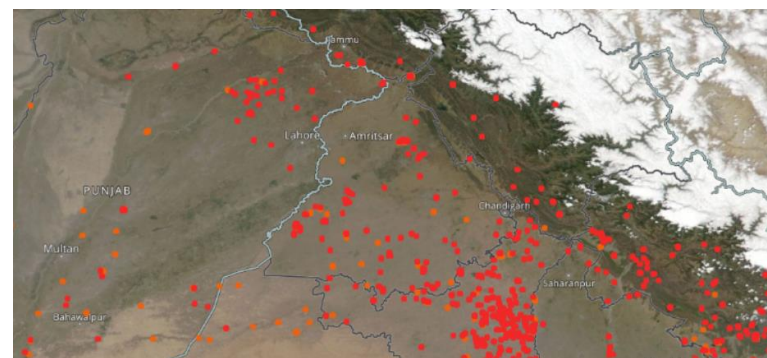


MONITORING PADDY RESIDUE BURNING IN PUNJAB USING GEOSPATIAL TECHNOLOGIES 2023



Prepared By:
Punjab Remote Sensing Centre, Ludhiana, Punjab
for
Punjab Pollution Control Board, Patiala, Punjab



Highlights for 11 November 2023

- The active fire incidents due to paddy residue burning were monitored using satellite remote sensing, following the new "Standard Protocol for Estimation of Crop Residue Burning Fire Events using Satellite Data" developed on the directions of "Commission for Air Quality Management in National Capital Region and Adjoining Areas".
- Satellites detected 104 incidents in the Punjab State on 11 November 2023.

District-wise Active Fire Events in Punjab

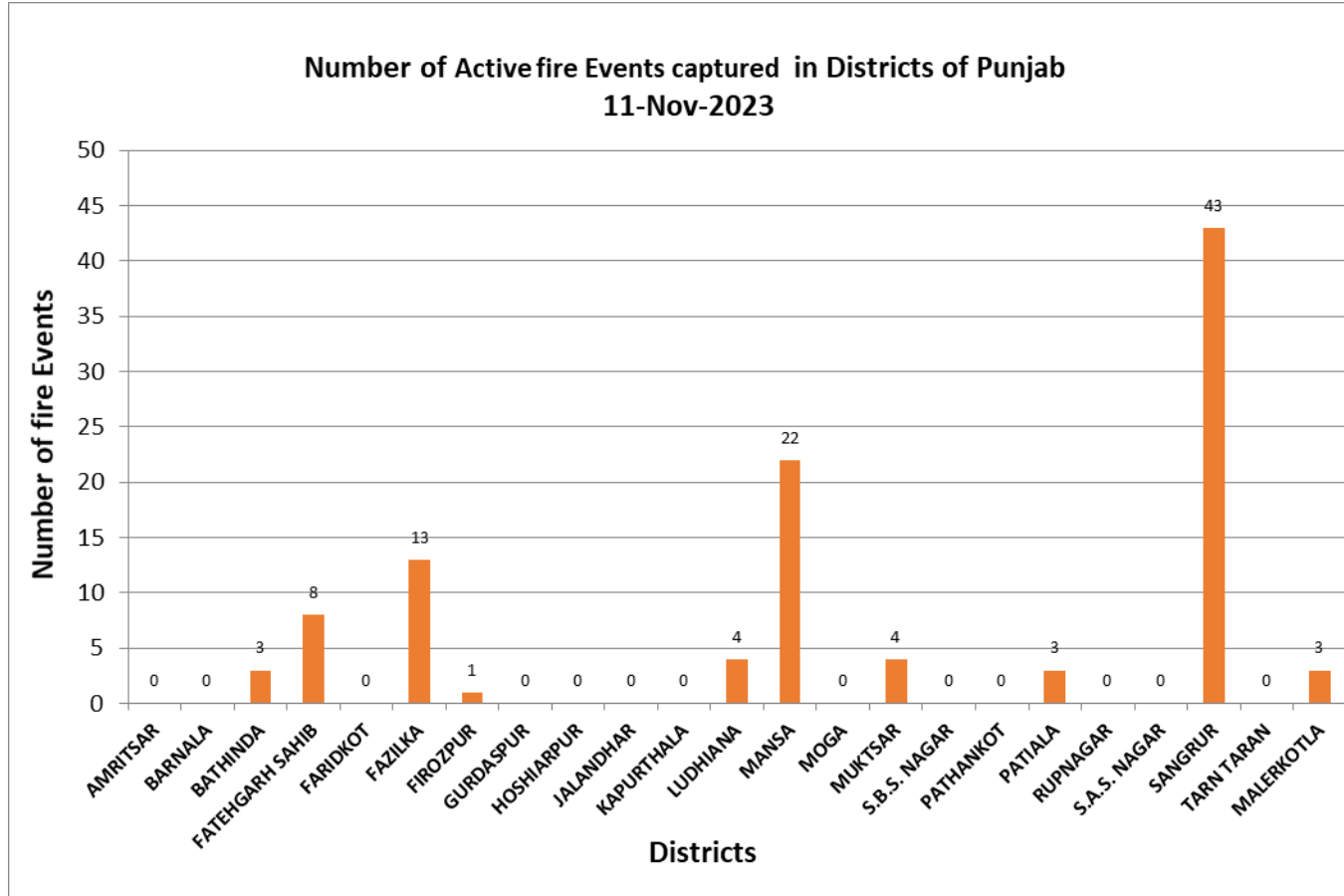


Fig. 1. District-wise fire incidents (Total events = 104) captured by Satellite in Punjab on 11 November 2023

On 11 November, 2023, 104 active fire incidents were captured by the Satellite in state of Punjab.

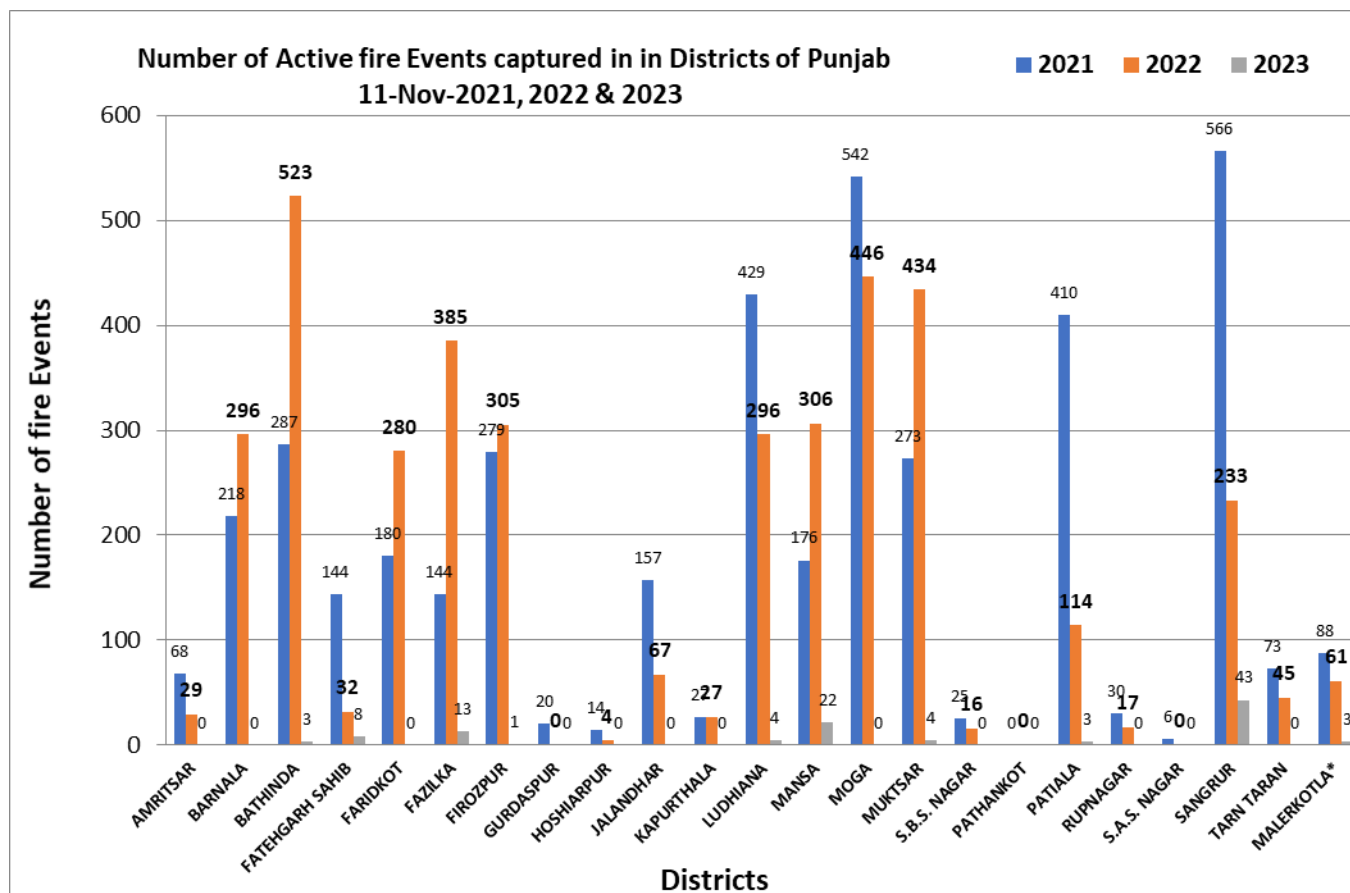


Fig 2 : District-wise comparison of fire incidents captured in Punjab on 11 November 2021, 2022 & 2023

On 11 November, 2023, 104 active fire events were captured by the Satellite in state of Punjab. Whereas on the same day (i.e. 11 November), in the year 2021, 4156 active fire events were captured and in the year 2022 there were 3916 active fire events in state of Punjab.

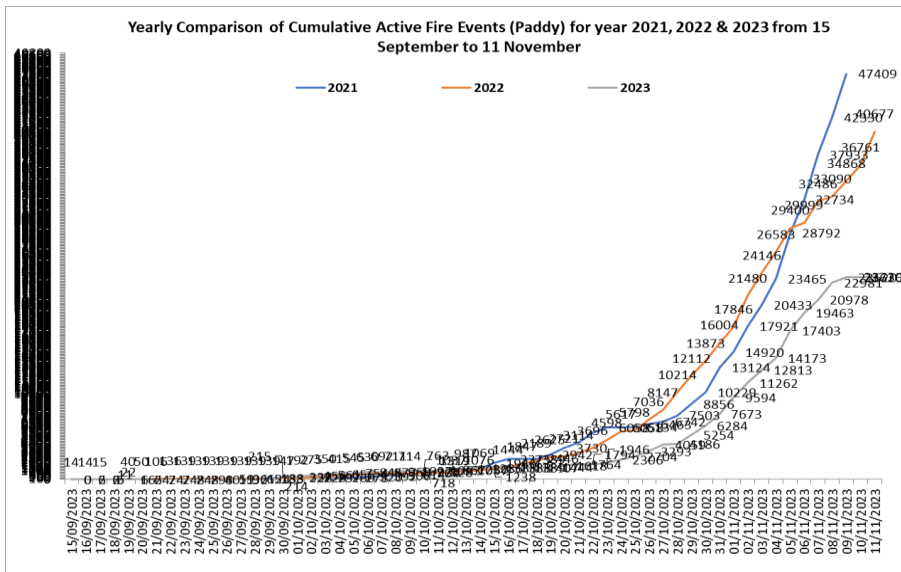


Fig 3 : Cumulative fire incidents captured in Punjab upto 11 November 2021, 2022 & 2023

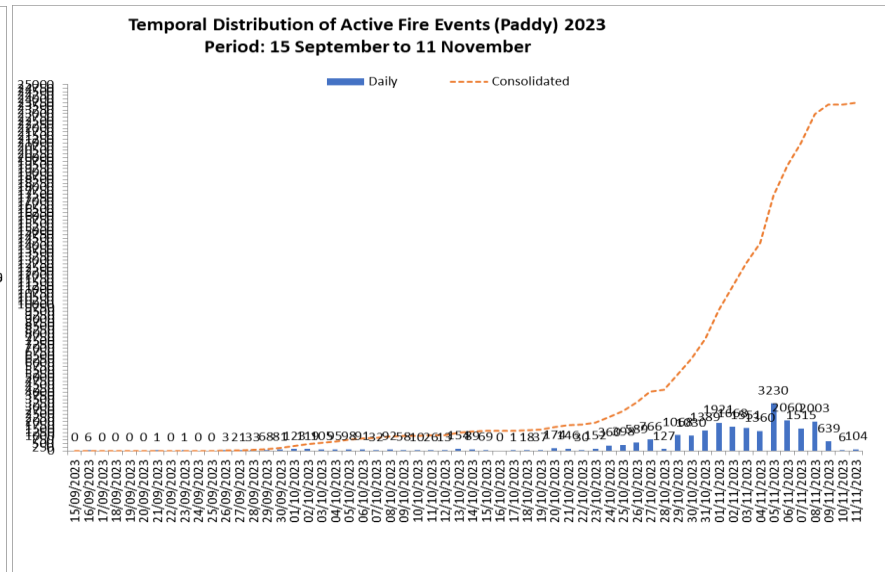
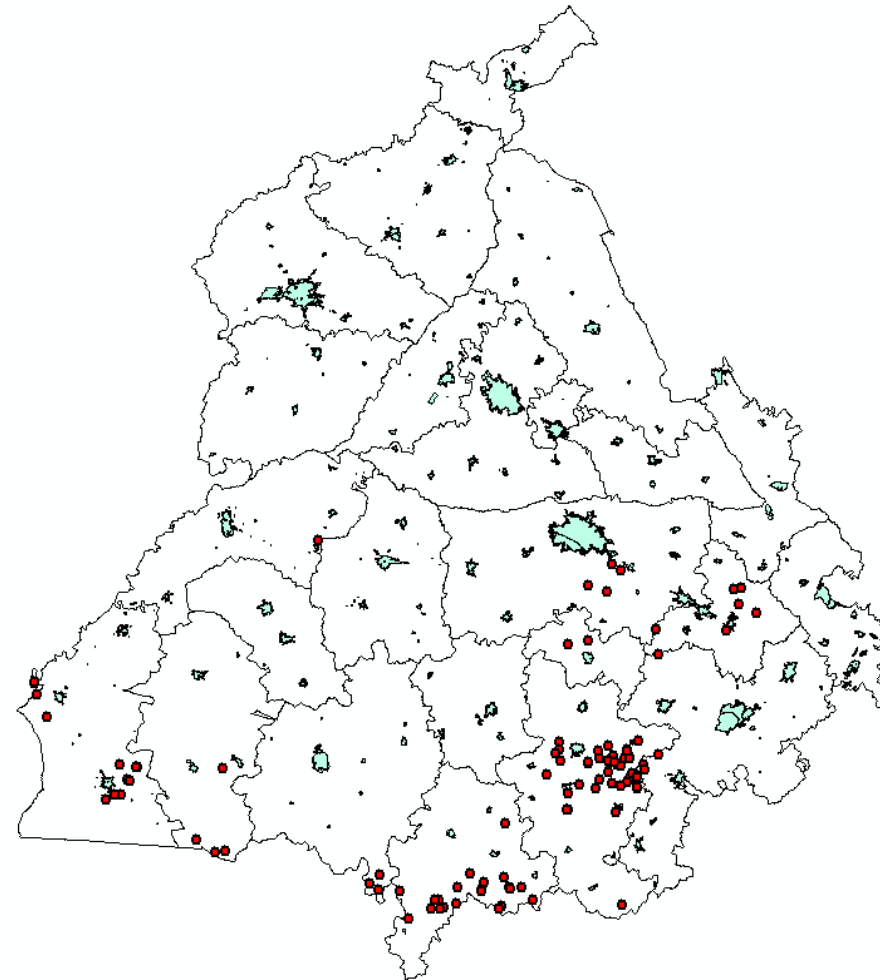


Fig 4: Date-wise Cumulative fire incidents captured in Punjab upto 11 November 2023



◆ Active Fire Events captured by Souni NPP VIIRS (Day & Night)

Map.1. Active fire locations detected in Punjab on 11 November 2023 by Satellite

Table.1. Active fire locations detected in Punjab on 11 November 2023 by Satellite

S.No.	Latitude	Longitude	Detection_Confidence	Radiative_power (W/m ²)	sat	Acq-date	acqtime	District	Tehsil	Block	Village
1	29.81684	75.15015	8	6.4	npp	29:06.5	13:M3:06	Bathinda	Talwandi Sabo	Talwandi Sabo	Kalawala
2	29.83565	75.11758	8	2.6	npp	29:06.5	13:M3:06	Bathinda	Talwandi Sabo	Talwandi Sabo	Koreana
3	29.86169	75.15324	8	4.0	npp	29:06.5	13:M3:06	Bathinda	Talwandi Sabo	Talwandi Sabo	Lehri
4	30.53142	76.13589	8	1.4	npp	29:06.5	13:M3:06	Fatehgarh Sahib	Amloh	Amloh	Bugga Kalan
5	30.60773	76.12618	8	2.8	npp	29:06.5	13:M3:06	Fatehgarh Sahib	Amloh	Amloh	Lallon Khurd
6	30.73183	76.42616	8	2.9	npp	29:06.5	13:M3:06	Fatehgarh Sahib	Bassi Pathanan	Bassi Pathanan	Bajidpur
7	30.68107	76.41897	8	3.2	npp	29:06.5	13:M3:06	Fatehgarh Sahib	Bassi Pathanan	Bassi Pathanan	Bassi
8	30.72833	76.40181	8	5.6	npp	29:06.5	13:M3:06	Fatehgarh Sahib	Bassi Pathanan	Bassi Pathanan	Haji Pur
9	30.72650	76.40185	8	2.3	npp	29:06.5	13:M3:06	Fatehgarh Sahib	Bassi Pathanan	Bassi Pathanan	Haji Pur

10	30.6520 3	76.4787 8	8	3.8	npp	29:06.5	13:M3:0 6	Fatehgar h Sahib	Bassi Pathanan	Khera	Kotla Faazal
11	30.6005 4	76.3750 8	8	7.8	npp	29:06.5	13:M3:0 6	Fatehgar h Sahib	Fatehgarh Sahib	Sirhind	Bara
12	30.1518 6	74.2688 1	8	4.1	npp	29:06.5	13:M3:0 6	Fazilka	Abohar	Abohar	Bahawal Bassi
13	30.1884 5	74.3030 3	8	1.8	npp	29:06.5	13:M3:0 6	Fazilka	Abohar	Abohar	Chanan Khera
14	30.1899 1	74.3030 7	8	17.1	npp	29:06.5	13:M3:0 6	Fazilka	Abohar	Abohar	Chanan Khera
15	30.1892 5	74.2990 1	8	18.9	npp	29:06.5	13:M3:0 6	Fazilka	Abohar	Abohar	Chanan Khera
16	30.1973 0	74.2425 5	8	2.2	npp	29:06.5	13:M3:0 6	Fazilka	Abohar	Abohar	Gobind Garh
17	30.0918 4	74.1973 6	8	1.7	npp	29:06.5	13:M3:0 6	Fazilka	Abohar	Abohar	Kikar Khera
18	30.4087 2	73.9524 4	8	2.4	npp	29:06.5	13:M3:0 6	Fazilka	Fazilka	Fazilka	Kandar Ke
19	30.3408 3	73.9881 3	8	8.5	npp	29:06.5	13:M3:0 6	Fazilka	Fazilka	Fazilka	Karian
20	30.4449	73.9402	8	7.3	npp	29:06.5	13:M3:0	Fazilka	Fazilka	Fazilka	Mahar

	1	4					6				Jasmer
21	30.4482 6	73.9395 1	8	7.3	npp	29:06.5	13:M3:0 6	Fazilka	Fazilka	Fazilka	Mahar Jasmer
22	30.8849 2	74.9395 8	8	0.7	npp	19:06.6	02:M3:0 6	Firozpur	Zira	Zira	Sekhwan
23	30.7421 2	75.8892 4	8	1.5	npp	29:06.5	13:M3:0 6	Ludhiana	Ludhiana East	Dehlon	Khatra
24	30.8082 5	75.9716 1	8	1.9	npp	29:06.5	13:M3:0 6	Ludhiana	Ludhiana East	Ludhiana 1	Bilga
25	30.7859 0	76.0049 9	8	4.4	npp	29:06.5	13:M3:0 6	Ludhiana	Payal	Doraha	Deep Nagar
26	30.7212 5	75.9553 0	8	6.1	npp	29:06.5	13:M3:0 6	Ludhiana	Payal	Doraha	Rara Shiab
27	30.5761 4	75.8890 4	8	2.2	npp	29:06.5	13:M3:0 6	Malerkotl a	Malerkotla	Malerkotla	Bhogiwal
28	30.5621 3	75.8178 5	8	4.4	npp	29:06.5	13:M3:0 6	Malerkotl a	Malerkotla	Malerkotla	Hussan Pura
29	30.5654 4	75.8171 8	8	4.4	npp	29:06.5	13:M3:0 6	Malerkotl a	Malerkotla	Malerkotla	Hussan Pura
30	29.8538 0	75.5880 9	8	1.9	npp	29:06.5	13:M3:0 6	Mansa	Budhlada	Budhlada	Achanak

31	29.8182 9	75.5092 2	8	13.2	npp	29:06.5	13:M3:0 6	Mansa	Budhlada	Budhlada	Boha
32	29.8396 0	75.5174 9	8	3.3	npp	29:06.5	13:M3:0 6	Mansa	Budhlada	Budhlada	Boha
33	29.8149 9	75.5098 9	8	5.9	npp	29:06.5	13:M3:0 6	Mansa	Budhlada	Budhlada	Boha
34	29.8223 3	75.6471 2	8	17.2	npp	29:06.5	13:M3:0 6	Mansa	Budhlada	Budhlada	Dharpura
35	29.8110 8	75.5065 9	8	4.4	npp	29:06.5	13:M3:0 6	Mansa	Budhlada	Budhlada	Hakam Wala
36	29.7841 9	75.6873 6	8	4.5	npp	29:06.5	13:M3:0 6	Mansa	Budhlada	Budhlada	Kulrian
37	29.7673 1	75.5765 9	8	4.6	npp	29:06.5	13:M3:0 6	Mansa	Budhlada	Budhlada	Riond Kalan
38	29.7594 9	75.5700 1	8	1.6	npp	29:06.5	13:M3:0 6	Mansa	Budhlada	Budhlada	Riond Khurd
39	29.8229 0	75.6062 1	8	13.2	npp	29:06.5	13:M3:0 6	Mansa	Budhlada	Budhlada	Saspali
40	29.8659 5	75.4672 6	8	3.6	npp	29:06.5	13:M3:0 6	Mansa	Budhlada	Budhlada	Tahlian
41	29.8196	75.6068	8	13.2	npp	29:06.5	13:M3:0	Mansa	Budhlada	Budhlada	Todarpur

	0	7					6				
42	30.0170 4	75.5921 6	8	3.8	npp	29:06.5	13:M3:0 6	Mansa	Mansa	Bhikhi	Dhalewan
43	29.7639 4	75.3773 3	8	7.7	npp	29:06.5	13:M3:0 6	Mansa	Sardulgarh	Jhunir	Chainewala
44	29.7846 2	75.3567 8	8	2.8	npp	29:06.5	13:M3:0 6	Mansa	Sardulgarh	Jhunir	Jhunir
45	29.7860 9	75.3442 2	8	4.0	npp	29:06.5	13:M3:0 6	Mansa	Sardulgarh	Jhunir	Makhe Wala
46	29.7739 6	75.4202 1	8	8.0	npp	29:06.5	13:M3:0 6	Mansa	Sardulgarh	Jhunir	Moffar
47	29.7614 9	75.3614 8	8	6.1	npp	29:06.5	13:M3:0 6	Mansa	Sardulgarh	Sardulgarh	Jhandke
48	29.8147 6	75.2243 0	8	3.4	npp	29:06.5	13:M3:0 6	Mansa	Sardulgarh	Sardulgarh	Kusla
49	29.7277 8	75.2540 0	8	1.5	npp	29:06.5	13:M3:0 6	Mansa	Sardulgarh	Sardulgarh	Tabbi Hari
50	30.1885 4	74.6041 3	8	9.3	npp	29:06.5	13:M3:0 6	Muktsar	Gidderbaha	Kot Bhai At Gidderbaha	Fakkarsar
51	29.9705 0	74.5120 8	8	3.4	npp	29:06.5	13:M3:0 6	Muktsar	Malout	Lambi	Bhitti Wala

52	29.9296 7	74.5790 6	8	4.4	npp	29:06.5	13:M3:0 6	Muktsar	Malout	Lambi	Fatta Khera
53	29.9354 9	74.6152 6	8	3.3	npp	29:06.5	13:M3:0 6	Muktsar	Malout	Lambi	Waring Khera
54	30.1950 3	76.0775 5	8	2.4	npp	29:06.5	13:M3:0 6	Patiala	Samana	Samana	Fathehgarh Chhana
55	30.2264 8	76.1288 9	8	4.4	npp	29:06.5	13:M3:0 6	Patiala	Samana	Samana	Quadra Bad
56	30.1784 8	76.0807 9	8	3.0	npp	29:06.5	13:M3:0 6	Patiala	Samana	Samana	Talwandi Malik
57	30.1488 1	76.0414 9	8	2.7	npp	29:06.5	13:M3:0 6	Sangrur	Bhawanigar h	Bhawanigar h	Bassiark
58	30.1536 6	76.0282 4	8	10.0	npp	29:06.5	13:M3:0 6	Sangrur	Bhawanigar h	Bhawanigar h	Bassiark
59	30.2003 3	75.9985 4	8	4.5	npp	29:06.5	13:M3:0 6	Sangrur	Bhawanigar h	Bhawanigar h	Batriara
60	30.1946 5	75.9832 6	8	2.0	npp	29:06.5	13:M3:0 6	Sangrur	Bhawanigar h	Bhawanigar h	Batriara
61	30.2183 1	76.0278 1	8	6.8	npp	29:06.5	13:M3:0 6	Sangrur	Bhawanigar h	Bhawanigar h	Bhatiwala Kalan
62	30.2150	76.0284	8	6.8	npp	29:06.5	13:M3:0	Sangrur	Bhawanigar	Bhawanigar	Bhatiwala

	0	7					6		h	h	Kalan
63	30.2696 2	76.0589 7	8	3.3	npp	29:06.5	13:M3:0 6	Sangrur	Bhawanigar h	Bhawanigar h	Bhawanigar h
64	30.2238 3	75.9734 0	8	1.8	npp	29:06.5	13:M3:0 6	Sangrur	Bhawanigar h	Bhawanigar h	Gharachon
65	30.2043 2	75.9567 3	8	6.0	npp	29:06.5	13:M3:0 6	Sangrur	Bhawanigar h	Bhawanigar h	Gharachon
66	30.2076 3	75.9560 9	8	6.0	npp	29:06.5	13:M3:0 6	Sangrur	Bhawanigar h	Bhawanigar h	Gharachon
67	30.1937 2	75.9998 5	8	4.1	npp	29:06.5	13:M3:0 6	Sangrur	Bhawanigar h	Bhawanigar h	Kapial
68	30.2399 5	76.0196 2	8	2.4	npp	29:06.5	13:M3:0 6	Sangrur	Bhawanigar h	Bhawanigar h	Phaguwal
69	30.2375 8	76.0199 2	8	3.5	npp	29:06.5	13:M3:0 6	Sangrur	Bhawanigar h	Bhawanigar h	Phaguwal
70	30.2039 9	75.9773 2	8	1.6	npp	29:06.5	13:M3:0 6	Sangrur	Bhawanigar h	Bhawanigar h	Sangeri
71	30.1686 7	76.0375 8	8	3.2	npp	29:06.5	13:M3:0 6	Sangrur	Dirba	Dirba	Ghanaur Jatan
72	30.1375 8	75.9659 1	8	6.1	npp	29:06.5	13:M3:0 6	Sangrur	Dirba	Dirba	Gujran

73	30.1611 0	76.0554 7	8	3.6	npp	29:06.5	13:M3:0 6	Sangrur	Dirba	Dirba	Kahangarh
74	30.1577 9	76.0561 3	8	3.6	npp	29:06.5	13:M3:0 6	Sangrur	Dirba	Dirba	Kahangarh
75	30.1239 0	76.0535 4	8	2.9	npp	29:06.5	13:M3:0 6	Sangrur	Dirba	Dirba	Kamal Pur
76	30.1318 0	75.9956 5	8	4.5	npp	29:06.5	13:M3:0 6	Sangrur	Dirba	Dirba	Khanal Kalan
77	30.1515 0	75.9222 0	8	3.1	npp	29:06.5	13:M3:0 6	Sangrur	Dirba	Dirba	Mehlan
78	30.1272 1	76.0528 9	8	2.9	npp	29:06.5	13:M3:0 6	Sangrur	Dirba	Dirba	Sant Pura
79	30.2662 1	75.7848 4	8	2.3	npp	29:06.5	13:M3:0 6	Sangrur	Sangrur	Sangrur	Badru Khan
80	30.2418 8	75.7814 9	8	6.9	npp	29:06.5	13:M3:0 6	Sangrur	Sangrur	Sangrur	Badru Khan
81	30.2542 3	75.9552 5	8	4.1	npp	29:06.5	13:M3:0 6	Sangrur	Sangrur	Sangrur	Gurdas Pur
82	30.2389 8	75.9214 3	8	9.2	npp	29:06.5	13:M3:0 6	Sangrur	Sangrur	Sangrur	Kalaudi
83	30.2002	75.8838	8	4.5	npp	29:06.5	13:M3:0	Sangrur	Sangrur	Sangrur	Kheri

	5	7					6				
84	30.2035 5	75.8832 2	8	4.5	npp	29:06.5	13:M3:0 6	Sangrur	Sangrur	Sangrur	Kheri
85	30.2161 3	75.9217 1	8	6.6	npp	29:06.5	13:M3:0 6	Sangrur	Sangrur	Sangrur	Khqiqat Pura
86	30.2301 7	75.7715 5	8	6.9	npp	29:06.5	13:M3:0 6	Sangrur	Sangrur	Sangrur	Ubhawal
87	30.2088 2	75.7880 9	8	1.8	npp	29:06.5	13:M3:0 6	Sangrur	Sangrur	Sangrur	Ubhawal
88	30.1374 8	75.8512 6	8	1.5	npp	29:06.5	13:M3:0 6	Sangrur	Sunam	Sunam	Bigar Wall
89	30.0605 8	75.8123 3	8	4.4	npp	29:06.5	13:M3:0 6	Sangrur	Sunam	Sunam	Chhanjli
90	30.0599 8	75.8083 6	8	3.5	npp	29:06.5	13:M3:0 6	Sangrur	Sunam	Sunam	Chhanjli
91	30.1226 6	75.9115 3	8	1.1	npp	29:06.5	13:M3:0 6	Sangrur	Sunam	Sunam	Khadial
92	30.1682 1	75.7387 2	8	3.3	npp	29:06.5	13:M3:0 6	Sangrur	Sunam	Sunam	Namol
93	30.1077 8	75.8121 3	8	6.9	npp	29:06.5	13:M3:0 6	Sangrur	Sunam	Sunam	Sansar Pura

94	30.1720 0	75.9530 0	48	21.0	mo d	33:48.5	14:M3:4 8	Sangrur	Bhawanigar h	Bhawanigar h	Nagra
95	30.1480 0	74.2810 0	56	14.0	mo d	33:48.5	14:M3:4 8	Fazilka	Abohar	Abohar	Kera Khera
96	30.1430 0	76.0200 0	58	18.0	mo d	33:48.5	14:M3:4 8	Sangrur	Dirba	Dirba	Dialgarh Jajjan
97	29.8240 0	75.4260 0	59	19.0	mo d	33:48.5	14:M3:4 8	Mansa	Budhlada	Jhunir	Dalelwala
98	29.7660 0	76.0000 0	59	22.0	mo d	33:48.5	14:M3:4 8	Sangrur	Moonak	Andana	Bhulan
99	30.1060 0	74.2480 0	62	16.0	mo d	33:48.5	14:M3:4 8	Fazilka	Abohar	Abohar	Kalatiba
100	30.2140 0	76.0130 0	62	23.0	mo d	33:48.5	14:M3:4 8	Sangrur	Bhawanigar h	Bhawanigar h	Batriara
101	30.2400 0	75.9180 0	64	23.0	mo d	33:48.5	14:M3:4 8	Sangrur	Sangrur	Sangrur	Khurani
102	29.7610 0	75.3320 0	68	28.0	mo d	33:48.5	14:M3:4 8	Mansa	Sardulgarh	Sardulgarh	Jhandke
103	30.0500 0	75.9780 0	70	40.0	mo d	33:48.5	14:M3:4 8	Sangrur	Dirba	Dirba	Diwan Garh
104	30.1040	74.2270	71	27.0	mo	33:48.5	14:M3:4	Fazilka	Abohar	Abohar	Kalatiba

	0	0			d		8				
--	---	---	--	--	---	--	---	--	--	--	--

The data from following Satellites received at NRSC Ground Station were used

S. No.	Satellite Name	Sensor	Resolution (m)	Day/Night Passses
1	Suomi NPP	VIIRS	375/750	Both
2	Terra	MODIS	1000	Both
3	Aqua	MODIS	1000	Both

The rice mask for the States was provided by MNCFC, MoA&FW, Govt. of India

GIS Maps of fire events can be visualized online on Crop Residue Burning (CRB) Information and Management System of **Punjab Remote Sensing Centre**, Ludhiana by following the link: <http://202.164.39.172/residue/Index.aspx>