

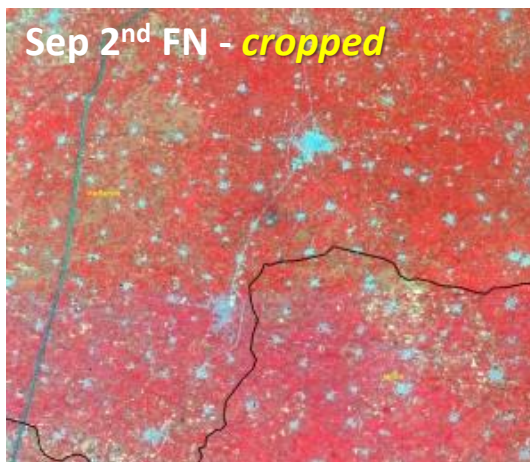
Assessment of paddy stubble burnt area progression in Punjab – Kharif 2022

Agricultural Sciences & Applications Group, Remote Sensing Applications Area

The post-harvest burning of crop residues in the kharif season in northern Indian states is a serious challenge – both in terms of the pollution being caused as well as the resulting photochemical smog in the neighboring areas. Various measures by government for crop residue management have been addressing the issue but to a very limited extent. Need of the hour is the availability of a spatial information of stubble burnt area and its dynamics for monitoring, assessing and planning preventive measures. Moreover, the surplus biomass in the form of stubble can be gainfully used as input to biofuel plants. Near real time satellite based detection of active fire locations is being done from MODIS and Suomi-NPP VIIRS, and is available on ISRO's geo-portal Bhuvan.

Continuous field-level monitoring and assessment of the actual paddy stubble burnt areas and its weekly/fortnightly progression is being carried out for kharif 2022 for Punjab state using the MIRBI (Mid Infrared Burn Index) index which utilizes a combination of two SWIR bands to estimate the burnt area. 10m and 5-day interval Sentinel-2 data starting from September 15, 2022 are being analysed.

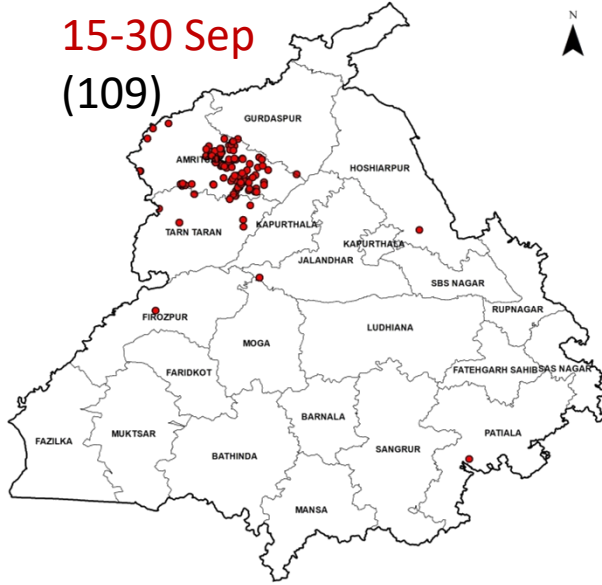
As on 31st October 2022, stubble burning was carried out in a total of about 4.16 lakh ha. The continuous monitoring and assessment will be continued till November 30th, 2022. Subsequently, the quantification of surplus biomass will be done, which will aid in appropriate decision making towards bioenergy solutions. Further, the spatial map of amount of biomass burnt can be used to assess the amount of Green House Gases (GHG) and particulate matter emission using bottom-up approach.



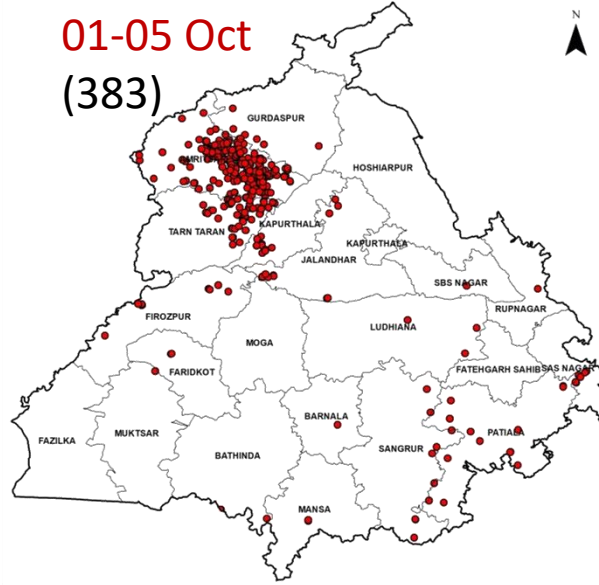
**Agricultural
fires &
smoke seen
from
Sentinel-2**

Number of Fire Incidents in Punjab in 2022 (SNPP)

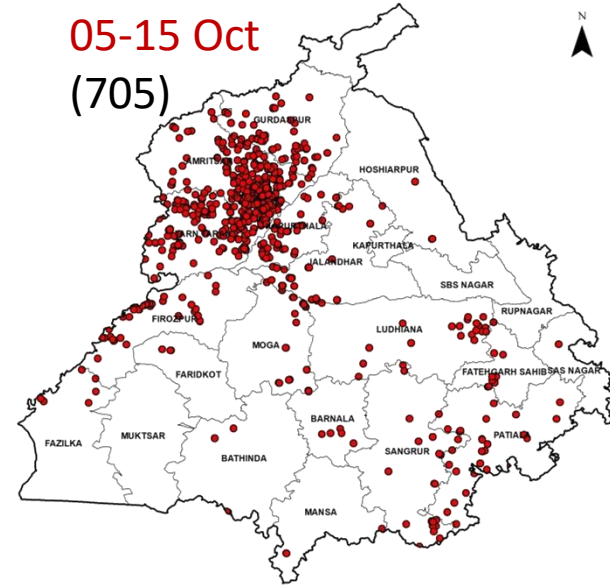
15-30 Sep
(109)



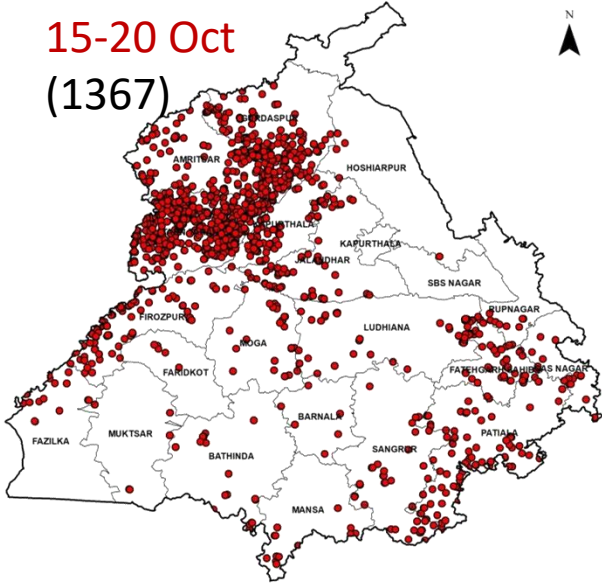
01-05 Oct
(383)



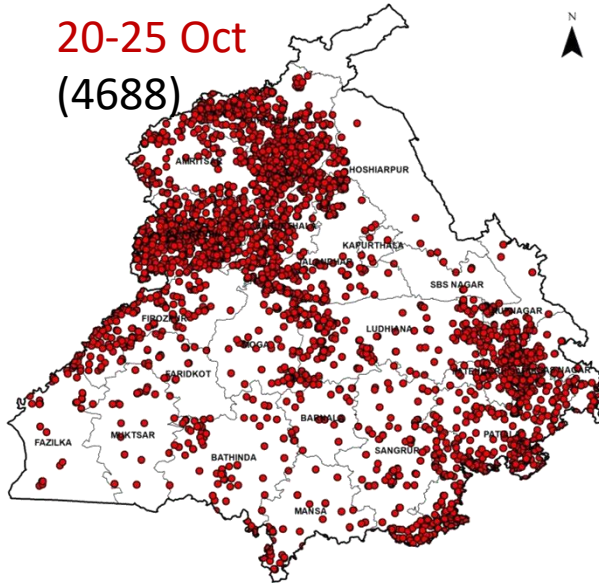
05-15 Oct
(705)



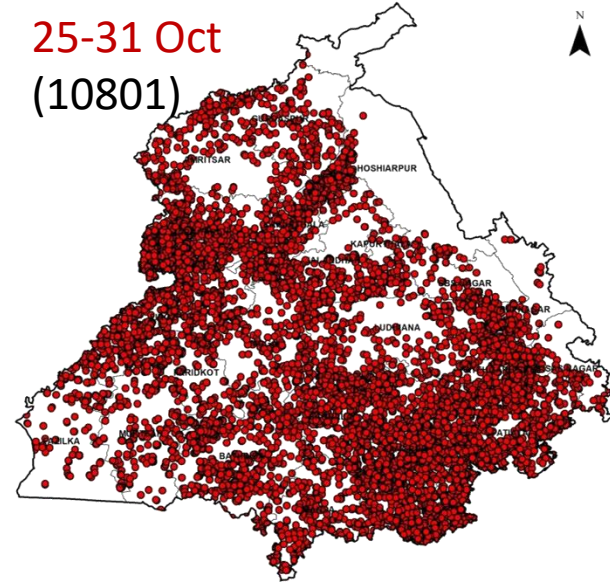
15-20 Oct
(1367)



20-25 Oct
(4688)

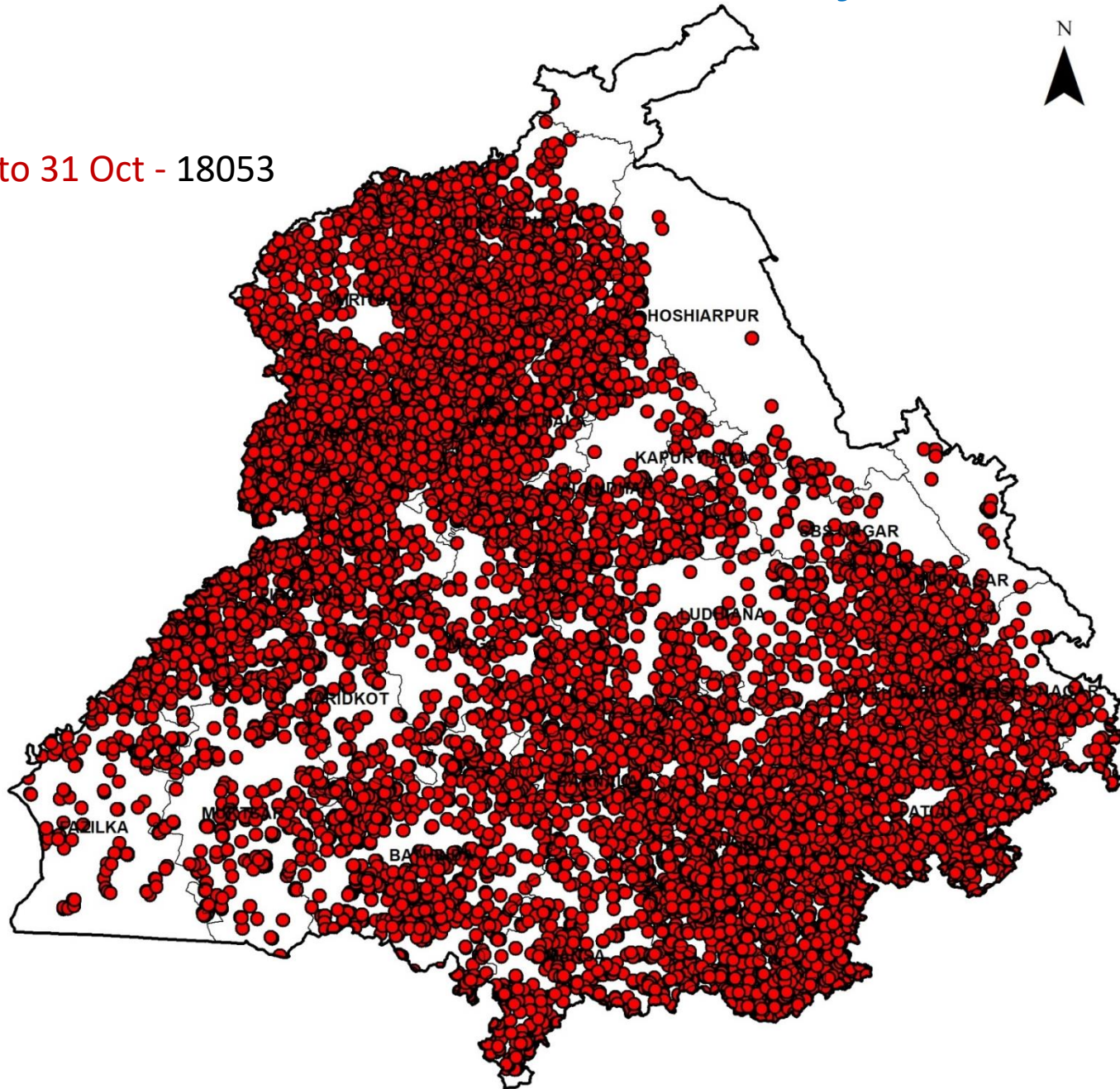


25-31 Oct
(10801)



Total Number of Fire Incidents in Punjab in 2022 (SNPP)

15 Sep to 31 Oct - 18053



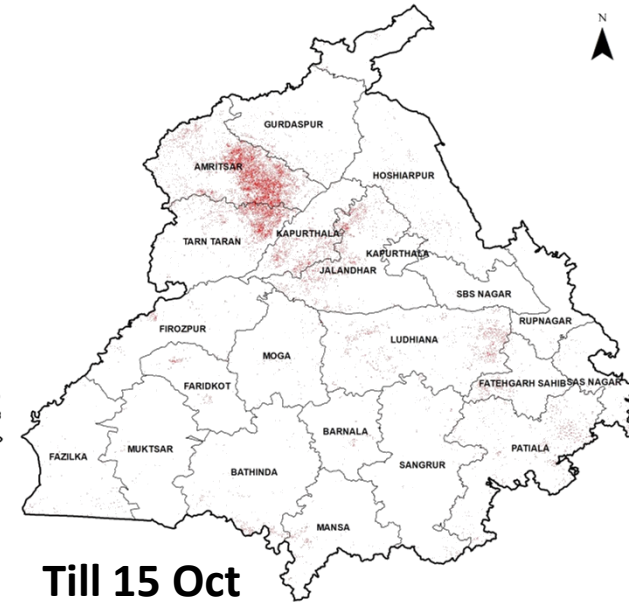
Cumulative Area Burnt in Punjab till Oct 31, 2022



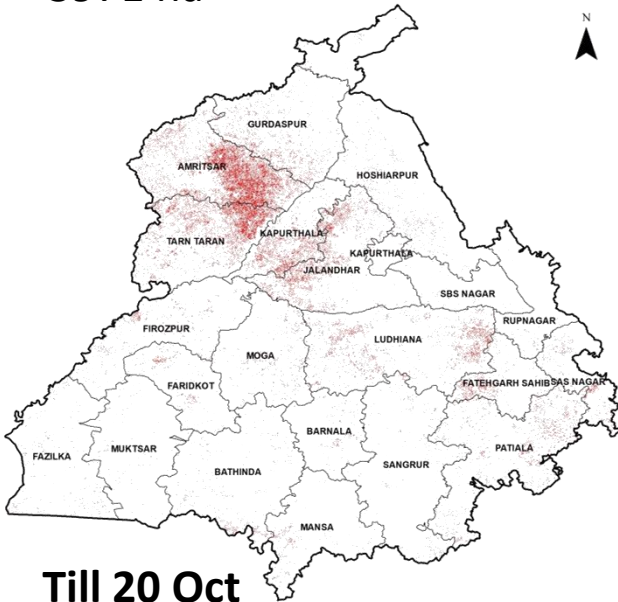
Till 30 Sep
3971 ha



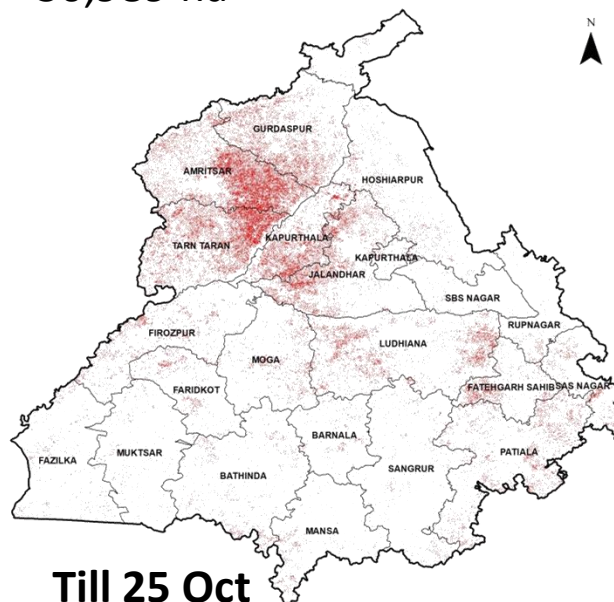
Till 05 Oct
30,989 ha



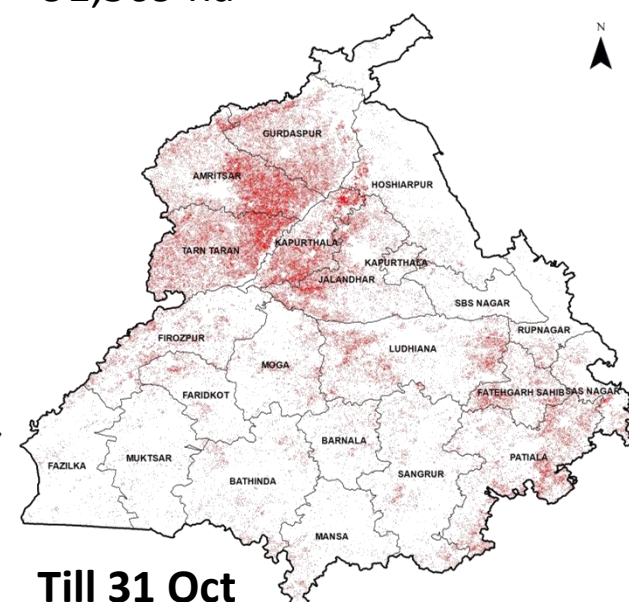
Till 15 Oct
91,569 ha



Till 20 Oct
1,44,220 ha

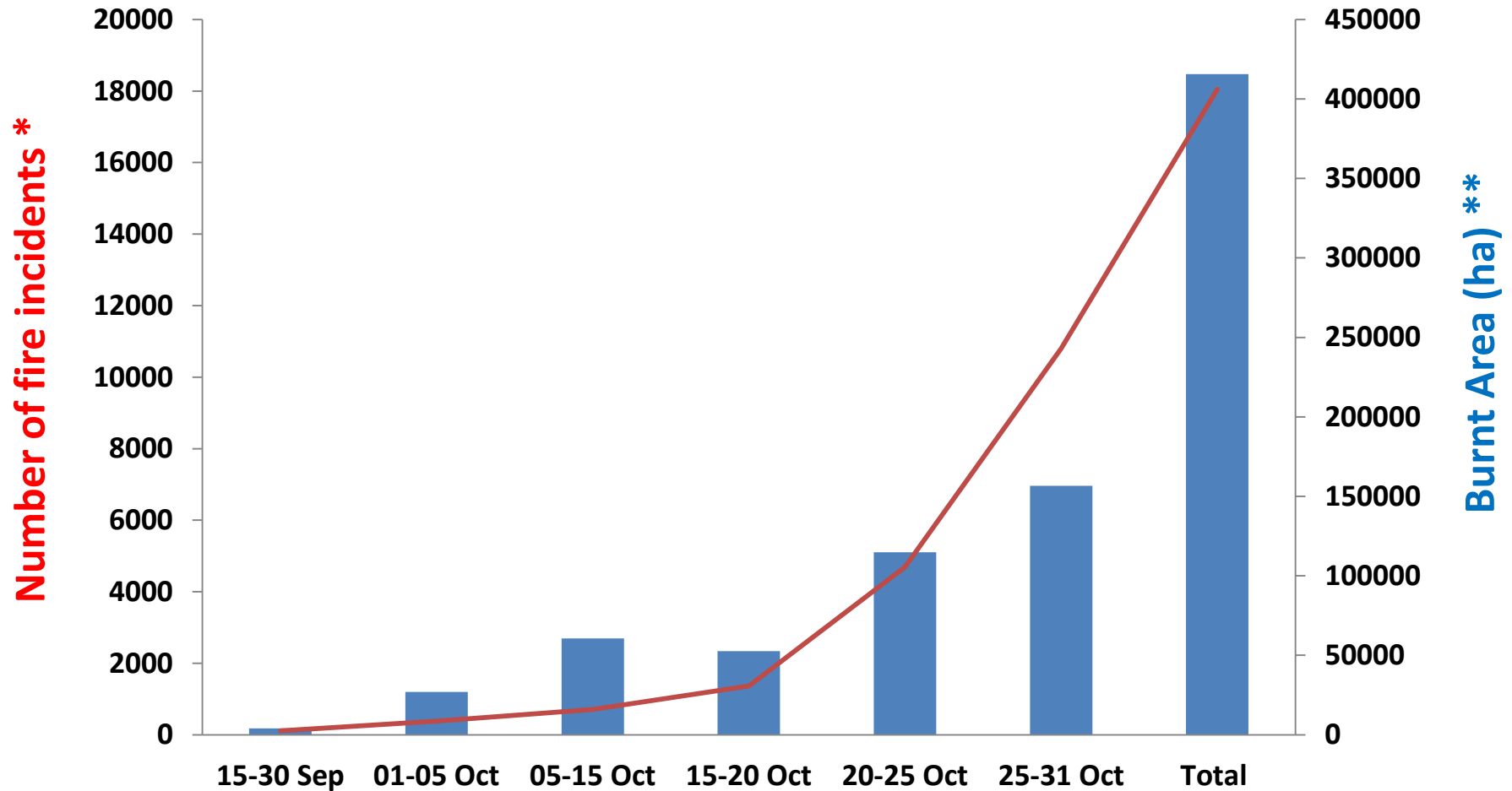


Till 25 Oct
2,59,051 ha



Till 31 Oct
4,15,704 ha

Fire Incidents vs. Area Burnt in Punjab (till Oct 31, 2022)



* Source – SNPP (375 m) : Bhuvan

** Sentinel-2A/2B

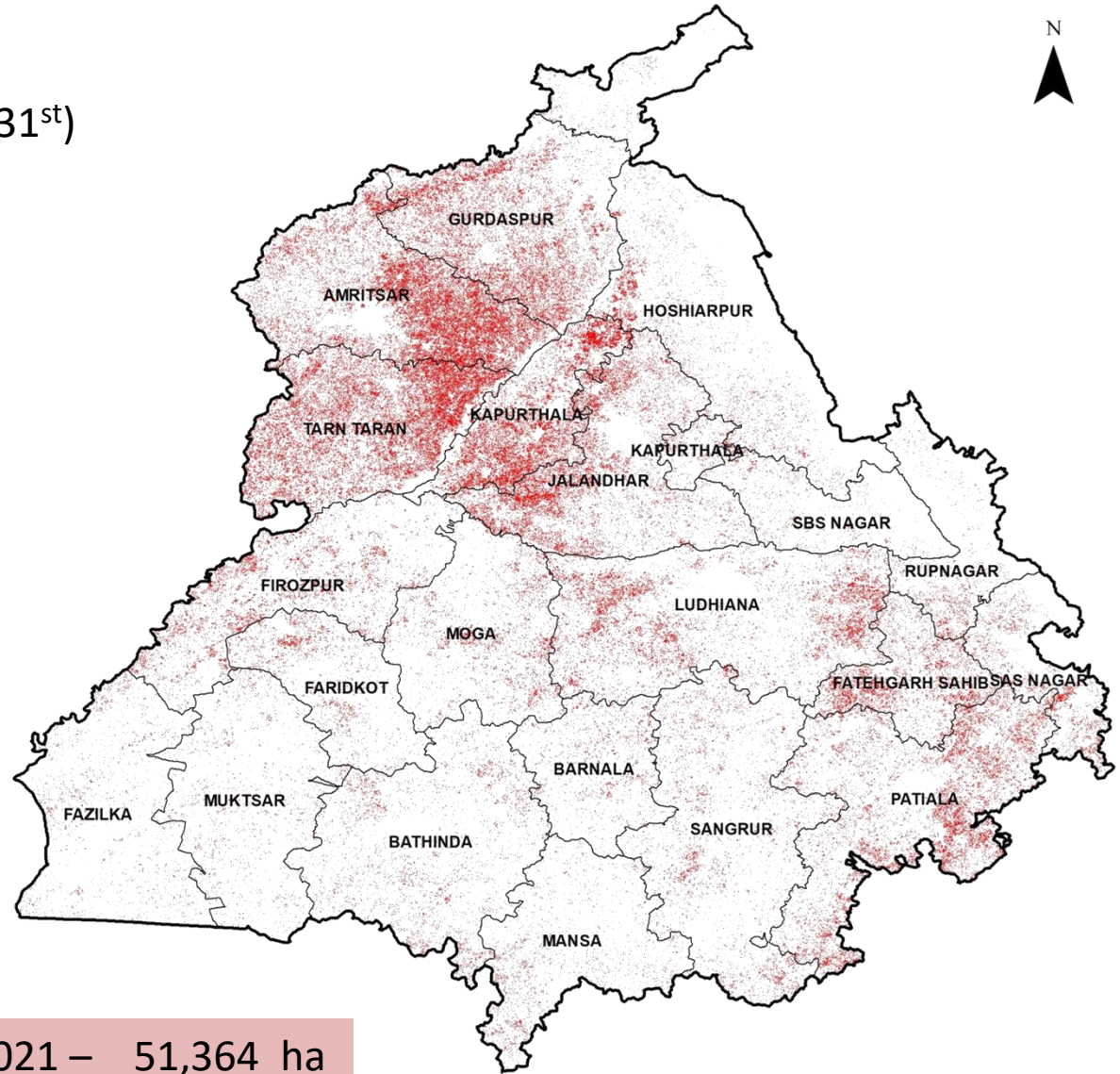
Total Area Burnt in Punjab (till Oct 31, 2022)

Cumulative area burnt (till Oct 31st)

2021 – 2,14,256 ha

2022 – 4,15,704 ha

Period (2022)	Area burnt (ha)
15-30 Sep	3971
01-05 Oct	27018
05-15 Oct	60580
15-20 Oct	52652
20-25 Oct	114831
25-31 Oct	156653
TOTAL	415704



Area burnt during Oct 25-31, 2021 – 51,364 ha

Area burnt during Oct 25-31, 2022 – 1,56,653 ha