

## **Supplementary Material**

### **Characterising spatial clusters of forest fire activity in the Western Himalayan region of India: implications for conservation and management**

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## Supplementary Material

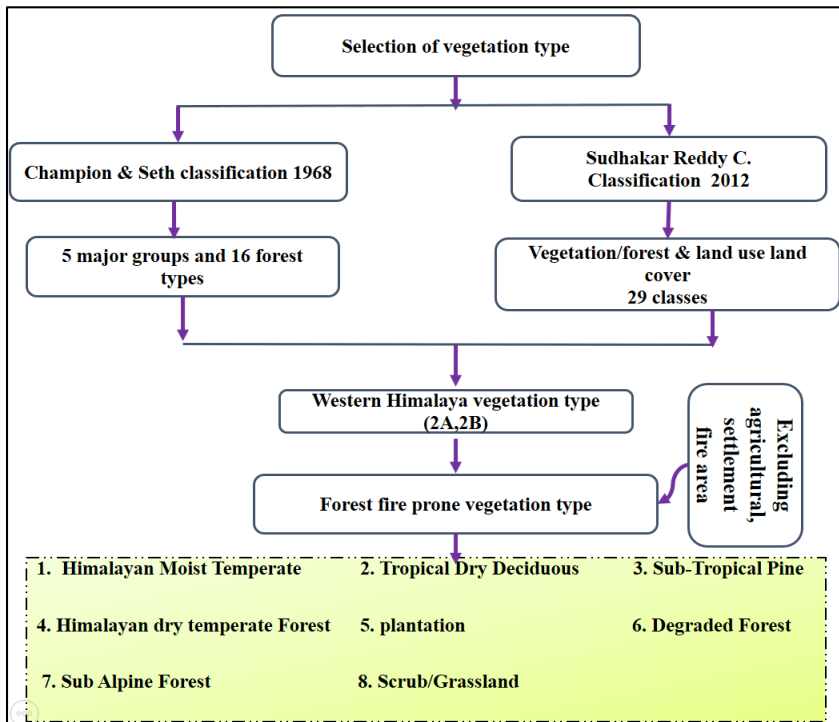


Figure S1. Workflow adopted in the selection of vegetation type for the study

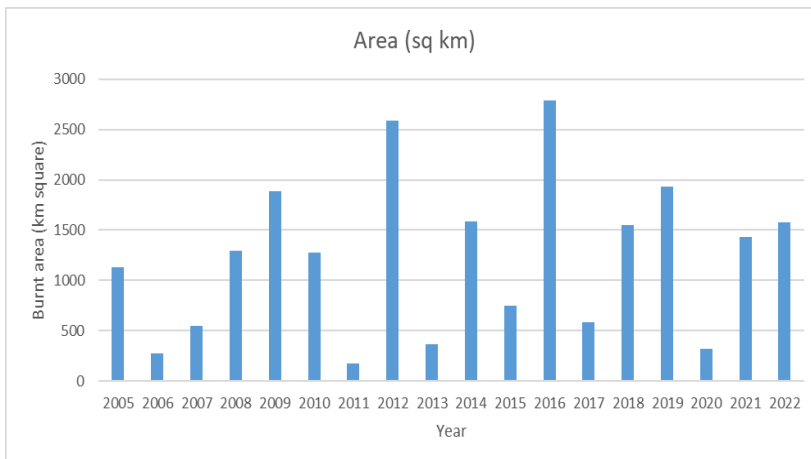


Figure S2: Quantification of Burnt area for different years for the study area

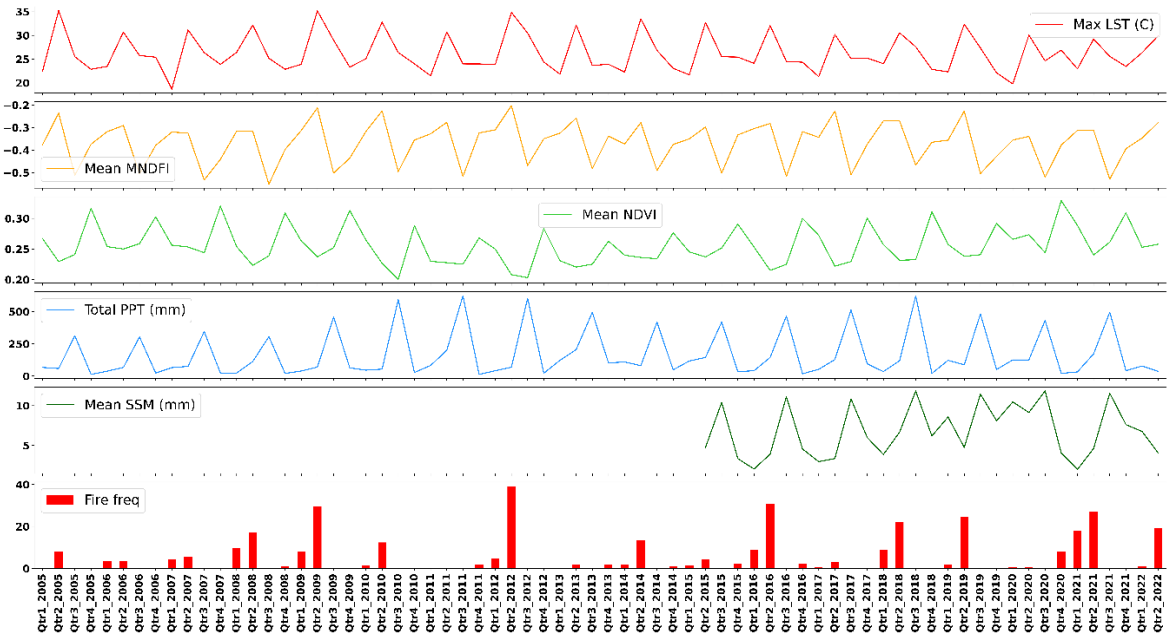
Table S1: Regression analysis details for different vegetation types for Himachal Pradesh

S. no.	Forest Type	R Square	Adjusted R Square	P value
1	Himalayan moist temperate	0.45	0.41	3.48073E-08
2	Tropical MDF	0.51	0.48	9.13432E-10
3	Tropical DDF	0.56	0.53	2.98323E-11
4	Himalayan dry temperate	0.36	0.31	5.85661E-06
5	Sub-tropical pine	0.53	0.49	3.95925E-10
6	Scrub grassland	0.50	0.46	2.98105E-09
7	Dry Alpine Scrub	0.47	0.43	1.14242E-08

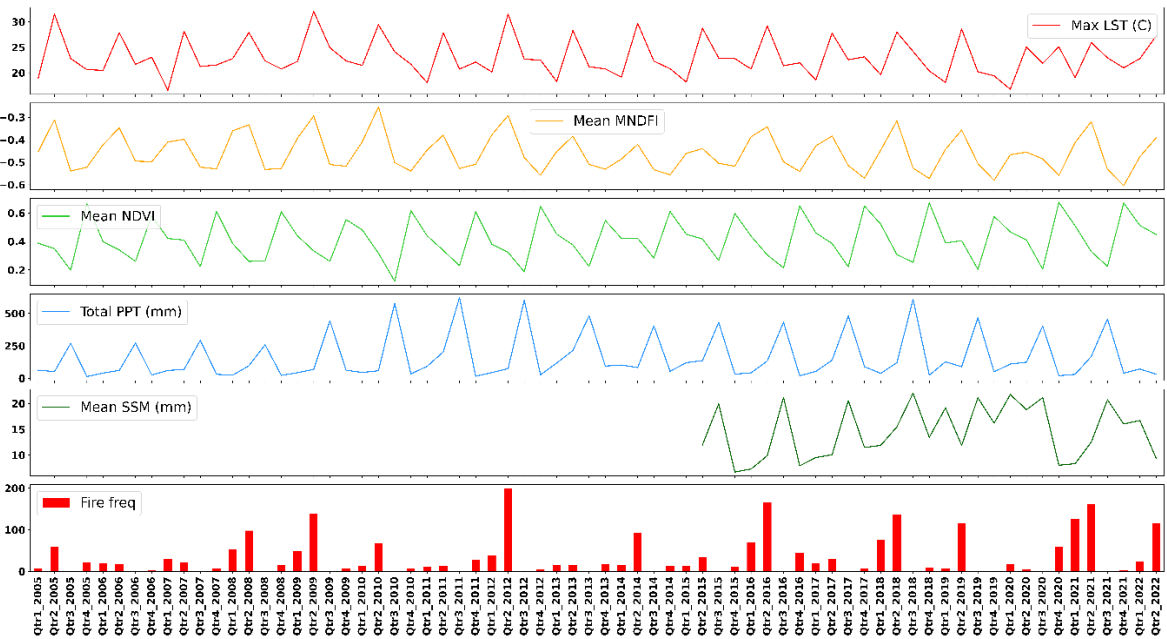
Table S2: Forest type wise Regression coefficient values for the independent variables considered in the study

S. no.	Forest Type	Total Precipitation	Mean NDVI	Mean LST	Mean MNDFI
1	Himalayan moist temperate	-0.418	-77.827	6.103	48.684
2	Sub Alpine Forest	-0.001	21.232	-0.237	-3.899
3	Tropical DDF	-0.026	312.957	19.503	1094.056
4	Himalayan dry temperate	-0.001	12.546	-0.103	-1.609
5	Sub-tropical pine	-0.165	-23.228	19.384	449.637
6	Forest Plantation	-0.020	-99.193	1.351	-31.835
7	Scrub grassland	0.014	190.825	10.212	453.325
8	Degraded forest	-0.010	-31.514	2.319	70.427

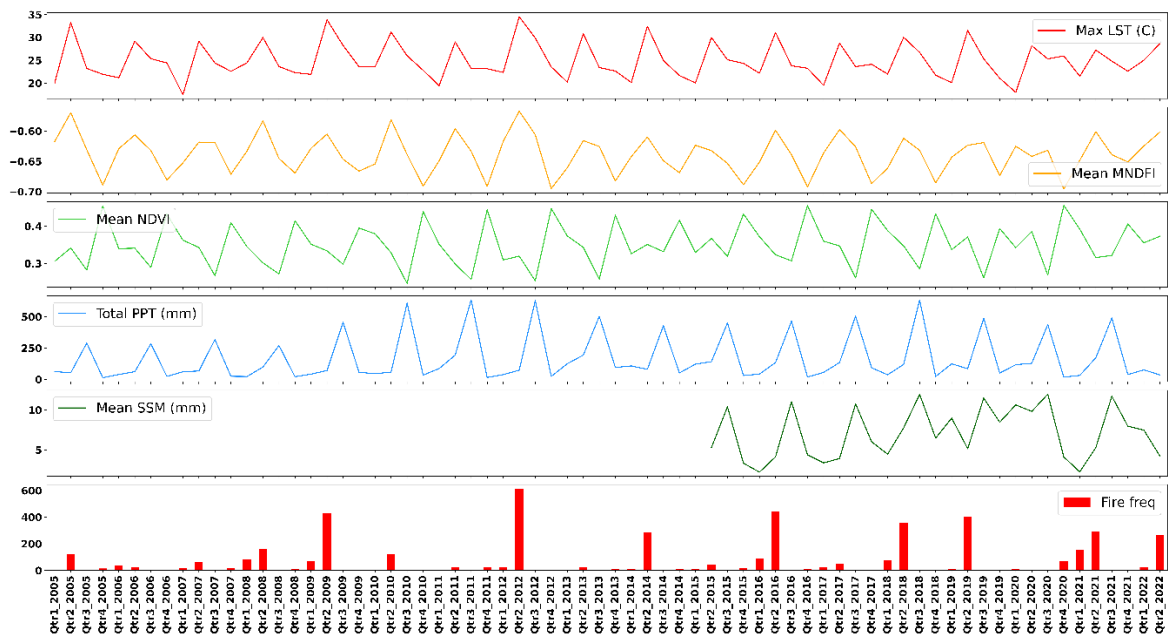
## Long-Term Trends-Degraded Forest (UK)



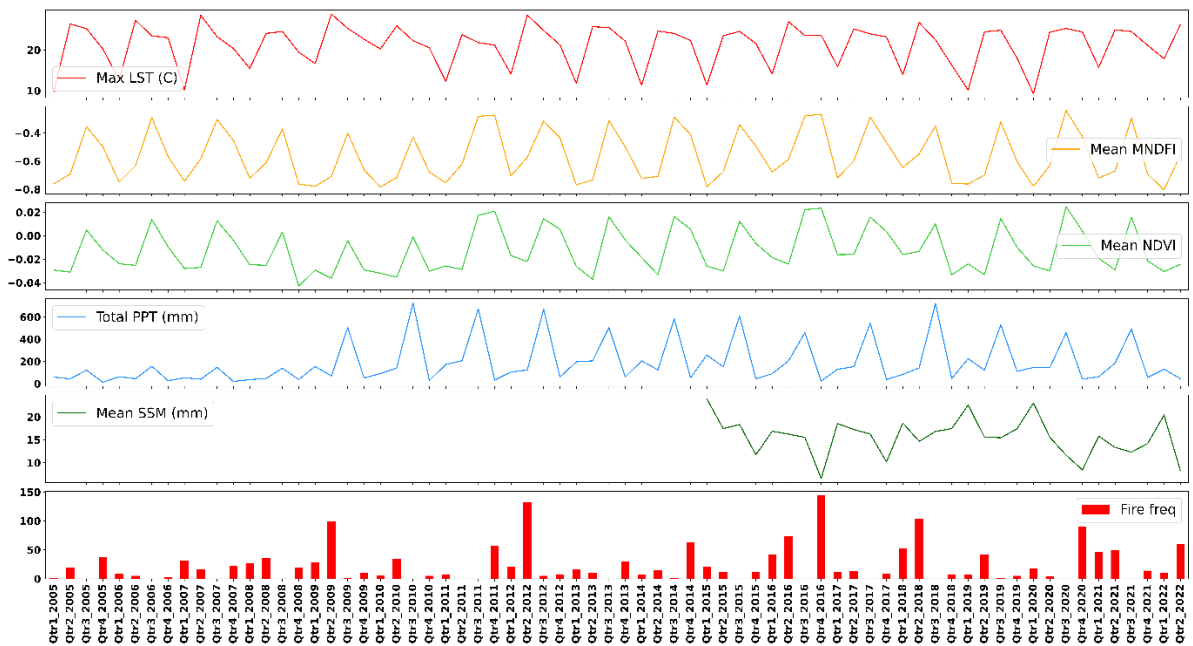
## Long-Term Trends-Scrub/Grassland (UK)



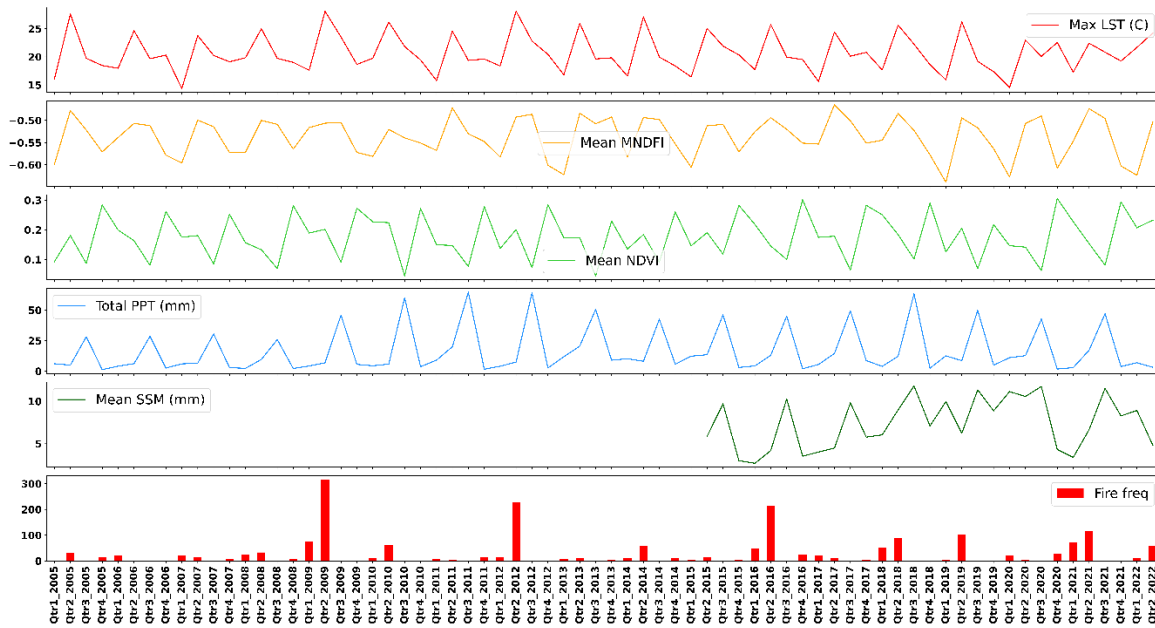
## Long-Term Trends-Sub-Tropical Pine Forest (UK)



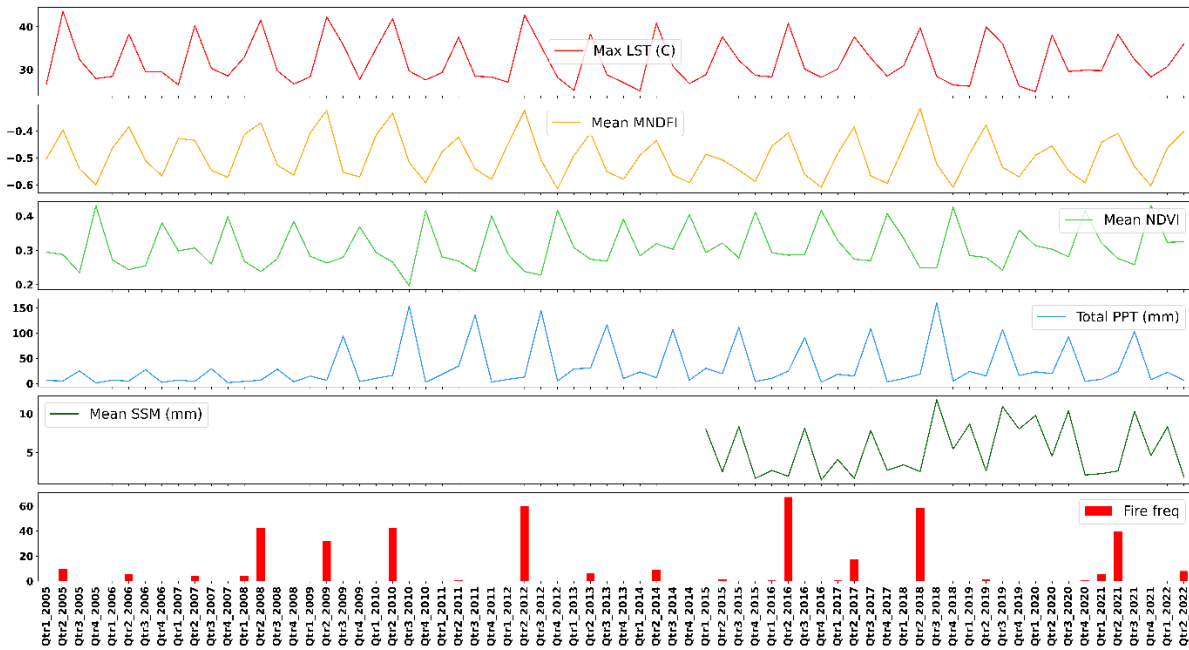
## Long-Term Trends-Scrub/Grassland (HP)



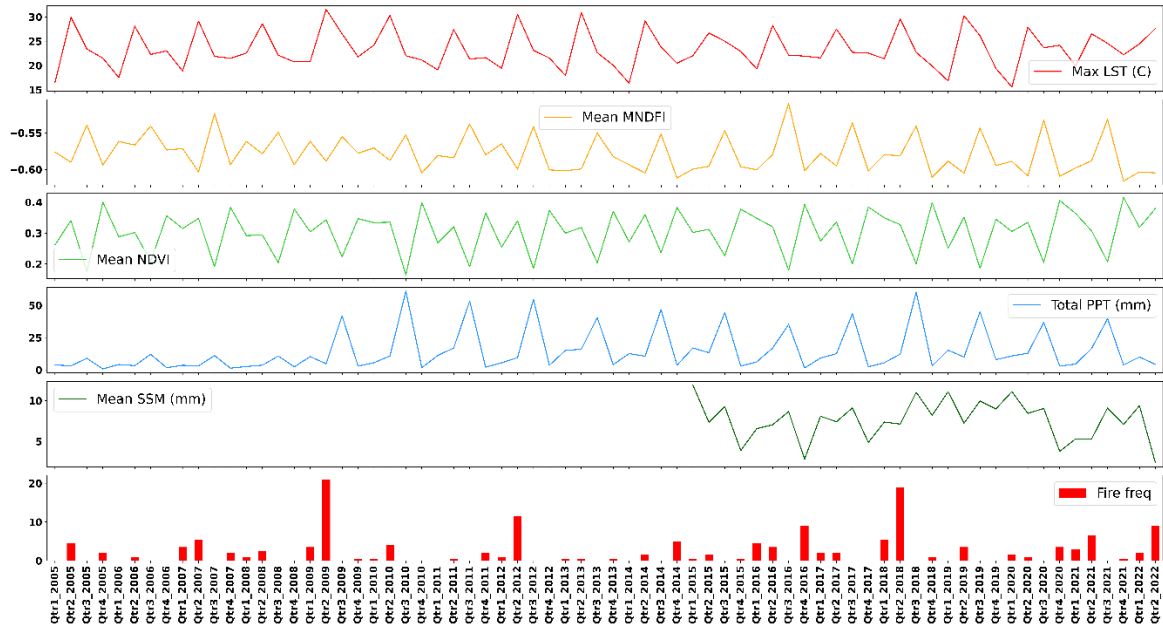
## Long-Term Trends-Himalayan Moist Temperate Forest (UK)



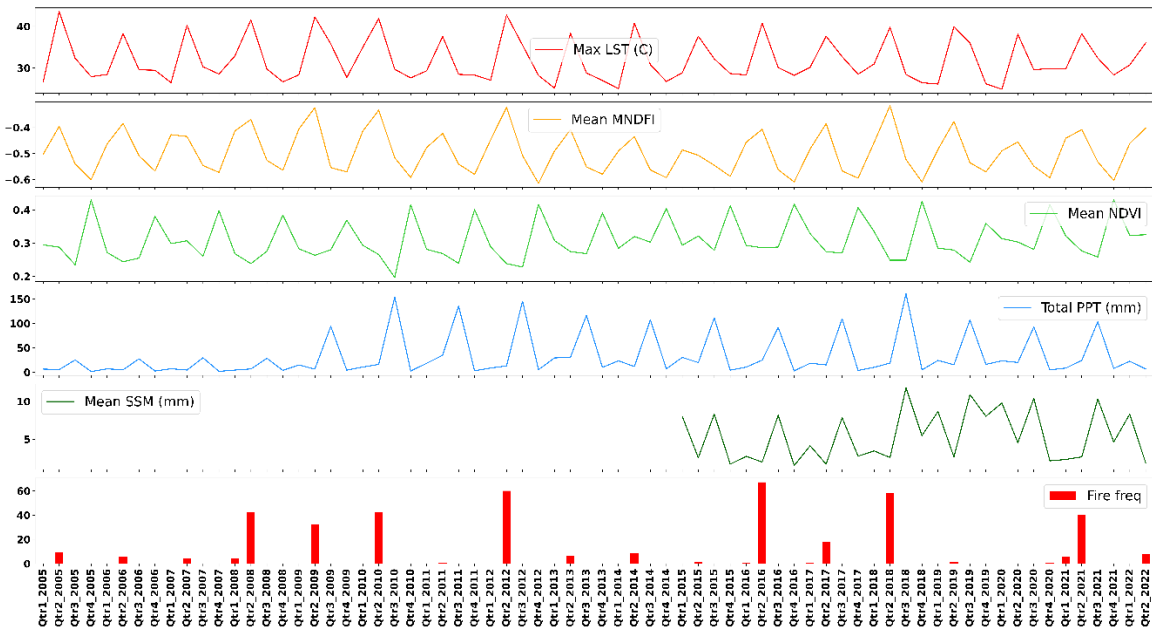
## Long-Term Trends-Tropical Dry Deciduous Forest (HP)



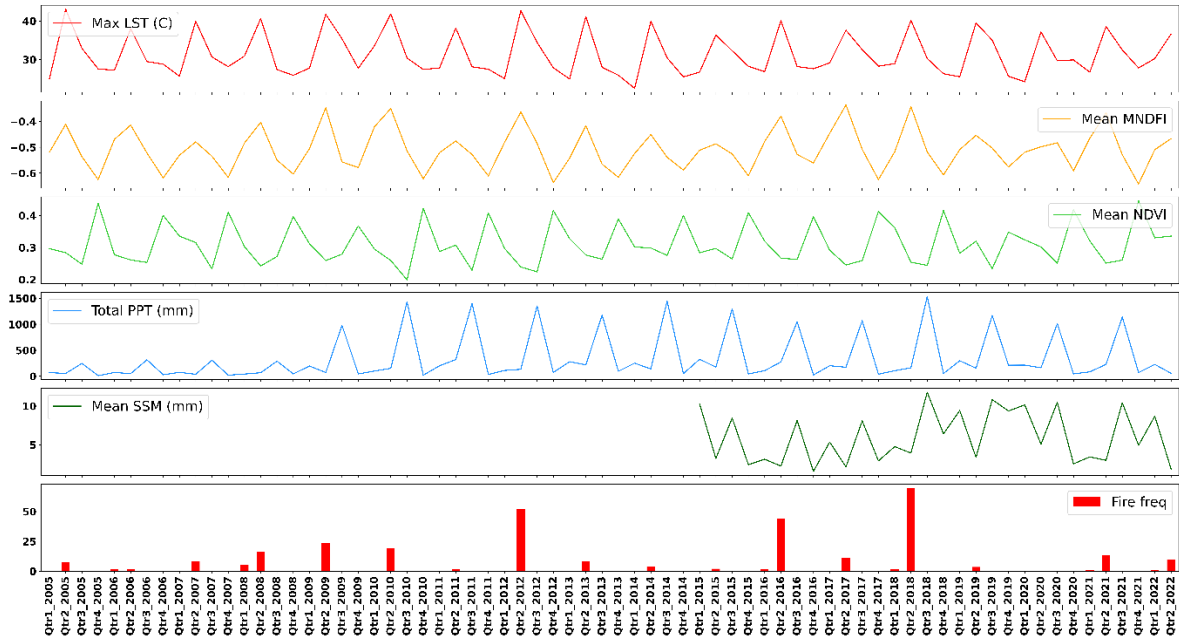
## Long-Term Trends-Himalayan Moist Temperate (HP)



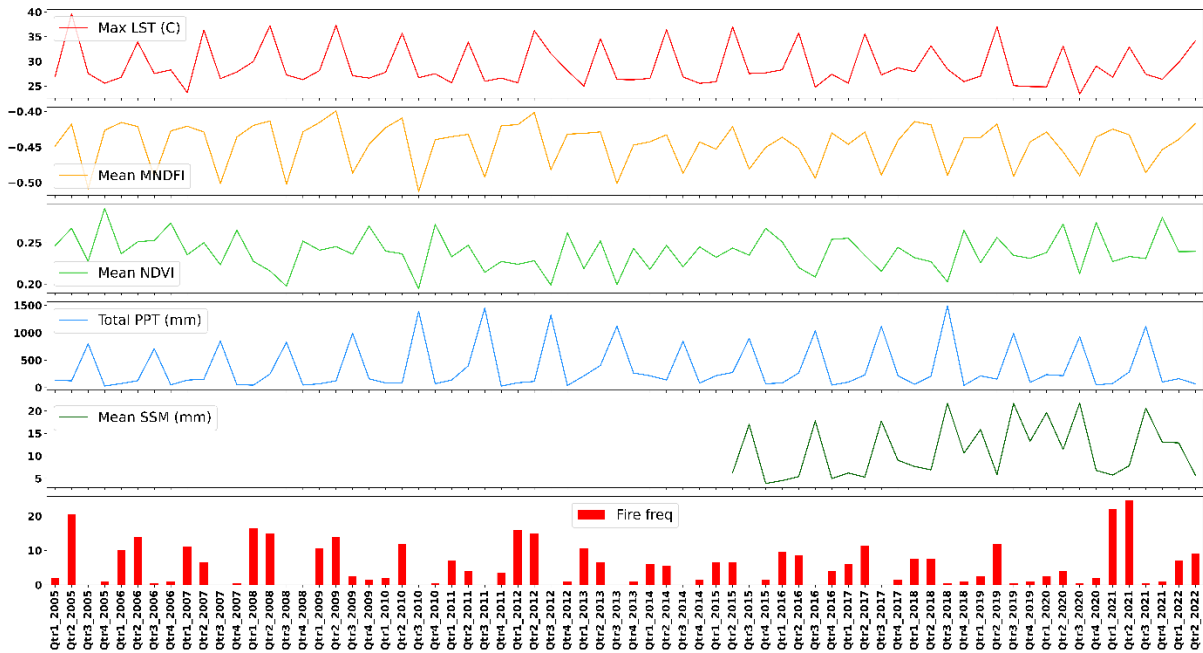
## Long-Term Trends-Tropical Dry Deciduous Forest (HP)



## Long-Term Trends-Tropical Moist Deciduous Forest (HP)



## Long-Term Trends-Forest Plantation (UK)





### Long-Term Trends-Forest Plantation (HP)

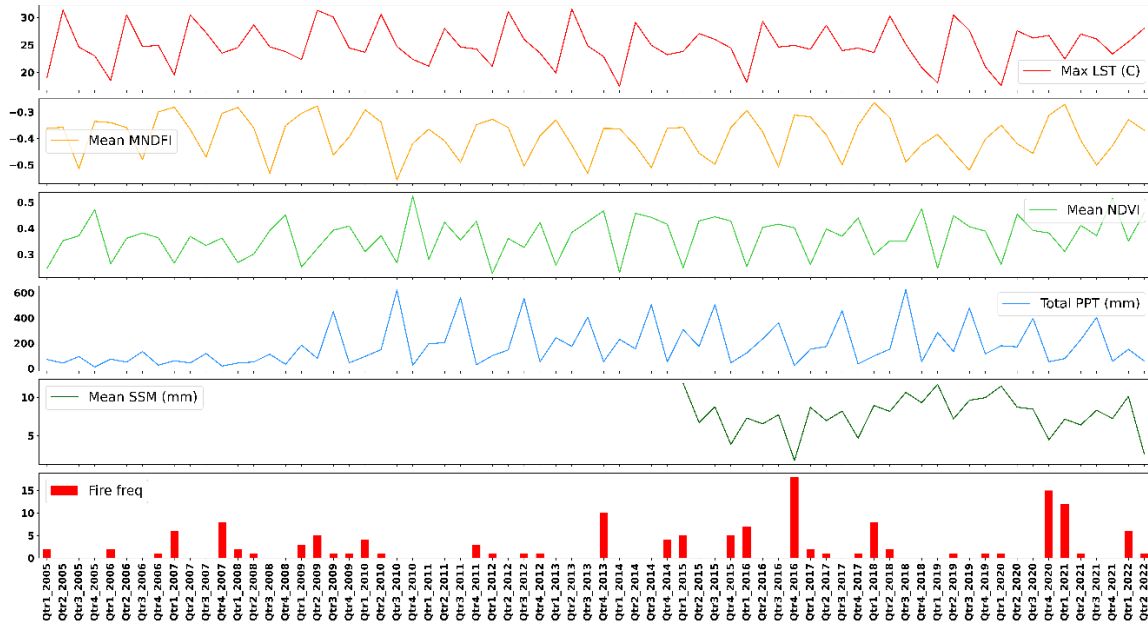


Figure S3: Illustration of quarterly spatio – temporal trends of forest fire incidences and its inducing variables (LST, NDVI, MNDFI, SSM and Rainfall) in Uttarakhand and Himachal Pradesh

# Statistical analysis- Variable Importance Curve with respect to Fire Incidences

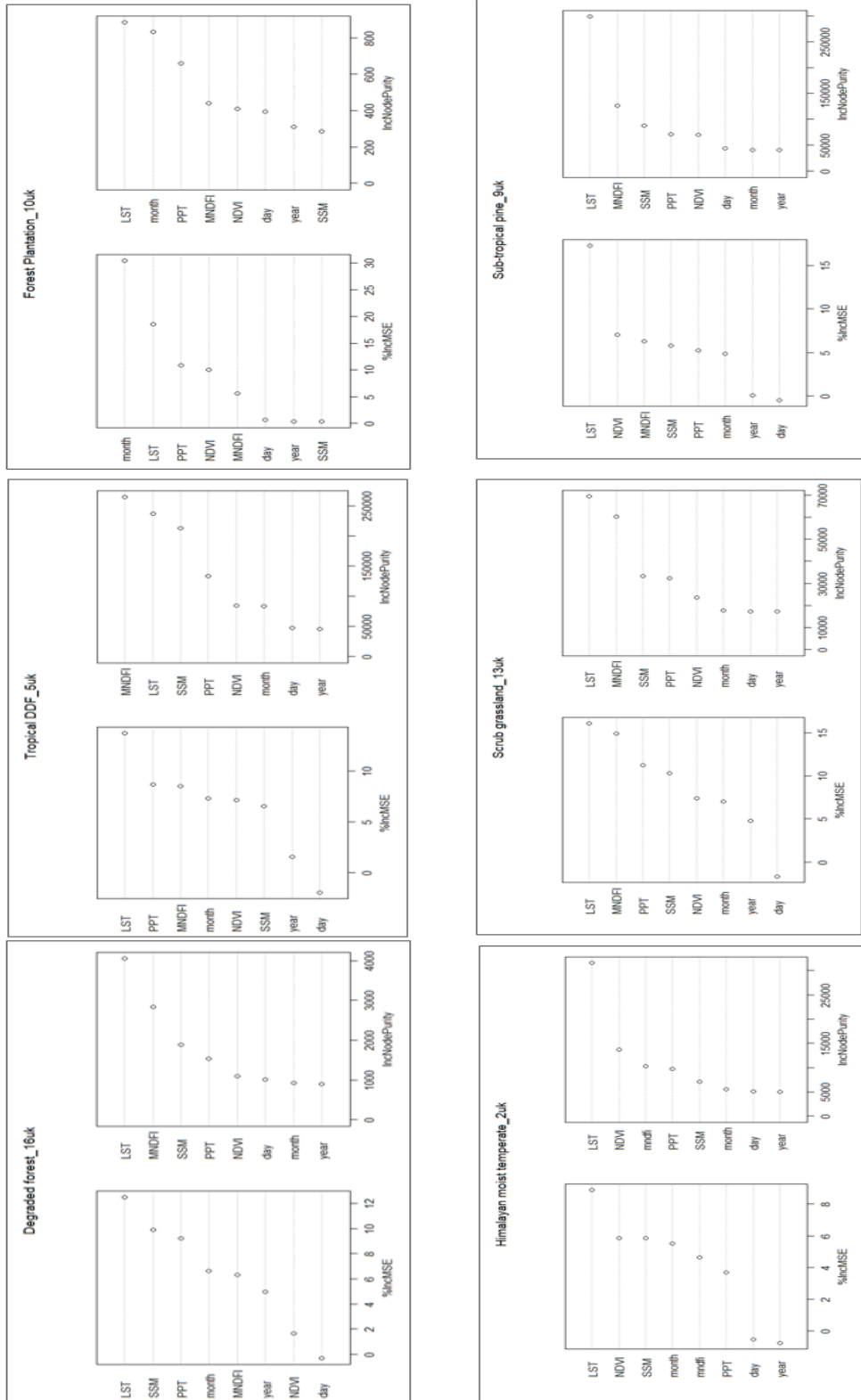


Figure S4: VI score for different vegetation over Uttarakhand region

Table S3: Hotspot analysis results with their GiZscores, GiPvalues and area in a 5km\*5km grid

<b>Class</b>	<b>Gi_Bin</b>	<b>Zscore</b>	<b>Pvalue</b>	<b>Area km<sup>2</sup></b>
<b>Not Significant</b>	0	(-1.493 to 1.643)	0.100 to 0.999	96850
<b>Hot Spot - 90% Confidence</b>	1	1.643 to 1.959	0.999 to 0.0500	2175
<b>Hot Spot - 95% Confidence</b>	2	1.959 to 2.564	0.050 to 0.0497	3975
<b>Hot Spot - 99% Confidence</b>	3	> 2.577	0.00 to 0.009	10875

Table S4: Hotspot analysis results for cluster and outliers using Anselin Local Moran's Index (Z-score, P-value and CoT).

<b>Cluster or Outlier Type</b>	<b>Zscore</b>	<b>Pvalue</b>	<b>LMiIndex</b>	<b>Area (km<sup>2</sup>)</b>
<b>Not Significant</b>	Null	0.374	Null	64419
<b>High-high Cluster</b>	1.849 to 11.195	0.050 to 0.002	0.020 to 196	12755
<b>Low - Low Cluster</b>	1.010 to 1.480	0.050 to 0.004	-0.38 0to 2.195	28961
<b>Low- High Outliers</b>	-1.900 to - 8.390	0.050 to 0.002	-0.060 to -7.980	718