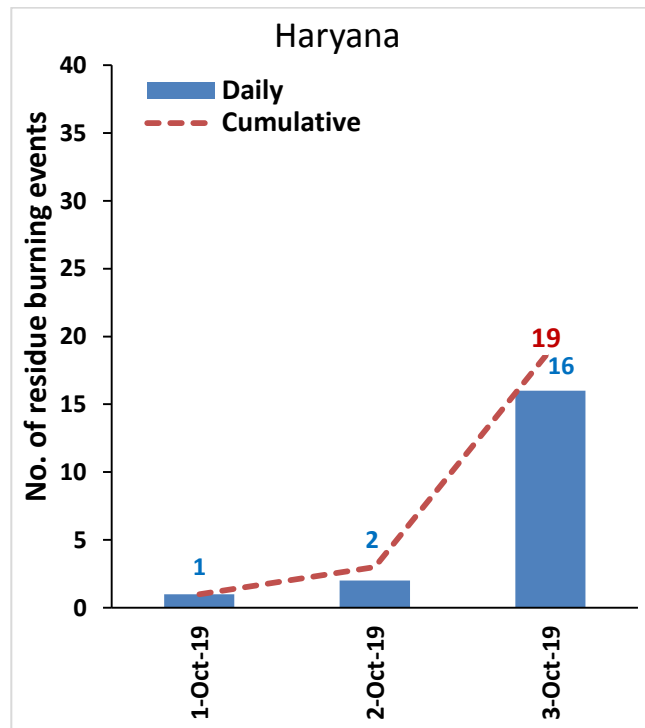
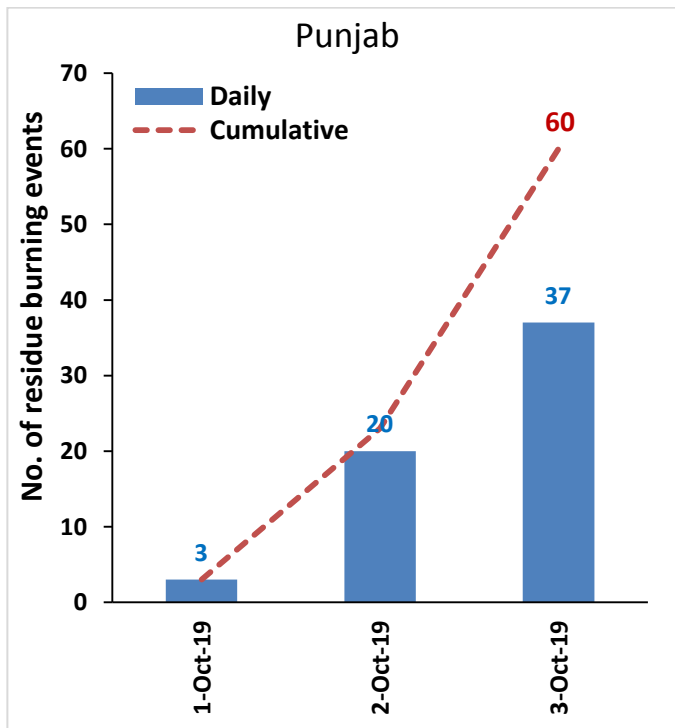
**Consortium for Research on Agroecosystem Monitoring and Modeling from Space (CREAMS) Laboratory,
Division of Agricultural Physics, ICAR – Indian Agricultural Research Institute, New Delhi – 110012**

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

Highlights for 03-October-2019

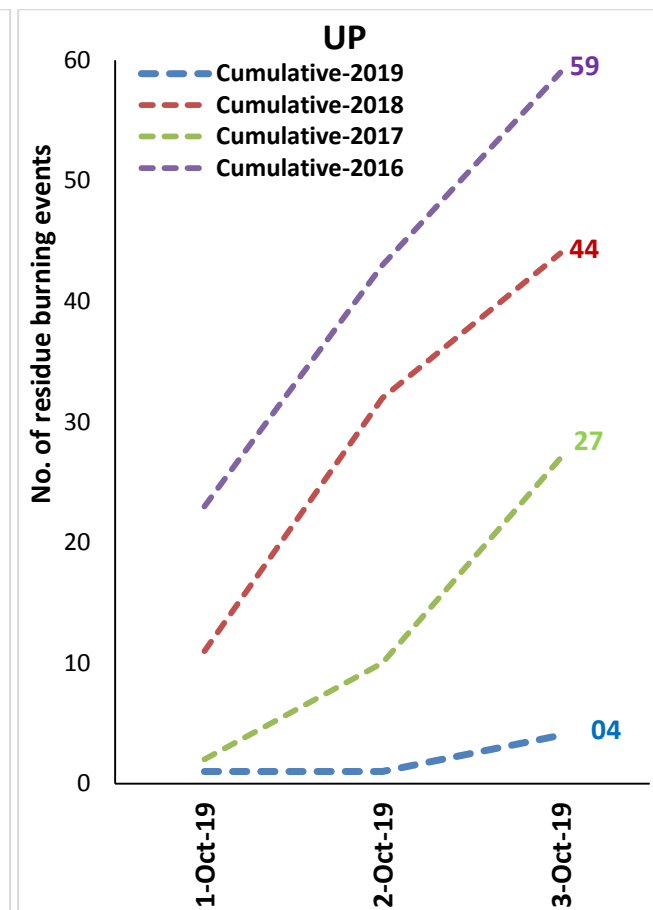
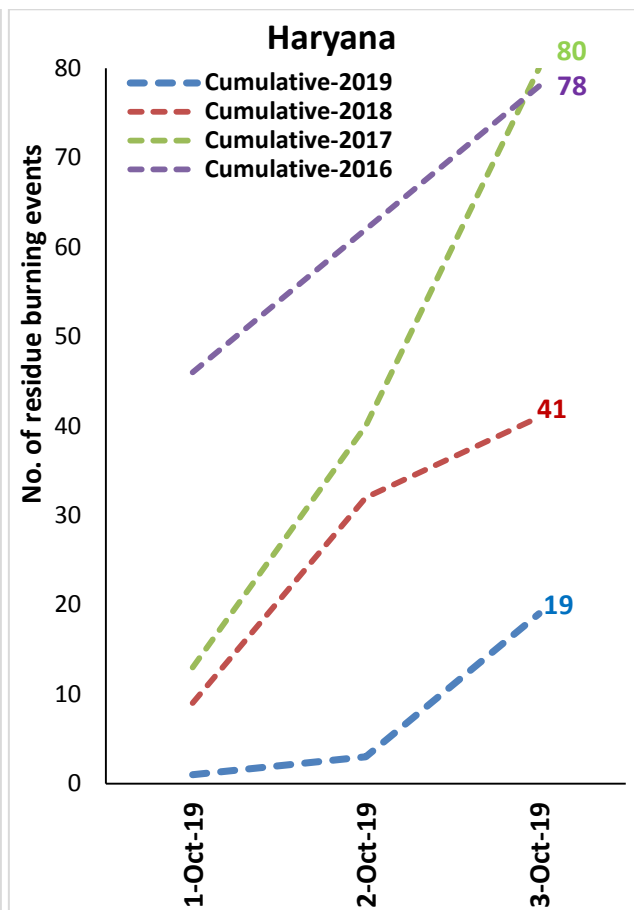
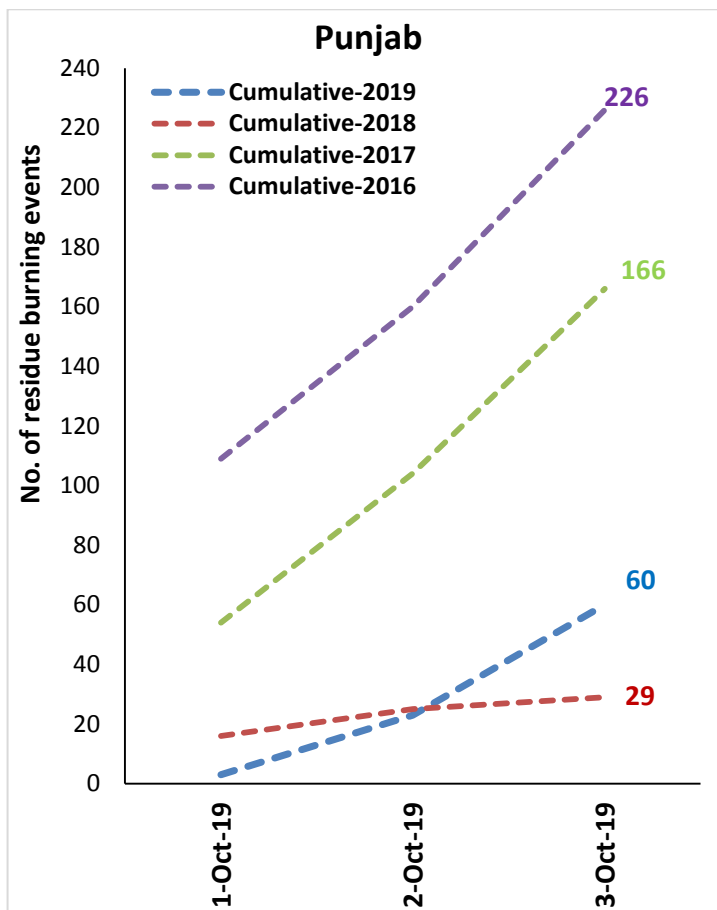
- Satellites detected 56 residue burning events in the three study States on 03-Oct-2019.
- In Punjab, majority of burning/fire events were concentrated in Amritsar and Tarn Taran districts.
- In Haryana and Uttar Pradesh, the burning/fire events were scattered across State.
- Overall, the residue burning/fire events are very few till date in the three study States being monitored.

Temporal distribution of residue burning events for the three study States



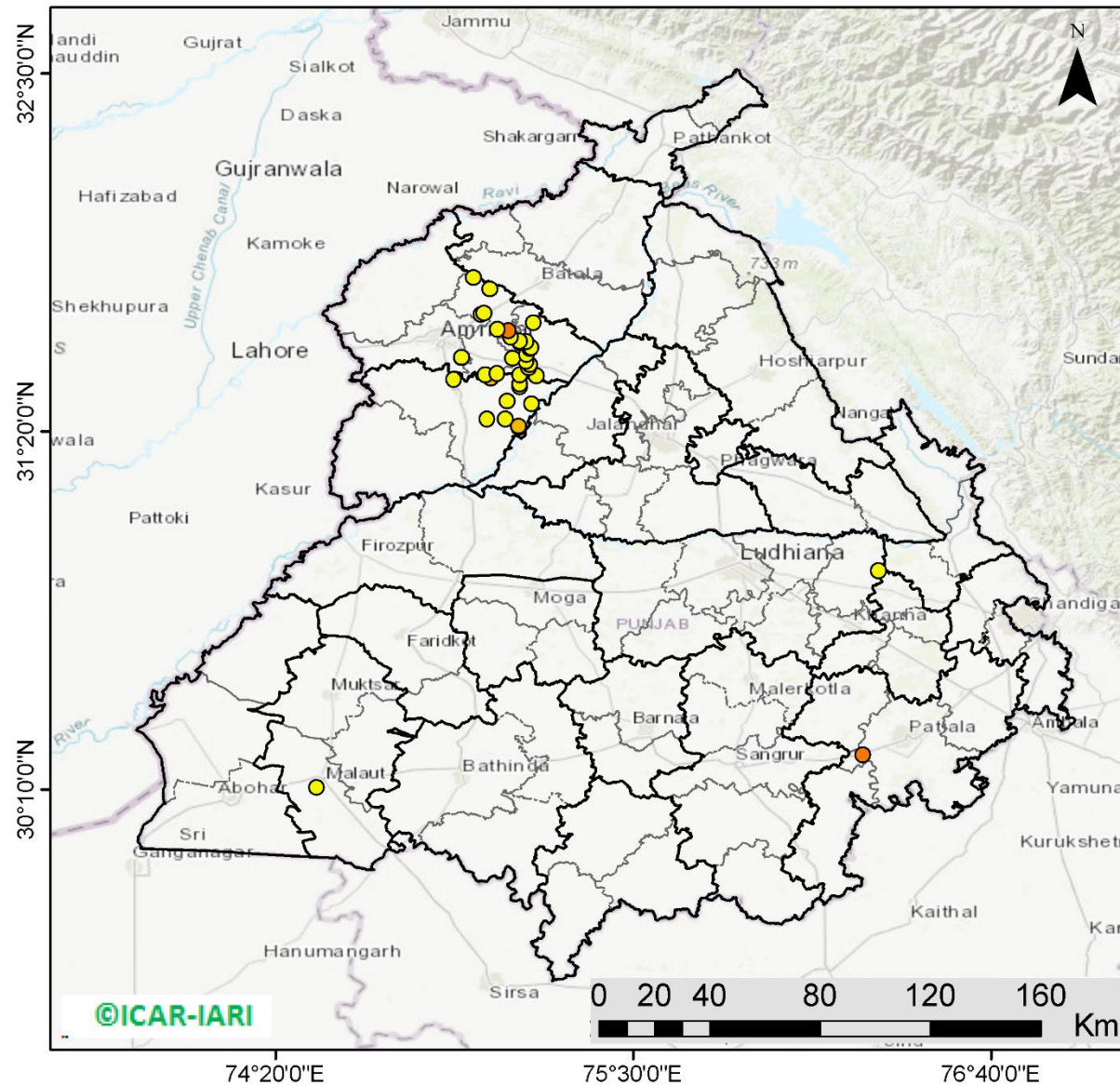
Comparison of residue burning events in current year (2019) with previous years (2018, 2017 & 2016) for the three study States

(01-Oct to 03-Oct)



(a) Punjab

RICE RESIDUE BURNING IN PUNJAB



37 burning events detected in Punjab on 03 rd October 2019

Fire Intensity (W/m²)

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

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0 20 40 80 120 160 Km

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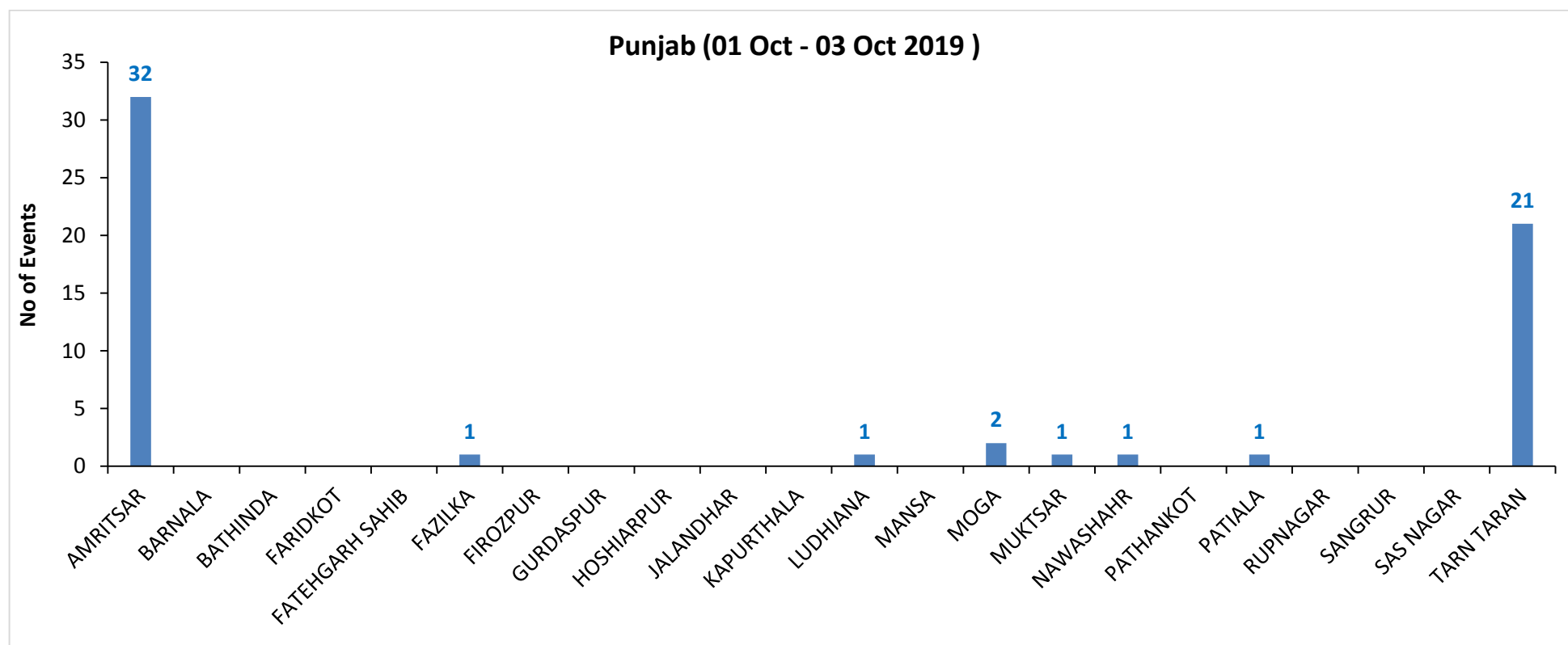


Details of residue burning events in Punjab on 03-Oct-2019

S. No.	District	Tehsil / Block	Satellite	Longitude	Latitude	Time IST	Day/ Night	Fire Power (W/m ²)
1	MUKTSAR	MALAUT	S-NPP	74.46758	30.17202	13:54:00	D	4.50
2	PATIALA	PATIALA	AQUA	76.24800	30.27900	13:40:00	D	12.50
3	LUDHIANA	SAMRALA	S-NPP	76.29882	30.87879	13:54:00	D	3.90
4	TARN TARAN	KHADOOR SAHIB	S-NPP	75.12669	31.34538	13:54:00	D	6.60
5	TARN TARAN	KHADOOR SAHIB	S-NPP	75.12611	31.34951	13:54:00	D	6.60
6	TARN TARAN	KHADOOR SAHIB	S-NPP	75.08335	31.37424	13:54:00	D	1.60
7	TARN TARAN	KHADOOR SAHIB	S-NPP	75.02287	31.37426	13:54:00	D	1.80
8	TARN TARAN	KHADOOR SAHIB	S-NPP	75.16920	31.42275	13:54:00	D	1.70
9	TARN TARAN	KHADOOR SAHIB	S-NPP	75.08891	31.43118	13:54:00	D	3.70
10	TARN TARAN	KHADOOR SAHIB	S-NPP	75.13076	31.47751	13:54:00	D	1.60
11	TARN TARAN	KHADOOR SAHIB	S-NPP	75.13024	31.48784	13:54:00	D	1.60
12	TARN TARAN	KHADOOR SAHIB	S-NPP	74.91498	31.50324	13:54:00	D	4.30
13	TARN TARAN	KHADOOR SAHIB	S-NPP	75.03545	31.50746	13:54:00	D	5.70
14	TARN TARAN	KHADOOR SAHIB	S-NPP	75.18408	31.51431	13:54:00	D	4.60
15	AMRITSAR	BABA BAKALA	S-NPP	75.13057	31.51726	13:54:00	D	1.70
16	TARN TARAN	KHADOOR SAHIB	S-NPP	75.01655	31.51802	13:54:00	D	2.20
17	AMRITSAR	AMRITSAR I	S-NPP	75.05524	31.52204	13:54:00	D	3.30
18	AMRITSAR	BABA BAKALA	S-NPP	75.15821	31.54111	13:54:00	D	3.50
19	AMRITSAR	BABA BAKALA	S-NPP	75.16143	31.54986	13:54:00	D	3.00
20	AMRITSAR	BABA BAKALA	S-NPP	75.15097	31.56139	13:54:00	D	2.40
21	AMRITSAR	AMRITSAR I	AQUA	75.10700	31.57100	13:40:00	D	4.50
22	AMRITSAR	AMRITSAR II	S-NPP	74.93970	31.57231	13:54:00	D	5.60
23	AMRITSAR	AMRITSAR II	S-NPP	74.93952	31.57492	13:54:00	D	4.10
24	AMRITSAR	BABA BAKALA	S-NPP	75.15247	31.58258	13:54:00	D	1.60
25	AMRITSAR	BABA BAKALA	S-NPP	75.16356	31.60181	13:54:00	D	3.50
26	AMRITSAR	BABA BAKALA	S-NPP	75.16738	31.60640	13:54:00	D	3.50
27	AMRITSAR	BABA BAKALA	S-NPP	75.12949	31.62359	13:54:00	D	2.90
28	AMRITSAR	BABA BAKALA	S-NPP	75.15135	31.62582	13:54:00	D	1.90
29	AMRITSAR	BABA BAKALA	S-NPP	75.12892	31.62773	13:54:00	D	2.90
30	AMRITSAR	BABA BAKALA	S-NPP	75.10046	31.64160	13:54:00	D	2.20
31	AMRITSAR	BABA BAKALA	AQUA	75.09300	31.66200	13:40:00	D	13.80
32	AMRITSAR	AMRITSAR I	S-NPP	75.05740	31.66644	13:54:00	D	2.90

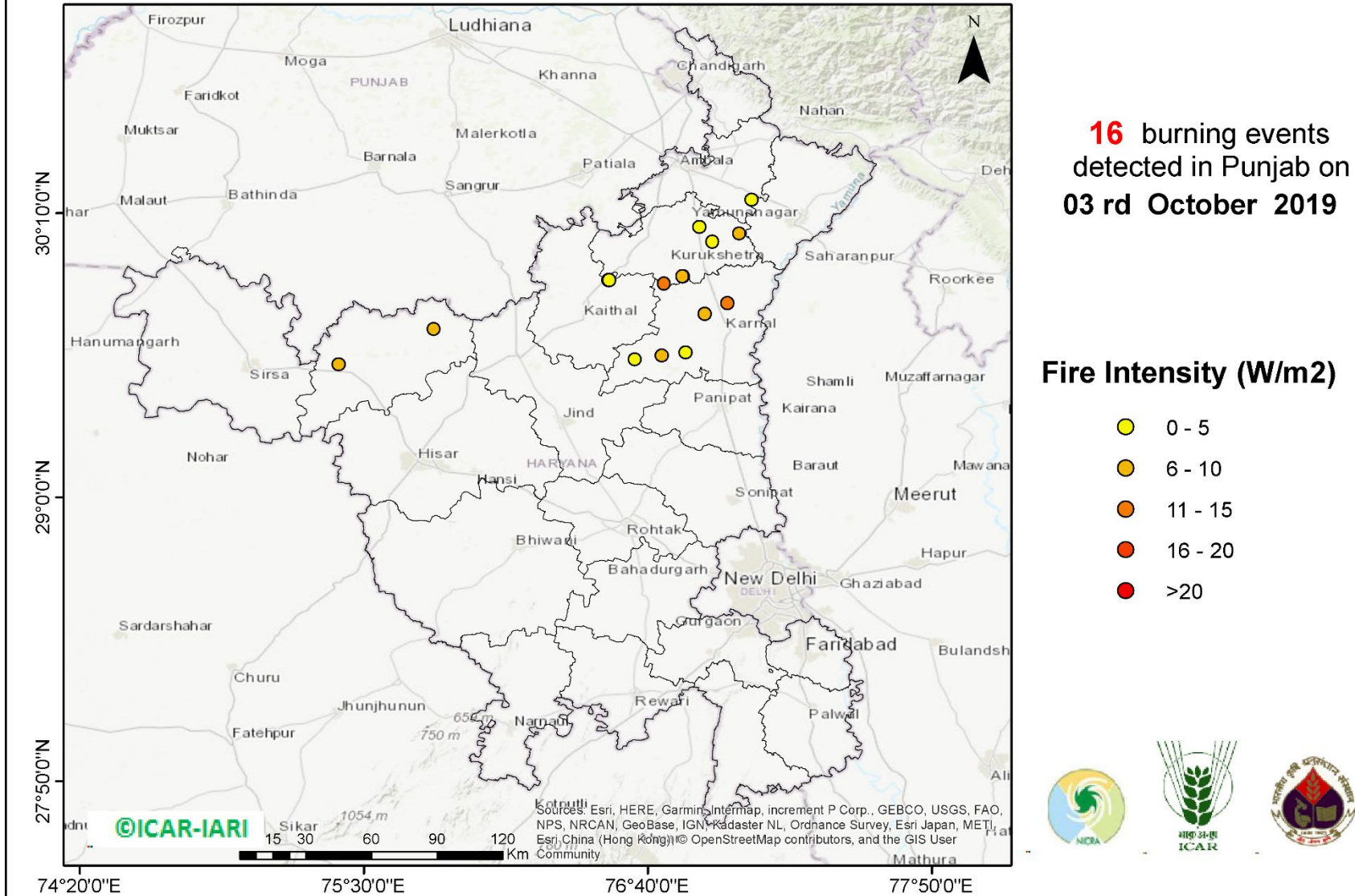
33	AMRITSAR	BABA BAKALA	S-NPP	75.17405	31.68716	13:54:00	D	2.90
34	AMRITSAR	AMRITSAR I	S-NPP	75.00458	31.71340	13:54:00	D	2.50
35	AMRITSAR	AMRITSAR I	S-NPP	75.01263	31.71841	13:54:00	D	4.00
36	AMRITSAR	AMRITSAR I	S-NPP	75.03275	31.79744	13:54:00	D	3.70
37	AMRITSAR	AMRITSAR I	S-NPP	74.97938	31.83383	13:54:00	D	1.90

District-wise cumulative number of residue burning events in Punjab (01 to 03-Oct 2019)



(b) Haryana

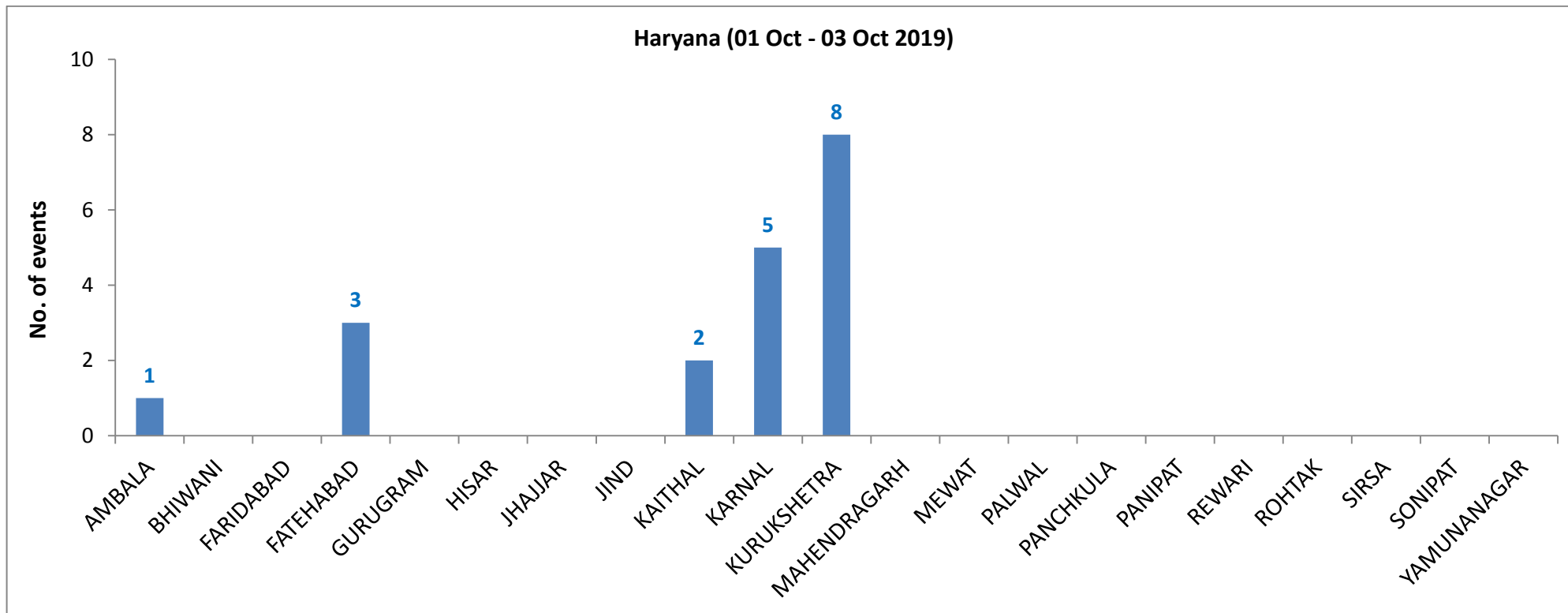
RICE RESIDUE BURNING IN HARYANA



Details of residue burning events in Haryana on 03-Oct-2019

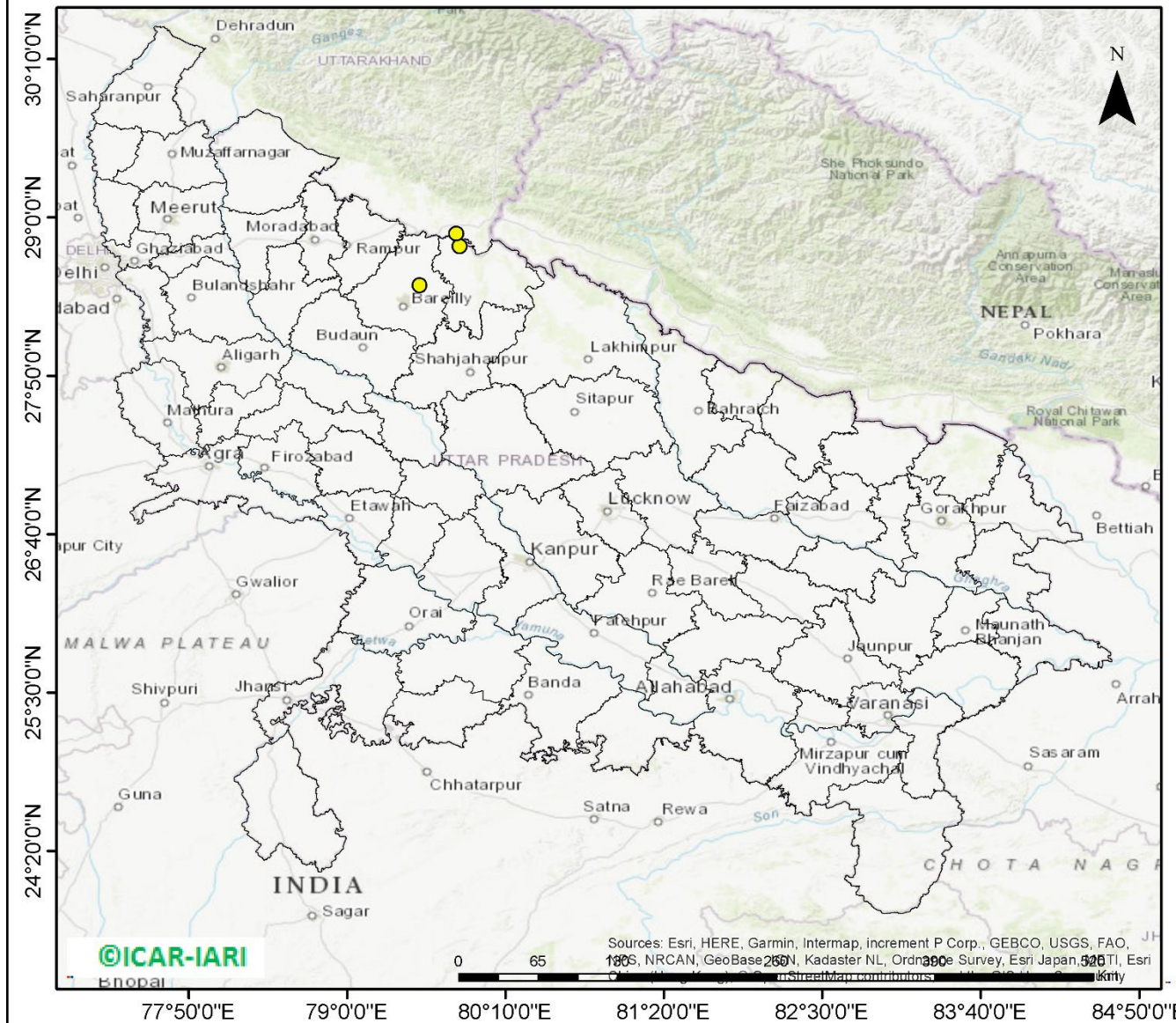
S. No.	District	Teshsil / Block	Satellite	Longitude	Latitude	Time IST	Day / Night	Fire Power (W/m ²)
1	FATEHABAD	FATEHABAD	S-NPP	75.39664	29.54600	13:54:00	D	6.40
2	KARNAL	ASSANDH	S-NPP	76.61202	29.56563	13:54:00	D	3.00
3	KARNAL	ASSANDH	AQUA	76.72300	29.58200	13:40:00	D	5.10
4	KARNAL	KARNAL	S-NPP	76.82027	29.59521	13:54:00	D	3.40
5	FATEHABAD	TOHANA	S-NPP	75.78728	29.69044	13:54:00	D	7.40
6	KARNAL	NILOKHERI	AQUA	76.90000	29.75400	13:40:00	D	6.30
7	KARNAL	KARNAL	S-NPP	76.99235	29.79737	13:54:00	D	11.90
8	KURUKSHETRA	THANESAR	AQUA	76.73300	29.87800	13:40:00	D	14.50
9	KAITHAL	KAITHAL	AQUA	76.50400	29.89200	13:40:00	D	4.70
10	KAITHAL	KAITHAL	S-NPP	76.506	29.892	13:54:00	D	3.80
11	KURUKSHETRA	THANESAR	AQUA	76.812	29.908	13:40:00	D	12.60
12	KURUKSHETRA	THANESAR	S-NPP	76.808	29.909	13:54:00	D	7.60
13	KURUKSHETRA	THANESAR	S-NPP	76.931	30.050	13:54:00	D	3.20
14	KURUKSHETRA	THANESAR	S-NPP	77.041	30.084	13:54:00	D	5.30
15	KURUKSHETRA	THANESAR	S-NPP	76.878	30.110	13:54:00	D	3.10
16	AMBALA	BARARA	S-NPP	77.092	30.222	13:54:00	D	4.90

District-wise cumulative number of residue burning events in Haryana (01 to 03-Oct 2019)



(c) UP

RICE RESIDUE BURNING IN UTTAR PRADESH



03 burning events detected in Uttar Pradesh on **03 rd October 2019**

Fire Intensity (W/m²)

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

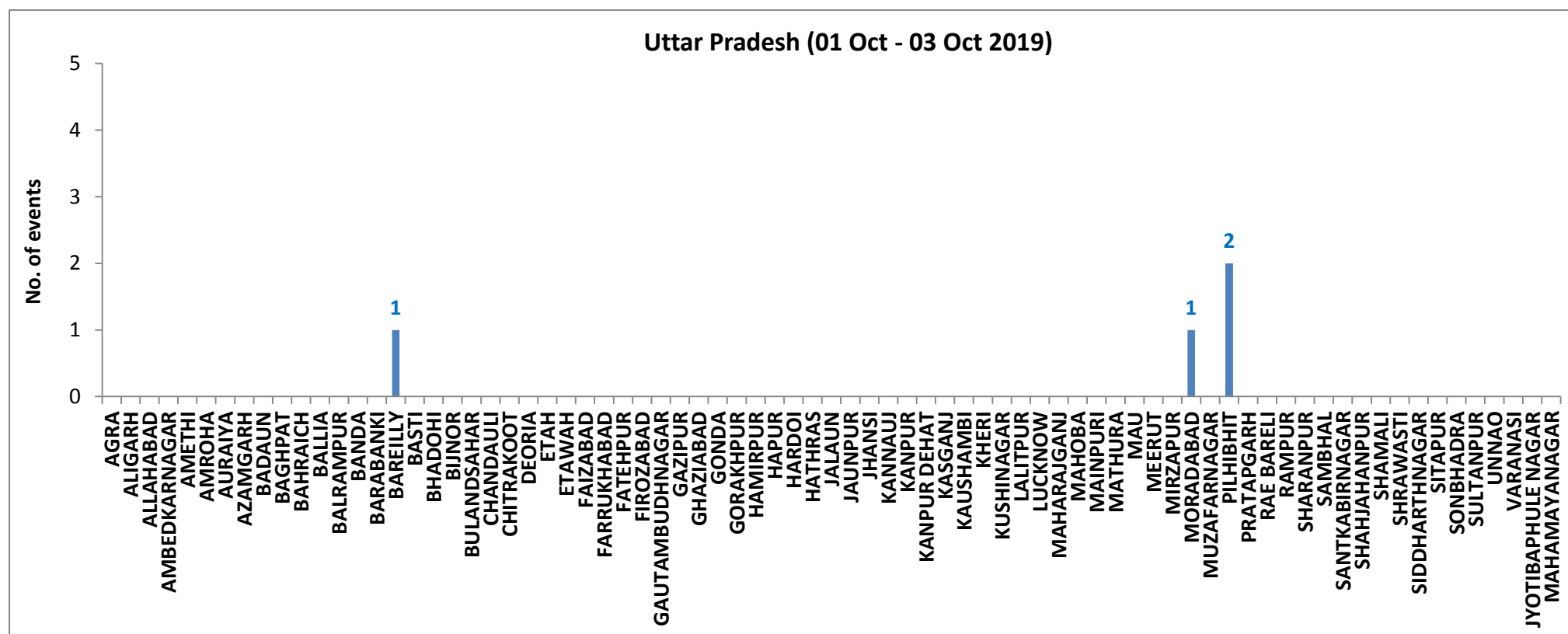


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Details of residue burning events in Uttar Pradesh on 03-Oct-2019

S. No.	District	Block	Satellite	Longitude	Latitude	Time IST	Day / Night	Fire Power (W/m ²)
1	BAREILLY	NAWABGANJ	S-NPP	79.53593	28.50076	13:54:00	D	2.00
2	PILHIBHIT	PILHIBHIT	S-NPP	79.82992	28.78807	13:54:00	D	4.20
3	PILHIBHIT	PILHIBHIT	S-NPP	79.80266	28.88036	13:54:00	D	4.20

District-wise cumulative number of residue burning events in Haryana (01 to 03-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 03-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	37	25	119	98
Total	60	29	166	226	19	41	80	78	4	44	27	59	83	114	273	363

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)
