

# **UTTARAKHAND FOREST FIRE MANAGEMENT MODEL – SOP**

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# Introduction

- Active forest fires are detected from the satellite images and BHUVAN Portal.
- Forest Fires are one of the main concerns of the Forest Department that occur during 'Fire Season' (15th February to 15th June) every year.
- Around 71 % of total geographical area of Uttarakhand is forest area and the most vulnerable areas for forest fires are *Chir*-pine forests which constitute around 26 % of total forests of Uttarakhand.
- The most sensitive districts for forest fires are - Pauri-Garhwal, Nainital, Almora, Rudraprayag, Chamoli, Pithoragarh, Tehri .

# Forest Fire - Adverse effects

## TRANSBOUNDARY

- Loss of biodiversity & loss of wild life habitat
- Global warming resulting in rising temperature & CO2
- Loss of carbon sinks
- Disturbance of global biogeochemical cycles
- Degradation of water catchment areas
- Ozone layer depletion
- Health problems leading to diseases

# Forest Fire –Adverse effect...

## REGIONAL -

- Degradation of forests
- Loss of natural regeneration and forest cover
- Soil erosion affecting productivity of soils and production
- Change in the microclimate of the area
- Indirect affect on agricultural production
- Loss of livelihood for tribal and rural poor (300 million) dependent on NTFP's

# Forest Fire

## CLASSIFICATION

- **ON BASIS OF CAUSATIVE FACTORS:**

- NATURAL

- ACCIDENTAL

- INTENTIONAL

# Forest Fire – Natural ....

Causes –

- Lightning – Maximum no.
- Rolling Stones
- Rubbing of dry bamboo

Nature & Effect –

- Non preventable & spontaneous
- Damage less

# Forest Fire – Accidental...

## Causes

- Kindling fire without permission - By laborers engaged in forestry works, road construction
- Leaving a fire burning (graziers and gatherers of various forest products starting)
- Small fires to obtain good grazing grass
- Facilitate gathering of NTFP's e.g. flowers of *Madhuca indica* and leaves of *Diospyros melanoxylon*
- To ward off wild animals

# Forest Fire – Accidental...

## Causes

- Burning bark to destroy beetles
- Shifting cultivation (especially in N-E region and parts of States of Orissa and Andhra Pradesh)
- Accidental fires by careless visitors to forests e.g. Throwing of torchwood, cigarette or coal pieces
- Burning the field or grass lands adjacent to forest
- Accidental spread of fire in the forest while burning fire lines departmentally.

# Forest Fire - Intentional

By Villagers – To

- Burn the undergrowth and grass to collect MFP.
- Charring the stumps for making charcoal.
- Scare away wild animals from nearby villages
- Induce new shoots of grass in summer by burning dry grass

# FOREST FIRE - CLASSIFICATION

## ON BASIS OF PLACE OF ACTION

### ➤ Creeping fire :

Spreading slowly over the ground with low flame -  
No damage to ground cover or undergrowth

### ➤ Ground fire :

Burns the ground cover - Burns organic material of  
forest floor and underlying soil

# CLASSIFICATION...

- Surface fire : Burns ground cover and undergrowth - Burns surface litter, loose debris and small vegetation
- Crown fire : Spreads through the crown of trees – consumes all or part of upper branches and foliage

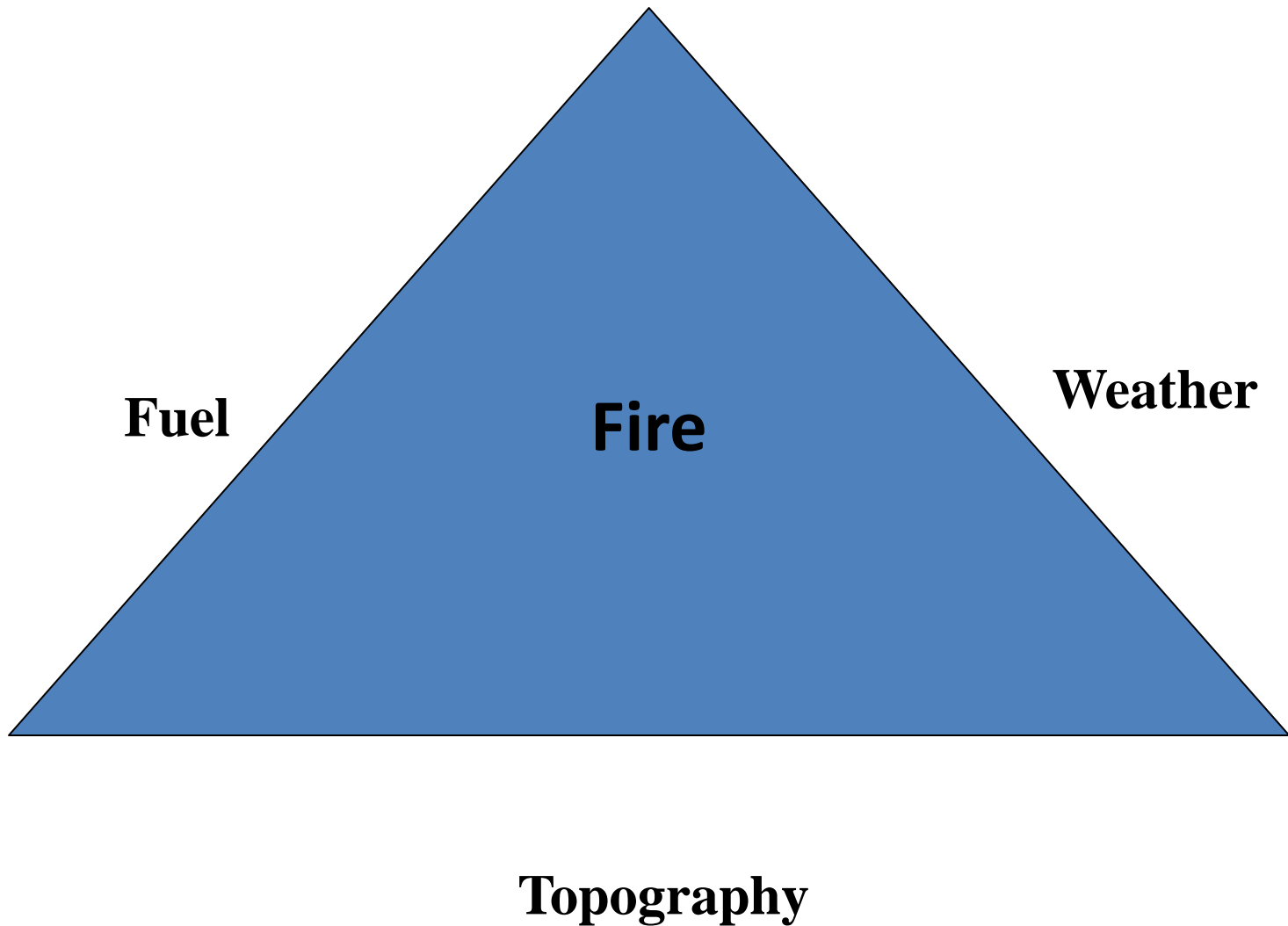
# Factors Responsible – Fire triangle

- Weather
  - Temperature
  - Wind
  - Humidity
- Inflammable material
  - Grass, dry leaves, dry fallen wood
  - Early burning
  - Green grass cover before fire environment
  - Departmental operation during winters
  - Resin tapping
  - Sawn timber in coniferous forest

# Factors Responsible for Fire...

- Topography
  - Altitude and aspect
  - S & SW aspect (Hotter and drier)
  - Lower altitude (More risk of fire)
  - Chir forest and fir forest
  - Spreads fast traveling up on hill slope

# FIRE ENVIRONMENT TRIANGLE



## MANAGEMENT OF FOREST FIRE IN UTTARAKHAND

- There are **two** types of methods:-

1. Traditional method
2. Modern method

### **1. Traditional method :**

- Forest officials say the traditional method of **“beating the fire down”** with green branches & **‘Fire Breaks’** work best.

## 2. MODERN METHOD :-



- **NDRF, SDRF, PAC and the forest department, were still on the ground to keep a watch on the situation.**
- More modern systems of fire monitoring alongside traditional methods like maintaining fire lines, so there is a clearing between two forests to prevent the fire from spreading from one to the other.
- **IAF aircrafts fly sorties to dump water picked from the neighboring lakes.**
- The pine needles, the main fire hazard, need to be converted into a resource.

- Forest scientists have already developed different uses of chir pine needles for briquettes, compost, boards, tiles, etc.
- Modern fire-fighting techniques like the Early Forest Fire Detection Using **Radio-Acoustic Sounding System, Doppler radar**, etc.
- Use of modern forest fire detection and monitoring systems with help from the **Forest Survey of India (FSI) and ISRO**.
- Creating awareness among locals along with their participation, can be a better solution.

# Forest Fire Management Strategy

➤ Forest Department is working on following levels :

- \* **Pre fire** : Preparatory planning for fire control through fire prone and sensitive area maps and reports, Pre-fire Alert/Warning by FSI;
- \* **During fire**: Near real time active fire detection and monitoring through Uttarakhand Forest Portal over BHUVAN
- \* **Post fire**: Warnings/alerts through e-mail, SMS and presently working on Damage assessment and Mitigation strategy.

➤ During fire season Information Technology and Geoinformatics Centre (ITGC)/IT Cell has been playing an important role in supporting forest divisions in planning process by providing maps of most sensitive areas, pre fire alerts, Near real time fire alerts from BHUVAN and location of fire incidences through SMS, email and WhatsApp Messenger. Active forest fires are detected from the satellite images and the information is uploaded daily to the forest department website - ([www.forest.uk.gov.in](http://www.forest.uk.gov.in)).

➤ ITGC/IT Cell is having collaboration with various agencies such as NRSC, FSI, IIRS , IMD and have a tie-up with NASA that support in providing fire points and weather forecast on daily basis.

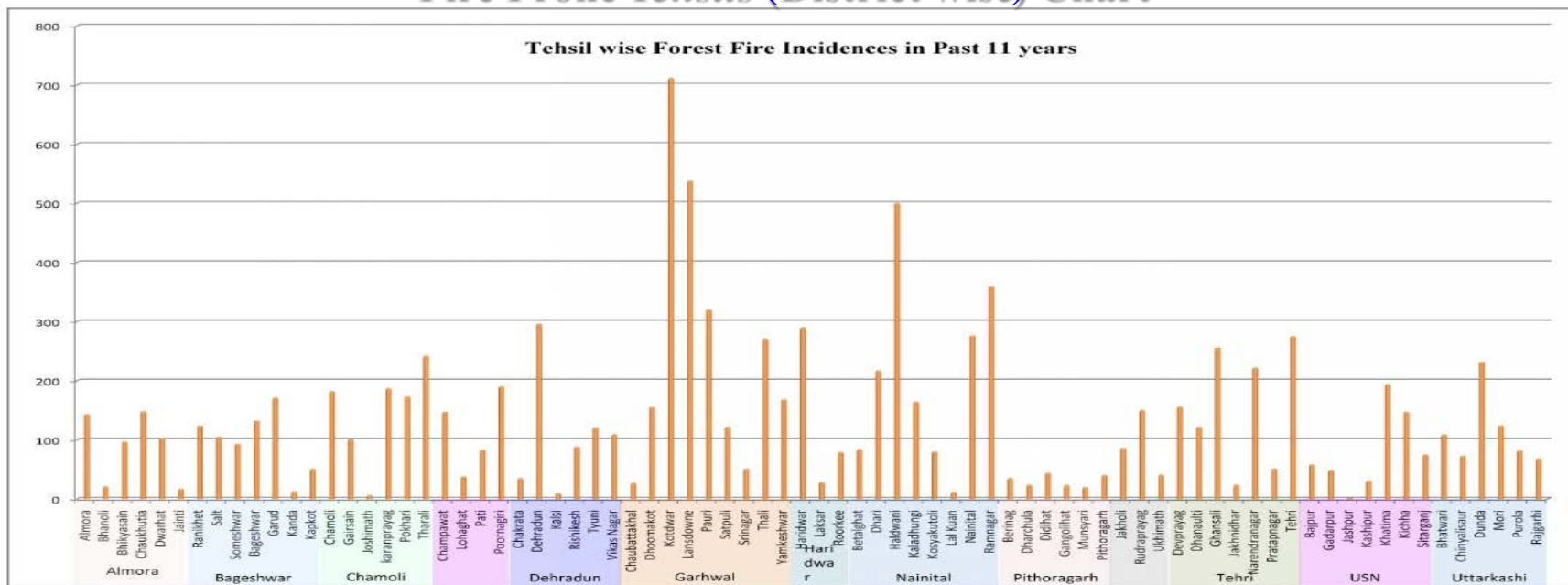
# Forest Fire Management Strategy/ SOP –

## A. Mapping of Fire Sensitive Areas (Before fire season starts)-

➤ For the resource mobilisation and planning purpose the maps of most fire sensitive areas were made and fire prone Districts and *Tehsils* were also identified and put on a chart. Division wise such maps or chart are made and put forth for fire management plans.

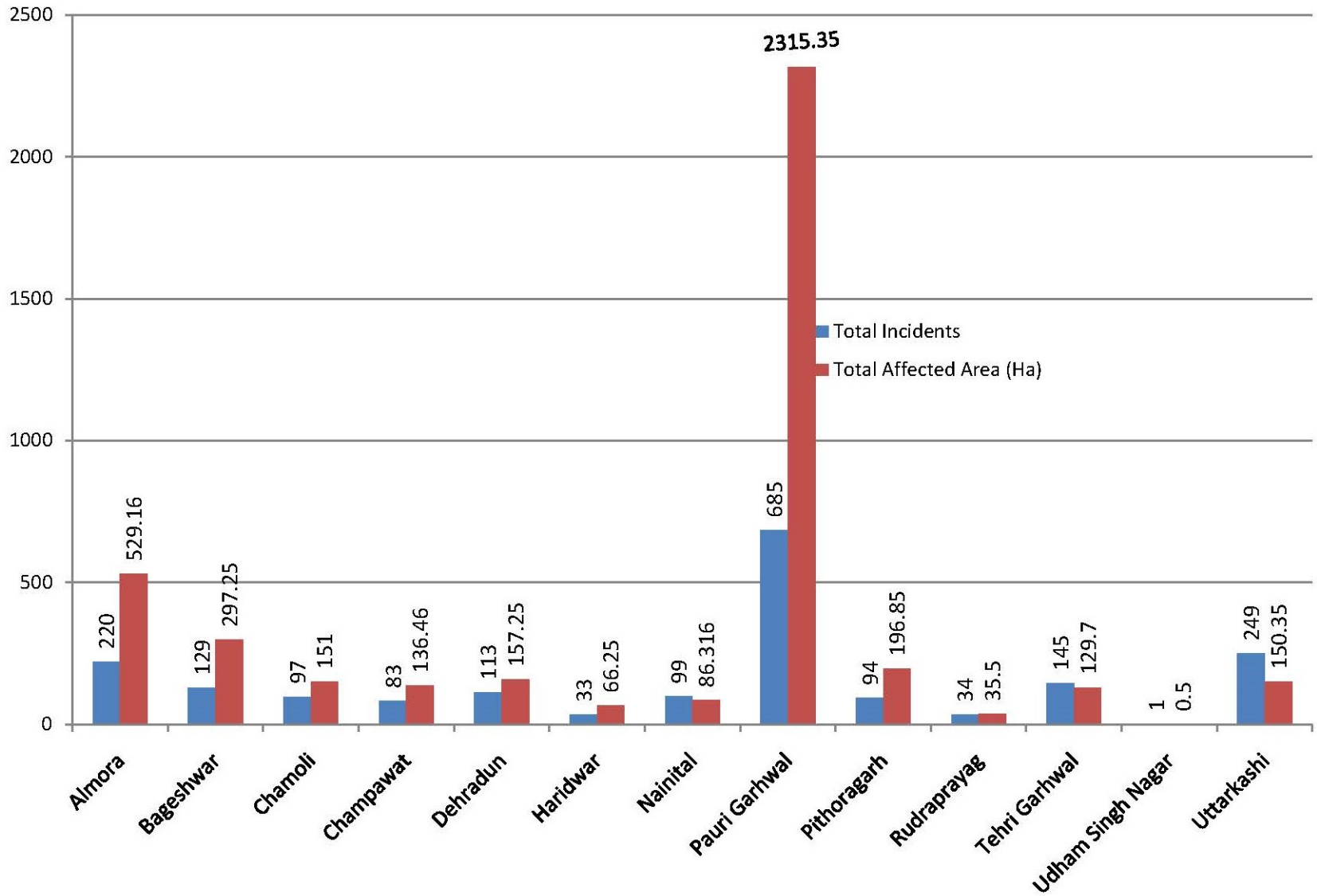
➤ This information is then sent to each Forest Division and District Administration through email, SMS, WhatsApp messenger and uploaded on Website for public notification.

### Fire Prone *Tehsils* (District wise) Chart



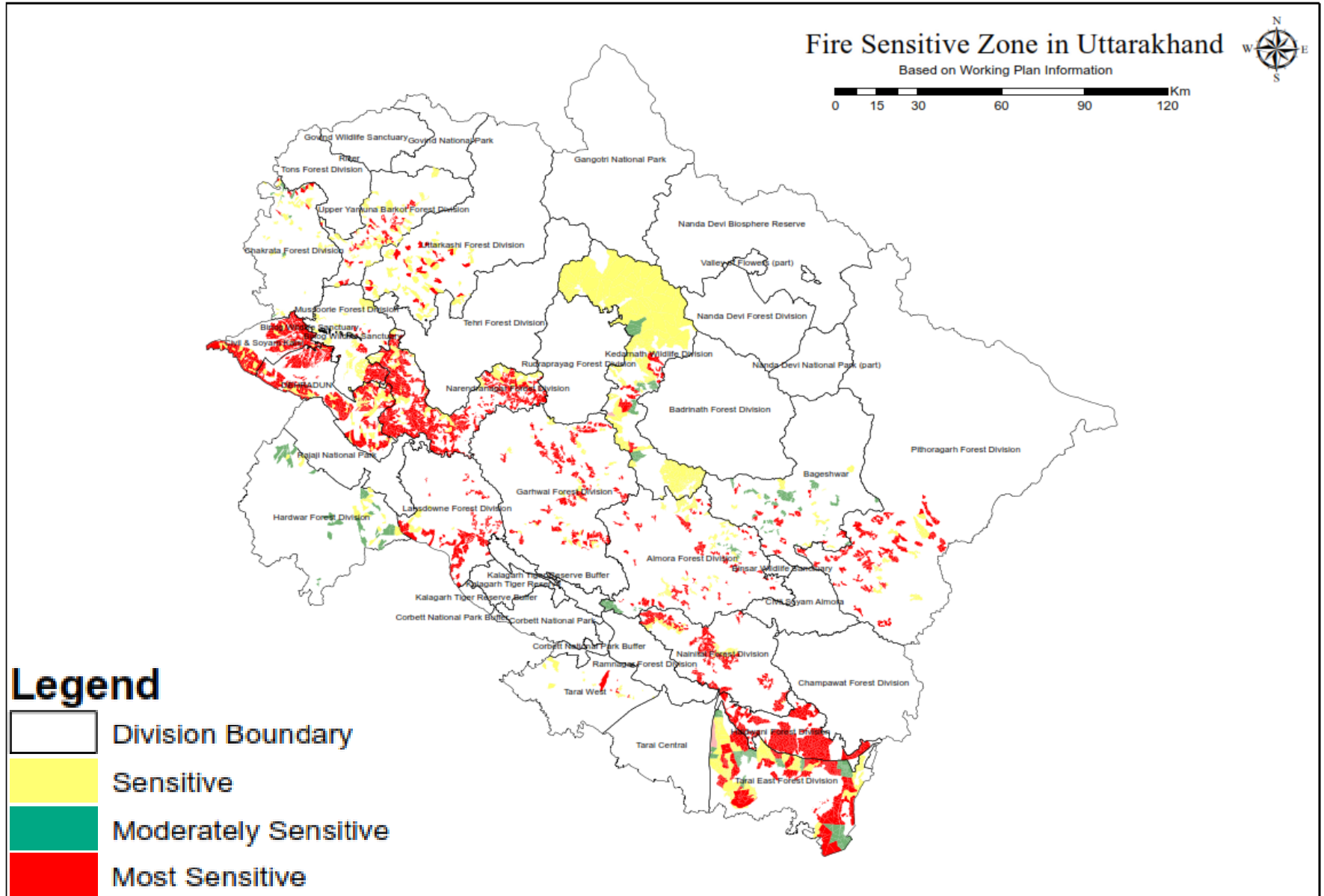
Based on 10 year point incidences

## District wise Forest Fire Incidences & Affected Area –Fire Season 2018 till 30-05-2018



# Division wise Forest Fire Sensitive Map of Uttarakhand

## (Based upon Working Plans and Past 10 Years Fire Data)



# Crew Station (CS) Vs Master Control Room (MCR)

## CS

- CS have only wireless handsets, modern fire fighting tools and some 3 to 5 crew members.

## MCR

- MCR have full fledged wireless base station set, digital hydro-thermometer, rain guage and more crew members(4 to 6), more fire fighting tools, search lights, medicine kits etc.

- Nesterov index

$$N = \sum_{i=1}^W (t_i - D_i) \times t_i$$

where,

**N= Nesterov index**

**w= number of days since the last rainfall > 3mm**

**t= temperature °C**

**D= dew point temperature °C**

- The index requires daily observations of temperature, dew point temperature and precipitation. The difference between daily temperature and dew point temperature and cumulatively added over the days since the last rainfall. Thus the index increases each day until a rainfall of more than 3mm occurs, at which the index drops back to zero and the process begin again. The system is divided into different fire danger levels

## FIRE DANGER LEVELS

<b>NIL</b>	<b>0--- 300</b>
<b>MODERATE</b>	<b>301--- 1000</b>
<b>HIGH</b>	<b>1001--- 4000</b>
<b>Extreme</b>	<b>&gt;4001</b>

- The Dew Point is daily measured on the basis of report received about daily temperature and Humidity percent in field stations of various ranges of the division.
- A computer software Ezair 135.exe is used to calculate Dew Point and on the basis of dew point temperature and daily temperature reading at 1 P.M and on basis of date on which rain more than 3mm held in different ranges FIRE DANGER INDEX is calculated by using computer and not only daily record is mentioned but also various crew stations are accordingly informed about their required preventive measures which should be carried out in advance.

# **Forest Fire Management Strategy/ SOP –**

## **B. Pre Fire Alerts/Warnings – Source Data : FSI**

- The prediction of weather in the tropical regions, like India, is a major challenge due to the complex and dynamic nature weather system. The day to day changes of weather elements such as rainfall, temperature, wind speed and humidity are the important meteorological parameters to be monitored on a continuous basis.
- Pre-fire alerts based on historical data to capture intent or traditions.
- A report is then generated in Excel format showing Circles, Division, Block, Beat up to compartment level, where the warning of forest fire is predicted.
- This information is further disseminated to the concern Divisions through e-mail, SMS, WhatsApp messenger for necessary actions and also uploaded to the departmental website for the public notification.

## **Pre Fire Warning/Alert by FSI**

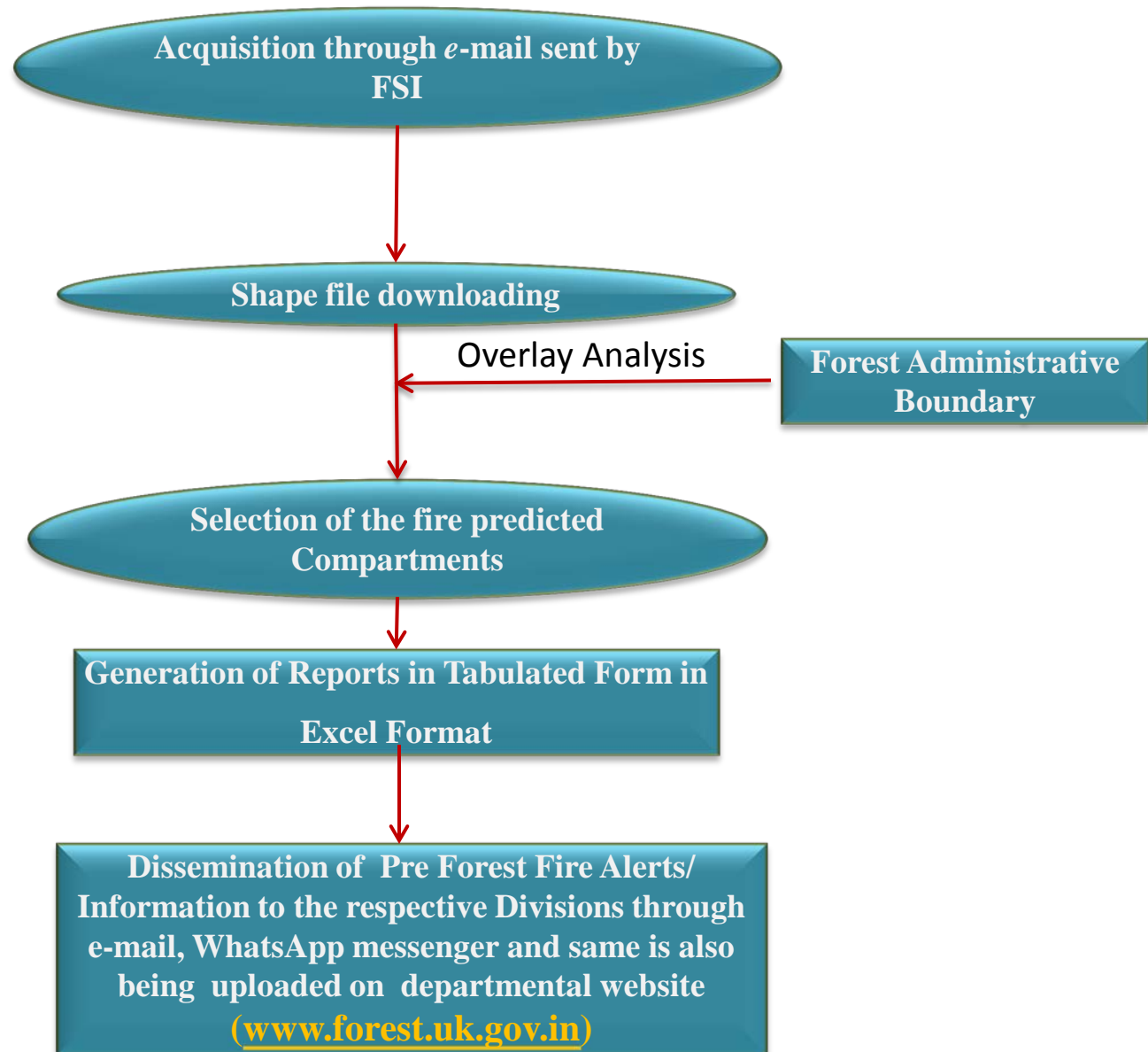
In 2016 fire season Forest Survey of India (FSI) has initiated a pre warning alert system for Forest Fires based on following parameters:

1. Forest Cover
2. Forest Type
3. Temperature
4. Recent Fire Signals
5. Rainfall

FSI has developed a suitable algorithm for prefire warning/alert system where the above mentioned parameters are being used and forest areas with higher risk of fire can be predicted.

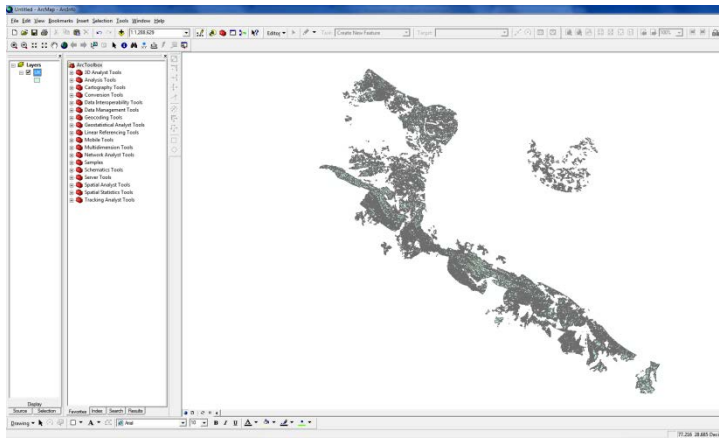
FSI sends pre forest fire alerts through email to Information Technology and Geoinformatics Centre (ITGC). After processing ITGC disseminates the information to the concerned officers.

# Methodology of Processing of Pre Fire Alerts

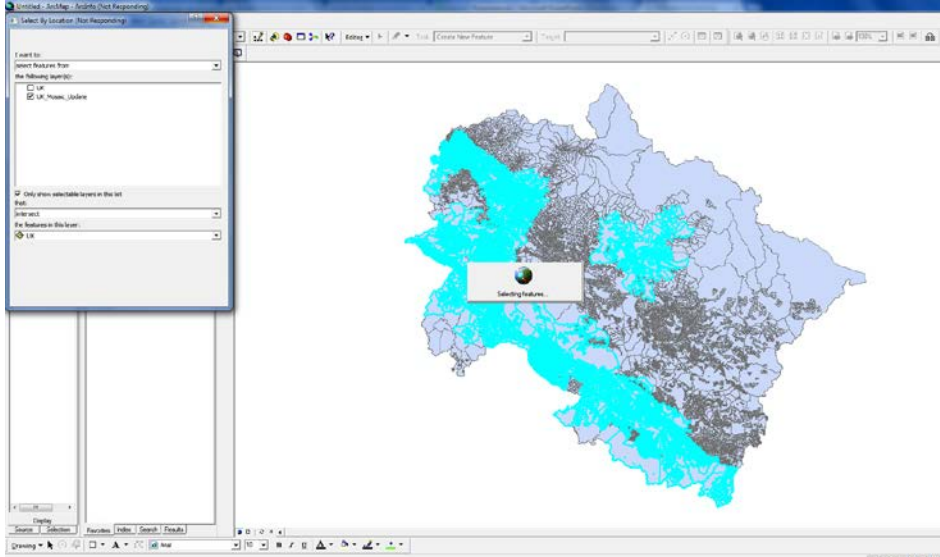
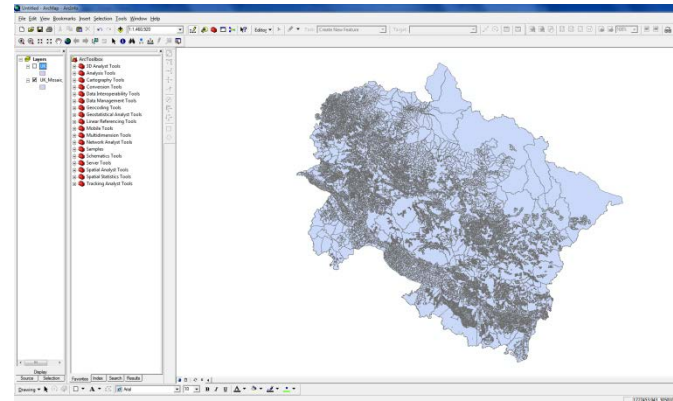


# Pre Fire Alerts processing at ITGC

Data Received From FSI



UK administrative Boundaries in ITGC



KIRKLE	DIVISION	RANGE	BEAT	BLOCK	COMPART
1	Blagragra Circle	Narandragra Forest Division	Saldna Chandra	Bag	Bag
2	Blagragra Circle	Narandragra Forest Division	Saldna Chandra	Bag	2
3	Blagragra Circle	Narandragra Forest Division	Saldna Chandra	Bag	3
4	Blagragra Circle	Narandragra Forest Division	Saldna Chandra	Bag	4
5	Blagragra Circle	Narandragra Forest Division	Saldna Chandra	Bag	5
6	Blagragra Circle	Narandragra Forest Division	Saldna Chandra	Bag	6
7	Blagragra Circle	Narandragra Forest Division	Saldna Chandra	Bag	7
8	Blagragra Circle	Narandragra Forest Division	Saldna Chandra	Bag	8
9	Blagragra Circle	Narandragra Forest Division	Saldna Chandra	Bag	9
10	Blagragra Circle	Narandragra Forest Division	Saldna Chandra	Bag	10
11	Blagragra Circle	Narandragra Forest Division	Saldna Chandra	Bag	11
12	Blagragra Circle	Narandragra Forest Division	Saldna Chandra	Bag	12
13	Blagragra Circle	Narandragra Forest Division	Saldna Chandra	Bag	13
14	Blagragra Circle	Narandragra Forest Division	Saldna Chandra	Bag	14
15	Blagragra Circle	Narandragra Forest Division	Saldna Chandra	Bag	15
16	Blagragra Circle	Narandragra Forest Division	Saldna Chandra	Bag	16
17	Blagragra Circle	Narandragra Forest Division	Saldna Chandra	Bag	17
18	Blagragra Circle	Narandragra Forest Division	Saldna Chandra	Bag	18
19	Blagragra Circle	Narandragra Forest Division	Saldna Chandra	Bag	19
20	Blagragra Circle	Narandragra Forest Division	Saldna Chandra	Bag	20
21	Blagragra Circle	Narandragra Forest Division	Saldna Chandra	Bag	21
22	Blagragra Circle	Narandragra Forest Division	Saldna Chandra	Bag	22
23	Blagragra Circle	Narandragra Forest Division	Saldna Chandra	Bag	23
24	Blagragra Circle	Narandragra Forest Division	Saldna Chandra	Bag	24
25	Blagragra Circle	Narandragra Forest Division	Saldna Chandra	Bag	25
26	Blagragra Circle	Narandragra Forest Division	Saldna Chandra	Bag	26
27	Blagragra Circle	Narandragra Forest Division	Saldna Chandra	Bag	27
28	Blagragra Circle	Narandragra Forest Division	Saldna Chandra	Bag	28
29	Blagragra Circle	Narandragra Forest Division	Saldna Chandra	Bag	29
30	Blagragra Circle	Narandragra Forest Division	Saldna Chandra	Bag	30
31	Blagragra Circle	Narandragra Forest Division	Saldna Chandra	Bag	31
32	Blagragra Circle	Narandragra Forest Division	Saldna Chandra	Bag	32
33	Blagragra Circle	Narandragra Forest Division	Saldna Chandra	Bag	33
34	Blagragra Circle	Narandragra Forest Division	Saldna Chandra	Bag	34
35	Blagragra Circle	Narandragra Forest Division	Saldna Chandra	Bag	35
36	Blagragra Circle	Narandragra Forest Division	Saldna Chandra	Bag	36
37	Blagragra Circle	Narandragra Forest Division	Saldna Chandra	Bag	37
38	Blagragra Circle	Narandragra Forest Division	Saldna Chandra	Bag	38
39	Blagragra Circle	Narandragra Forest Division	Saldna Chandra	Bag	39
40	Blagragra Circle	Narandragra Forest Division	Saldna Chandra	Bag	40

Overlay Analysis at ITGC using GIS Software

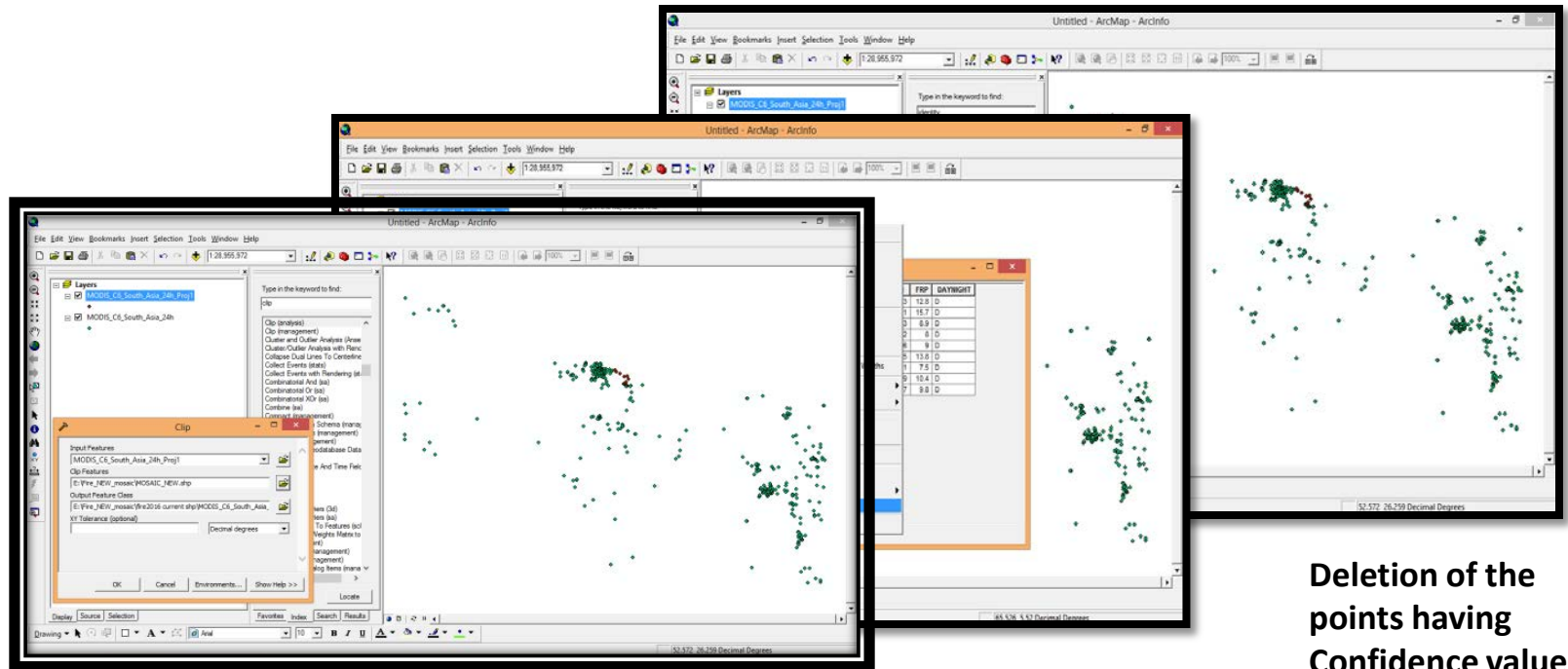
Final Table generation for Dissemination

# **Forest Fire Management Strategy**

## **A. Processing of Fire information at ITGC and its Dissemination**

- Downloading the fire incidences from NASA-ISRO-FSI
- Processing of the information to get details in **Reserve Forest** (Report generated contains following information:- **Latitude, Longitude, Circle, Division, Range, Block, Beat, Compartment**)
- Processing of the information to get details of **Outside Reserve Forest** (Report generated contains following information:- **Latitude, Longitude, District, Tehsil, Development Block, Villages**)
- Daily Dissemination of Map and Report at 11:30 AM and at 4:30 PM.
- Same is uploaded over Website and FIRMS (Fire information for Resource Management System) online Application

# Overlay Analysis and providing Identity to each fire point using GIS database of Uttarakhand State



**Selection of Points falling over Uttarakhand State**

**Selection of the Points having temperature over 45 degrees temperature**

**Deletion of the points having Confidence value 0**

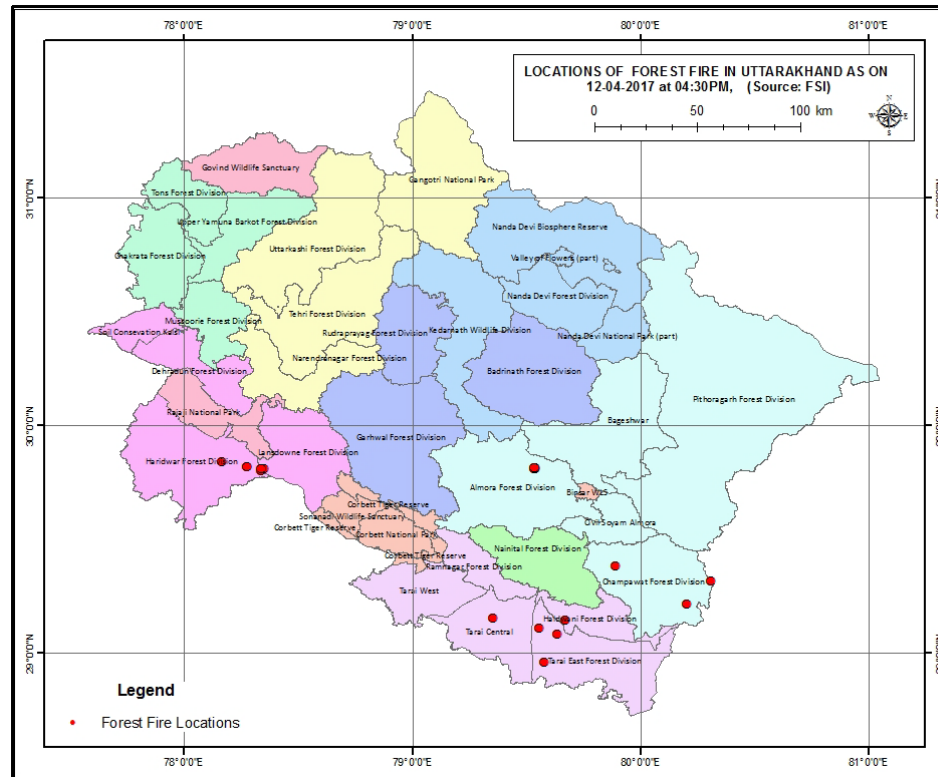
# Final Report for RF of Active/Post Fire Points:

## ITGC:O/oPCCF

Active Fire Alert in Reserve Forest as on 12-04-2017 at 04:30PM

Source FSI

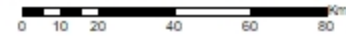
S.No	Latitude	Longitude	CIRCLE	DIVISION	RANGE	BEAT	BLOCK	COMPART
1	28.9589	79.5778	Western Circle	Tarai East Forest Division	Barakoli Range	Dhora Dam Beat	Barakoli-B Block	Dhora
2	29.0822	79.6347	Western Circle	Tarai East Forest Division	Kishanpur Range	Horai South Beat	Horai Block	2
3	29.1081	79.5567	Western Circle	Tarai East Forest Division	Gaula Range	Halduchaur Beat	Gaula Part	Gaula Part
4	29.1458	79.6706	Western Circle	Haldwani Forest Division	Nandhour Range	Asni Beat	Asni	5
5	29.1525	79.3508	Western Circle	Tarai Central	Pipalpadao Range	South East Gadgadiya Beat	South Gadgadiya Block	70
6	29.2153	80.2031	North Kumaon Circle	Champawat Forest Division	Champawat	Shim Beat	Shim	5
7	29.3139	80.3078	North Kumaon Circle	Champawat Forest Division	Champawat	Maurkot Beat	Pudaban	3a
8	29.3800	79.8911	North Kumaon Circle	Champawat Forest Division	DebiDhura	Bhaduliya Beat	Bhaduliya	5
9	29.7997	78.3333	Shivalik Circle	Lansdowne Forest Division	Laldang Range	Jaspur-II Beat	Sighdadi	7



# Active Fire Outside RF On 27-05-2020 At 11:30 AM Source:FSI

S.No	Latitude	Longitude	District	Tehsil	Village
1	29.52889	79.95916667	ALMORA	BHANAULI	KANDA GUNT (RAMESWAR)
2	29.67944	79.1475	ALMORA	SALT	BANGIDHAR
3	29.67944	79.2575	ALMORA	BHIKYASAIN	INOLI
4	29.69583	78.90472222	PAURI GARHWAL	LANSDOWNE	MELDHAR
5	29.73389	79.23611111	ALMORA	BHIKYASAIN	SAINKIRA
6	29.80111	78.74916667	PAURI GARHWAL	LANSDOWNE	ASAN KHET
7	29.85694	78.66416667	PAURI GARHWAL	LANSDOWNE	KURA
8	29.92444	78.43944444	PAURI GARHWAL	YAMKESHWAR	HARSOLI
9	29.925	78.43527778	PAURI GARHWAL	YAMKESHWAR	HARSOLI
10	30.34389	79.36611111	CHAMOLI	CHAMOLI	DASOLI

ACTIVE FIRE ALERT OUTSIDE RF OF UTTARAKHAND  
AS ON 27-05-2020 at 11:30 AM, Source : FSI

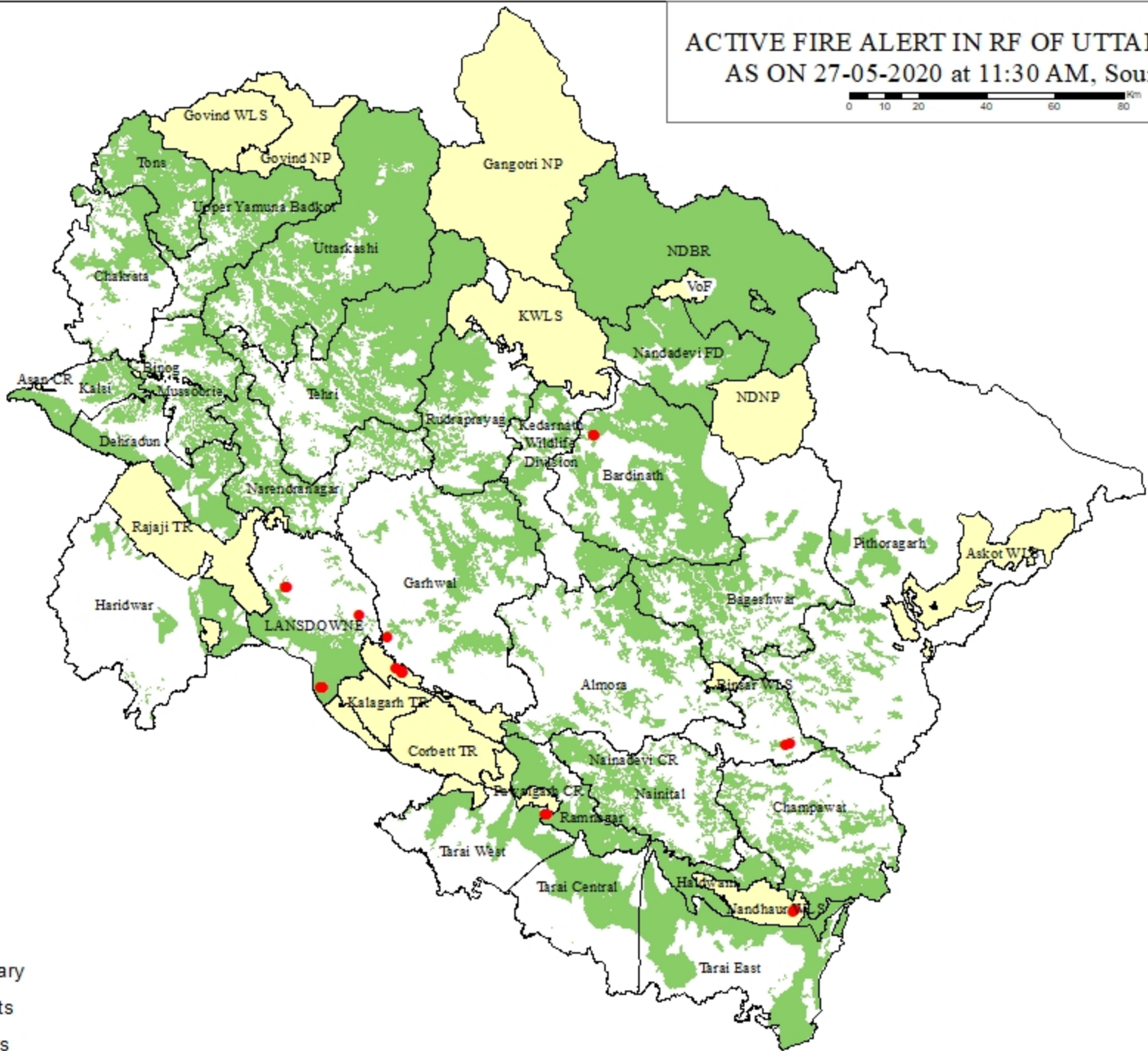
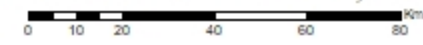


**Legend**

Detected Fire

District Boundary

ACTIVE FIRE ALERT IN RF OF UTTARAKHAND  
AS ON 27-05-2020 at 11:30 AM, Source : FSI



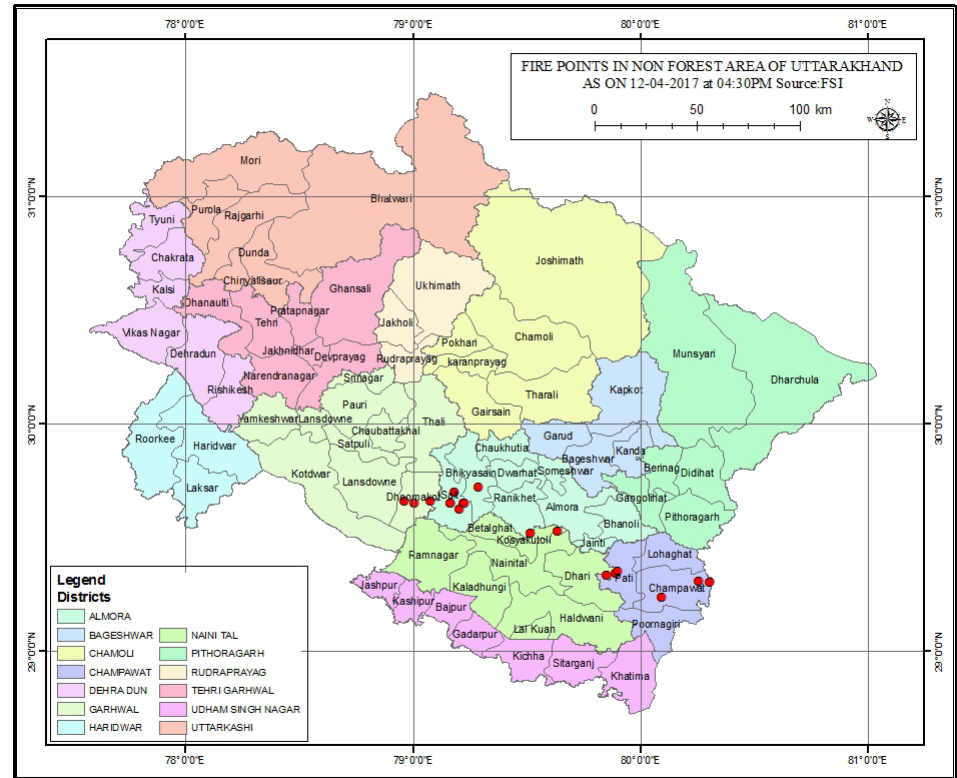
- Legend**
- Detected Fire
  - Division Boundary
  - Reserve Forests
  - Protected Areas

# Final Report for Non RF of Active/Post Fire Points:

Table - Showing Fire Locations

Active Fire Alert as on 12-04-2017 at 04:30PM				
S.No	Latitude	Longitude	DISTRICT	TEHSIL
1	29.2389	80.0917	CHAMPAWAT	Champawat
2	29.3025	80.3025	CHAMPAWAT	Champawat
3	29.3050	80.2542	CHAMPAWAT	Champawat
4	29.3342	79.8517	NAINI TAL	Dhari
5	29.3444	79.8900	CHAMPAWAT	Pati
6	29.3528	79.8967	NAINI TAL	Dhari
7	29.5183	79.5136	ALMORA	Ranikhet
8	29.5286	79.6333	NAINI TAL	Kosyakutoli
9	29.6242	79.2047	ALMORA	Salt
10	29.6489	79.2225	ALMORA	Bhikyasain
11	29.6494	79.1636	ALMORA	Salt
12	29.6497	79.1647	ALMORA	Salt
13	29.6497	79.2269	ALMORA	Bhikyasain
14	29.6503	79.0047	GARHWAL	Dhoomakot
15	29.6594	79.0767	GARHWAL	Dhoomakot
16	29.6606	78.9592	GARHWAL	Dhoomakot
17	29.6997	79.1814	ALMORA	Salt
18	29.7217	79.2864	ALMORA	Bhikyasain
<b>Source:FSI</b>				

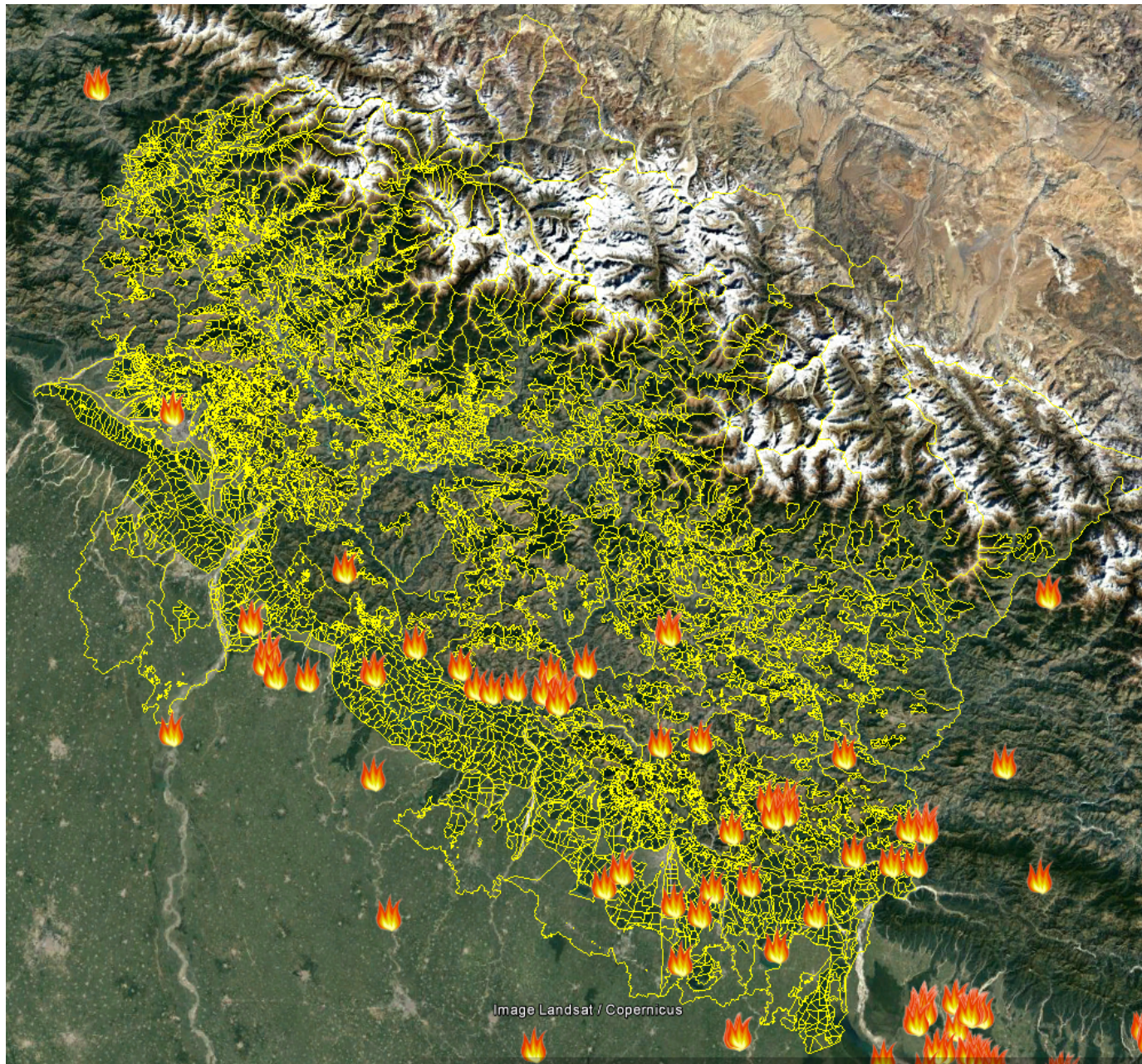
Map – Showing Fire Points/Location



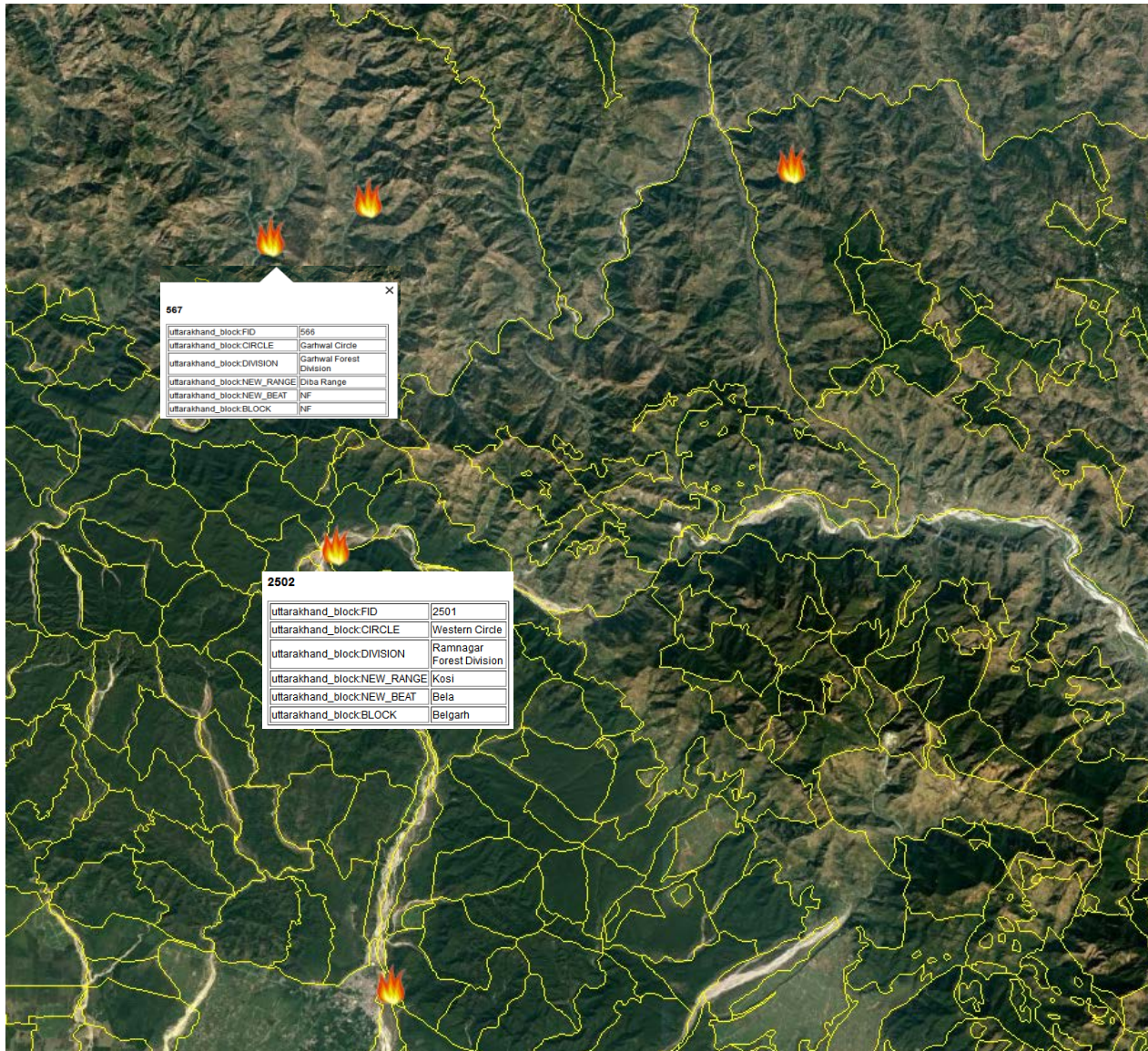
## **Further incorporation Capabilities of ITGC of UKFD**

- **Up to Village level information**
- **Nearest Crew Station, Watch Tower**
- **Nearest Settlement (up to 2 km from fire spot)**

# Fire Point Acquired from NASA & overlaid over Uttarakhand mosaic



## KML showing Fire alerts in Reserve Forest area & outside Reserve Forest Area



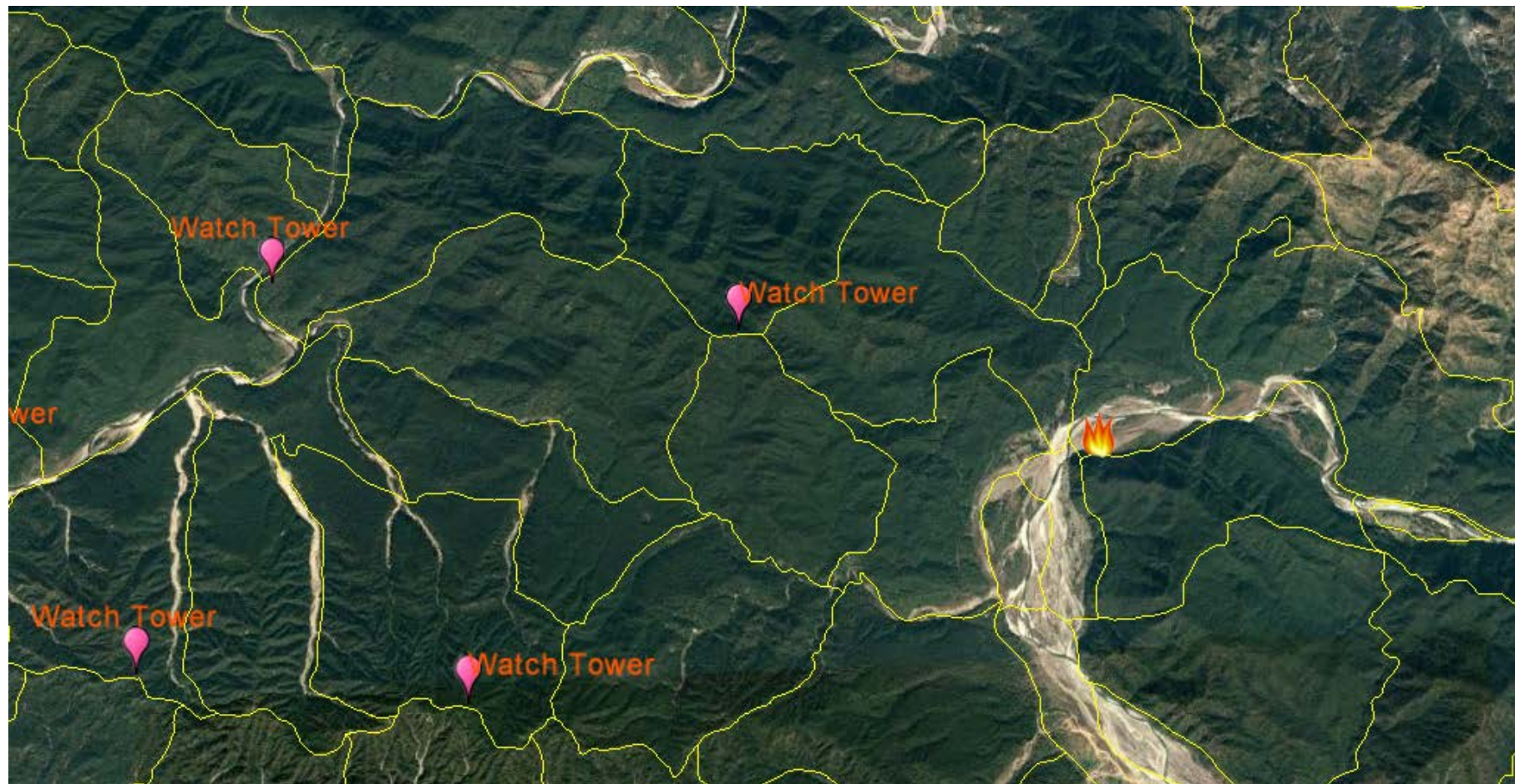
**KML showing settlement within 1KM buffer of Fire Point**



## Nearest Crew Station from Active Fire point



## Nearest Watch Tower from Active Fire point



## Detail Information about different Active Fire Alerts

S.No	Latitude	Longitude	DISTRICT	TEHSIL	DEV_BLOCK	CIRCLE	DIVISION	NEW_RANGE	NEW_BEAT	BLOCK	COMPAR	VT_NAME	SETT	VILL_CODE	VILL_COD_1	VID_2001
1	29.021389	79.812500	NAINI TAL	Haldwani		Western Circle	Tarai East Forest Division	South Jaulasal Range	North-West Jaulasal Beat	Jaulasal East	12	Forest		25080050F004		
2	29.021389	79.812500	NAINI TAL	Haldwani	Sitarganj	Western Circle	Tarai East Forest Division	South Jaulasal Range	North-West Jaulasal Beat	Jaulasal East	12	Dhayanpur		250800700075	01605600	0512000301605600
3	29.113056	79.854167	NAINI TAL	Haldwani		Western Circle	Haldwani Forest Division	Jaulasal Range	Birgot Beat	Birgot	14	Forest		25080050F004		
4	29.115000	79.862778	NAINI TAL	Haldwani		Western Circle	Haldwani Forest Division	Jaulasal Range	Birgot Beat	Birgot	12	Forest		25080050F004		
5	29.115556	79.858611	NAINI TAL	Haldwani		Western Circle	Haldwani Forest Division	Jaulasal Range	Birgot Beat	Birgot	16	Forest		25080050F004		
6	29.208889	80.231389	CHAMPAWAT	Champawat		North Kumaon Circle	Champawat Forest Division	Champawat	Shim Beat	Shim	2	Lohaghat Range	Nalka	25060060FFF2		
7	29.248056	80.279444	CHAMPAWAT	Champawa	Champawat	North Kumaon Circle	Champawat Forest Division	Champawat	Maurkot Beat	NF	NF	Tarkuli	Ninori	250600600608	01427400	0510000101427400
8	29.291667	79.756111	NAINI TAL	Dhari	Okhal Kanda	South Kumaon Circle	Nainital Forest Division	South Gola Range	NF	NF	NF	Khashu	Hairakhan	250800400125	01494700	0511000301494700
9	29.295000	79.756667	NAINI TAL	Dhari	Okhal Kanda	South Kumaon Circle	Nainital Forest Division	South Gola Range	Pashiyani Beat	Pashiyani	4	Khashu	Ijjar	250800400125	01494700	0511000301494700
10	29.336111	80.280833	CHAMPAWAT	Champawat		North Kumaon Circle	Champawat Forest Division	Lohaghat	East Dugrabanku Beat	Dugrabanku	17a	Lohaghat Range	Deokunda	25060060FFF2		
11	29.623333	79.100278	ALMORA	Salt	Suit	Garhwal Circle	Garhwal Forest Division	Diba Range	NF	NF	NF	Bandhar Anbist	Ritha	250700100545	01191900	0509000101191900
12	29.626667	79.100833	ALMORA	Salt	Suit	Garhwal Circle	Garhwal Forest Division	Diba Range	NF	NF	NF	Kopi	Salan	250700100544	01191800	0509000101191800
13	29.635278	79.596389	ALMORA	Almora	Hawalbag	North Kumaon Circle	Almora Forest Division	Almora Range	Chhana Beat	NF	NF	Jol Swar	Simalta	250700400372	01307800	0509000301307800
14	29.667222	79.125556	ALMORA	Salt	Suit	Garhwal Circle	Garhwal Forest Division	Diba Range	NF	NF	NF	Jaspur Patawal	Jaspur Semal	250700100525	01189700	0509000101189700
15	30.364722	78.920556	RUDRAPRAYAG	Jakholi	Jakholi	Garhwal Circle	Rudraprayag Forest Division	South_Jakholi Range	Saralvan Beat	Longa	21	Bhagna	Tendwal	250300400580	00225400	0503000200225400

# Forest Fire Management Strategy

## B. Extensive use of Uttarakhand Forest BHUVAN Portal

- BHUVAN is a Geo-portal of Indian Space Research Organisation (ISRO) Showcasing Indian Imaging Capabilities in Multi-sensor, Multi-platform and Multi-temporal domain. The Portal gives a gateway to explore and discover virtual earth in 3D space with specific emphasis on Indian Region.
- Apart from visualization BHUVAN provides **timely disaster support services** (domestic and international, free satellite data and a products download facility and rich thematic datasets BHUVAN is using a crowdsourcing approach to enrich its maps and collect point of interest data. It also acts as a platform for hosting government data (example - Uttarakhand Forest Department GIS Database).
- Daily NEAR REAL-TIME day & night TERRA/AQUA MODIS based active forest fire alerts are generated and disseminated via BHUVAN.
- Recently on step ahead NRSC has initiated a refine resolutions for fire monitoring using, 750m and 375m for “Suomi National Polar-Orbiting Partnership (SNPP), Visible Infrared Imaging Radiometer Suite (VIIRS)” satellite data, over UTTARAKHAND FOREST BHUVAN PORTAL .
- Fire locations represent centre of pixel of detection. S-NPP VIIRS 375m product is experimental but detects the small fires efficiently.

# Procedure to view Active Fire Alerts in BHUVAN Portal

## STEP-1

Url to reach BHUVAN Portal-[https://bhuvan.nrsc.gov.in/bhuvan\\_links.php#](https://bhuvan.nrsc.gov.in/bhuvan_links.php#)

The screenshot displays the BHUVAN Portal homepage. At the top, the browser address bar shows the URL [https://bhuvan.nrsc.gov.in/bhuvan\\_links.php#](https://bhuvan.nrsc.gov.in/bhuvan_links.php#). The page header includes the BHUVAN logo, the text "Indian Geo-Platform of ISRO", and the National Remote Sensing Centre logo with the motto "इसरो डिफेंस". Navigation links for "NRSC | Search | Bhuvan Store | Bhuvan Collaborators" are provided.

The main content area is organized into several sections:

- Visualisation & Free Download:** Includes links for Bhuvan-2D, Bhuvan-3D, Open Data Archive (Free Download), and Climate Environment (EO derived Products).
- Maps & OGC services:** Includes Thematic Services, Disaster Services, Ocean Services, and Create a Map / GIS (My Map | My GIS).
- Governance/Central Ministries g-Governance Dashboard:** Features icons for Island Information, School Bhuvan, Toll Information, Ground Water, Pipeline Grid, Watersheds, and Urban Survey.
- Application Sectors:** A row of icons for Agriculture, Forestry, E-Governance, Water, Tourism, Urban, and Rural.
- E-Governance:** Includes a link for Decentralised Planning.
- Special Applications:** Includes Data Discovery, Decision Support Dashboard, Hydrological Products, International Disasters, IRS Pass Quick Looks, Locate Satellites, MANU, and Multilingual Translation.

On the right side, the **State Portals/Applications** section is active for **ANDHRA PRADESH**. It features a map of India with Andhra Pradesh highlighted, a dropdown menu for the state, and a link for "Asset Mapping". Below this, a list of updates and downloads is shown, including "Hot Weather Outlook New", "Bhuvan Training on Apr 03 - 04, 2017", "Release of Telangana Water Resources Information System on 06 Aug 2016", "Citizen Centric - Post Application", "Recent Floods", "Bhuvan Satellite Data as OGC Web Service", and "g-Governance: Dashboard". At the bottom right, there is a satellite map viewer with controls for "Map", "Sat", "Hyb", and "Ter".

The footer contains the copyright notice "© Bhuvan: ISRO/NRSC, 2014", a link to the "Discussion Forum", the date "Last Updated: 21-Feb-2017", the text "Icons powered by FlatIcon.com", and links for "Contact us" and "Terms".

# STEP-2

In APPLICATION sector ,Left click **Forestry Tab** & again left click **UTTARAKHAND TAB**

FORESTRY TAB

UTTARAKHAND TAB

The screenshot shows the Bhuvan web application interface. At the top left is the Bhuvan logo (Indian Geo-Platform of ISRO) and at the top right is the National Remote Sensing Centre logo (NRSC | Search | Bhuvan Store | Bhuvan C). The main content area is divided into several sections:

- Visualisation & Free Download:** Includes Bhuvan-2D, Bhuvan-3D, Open Data Archive (Free Download), and Climate Environment (EO derived Products).
- Maps & OGC services:** Includes Thematic Services, Disaster Services, Ocean Services, and Create a Map / GIS (My Map | My GIS).
- Governance/Central Ministries:** Includes g-Governance Dashboard, ENVIS, CRIS, Flycatchers Distribution, Island Information, School Bhuvan, Toll Information, Ground Water, and Pipeline.
- Application Sectors:** Collaborative applications - Platform to share your data and create governance applications. Includes Agriculture, **Forestry** (highlighted with a red arrow), E-Governance, Water, Tourism, Urban, and Rural.
- Forestry:** Includes Karnataka, **Uttarakhand** (highlighted with a red arrow), Himachal Pradesh, and MoEFCC.
- Special Applications:** Includes Data Discovery, IRS Pass Quick Looks, Decision Support Dashboard, Locate Satellites, Hydrological Products, MANU, International Disasters, and Multilingual Translation.

On the right side, there is a **State Portals/Applications** section with a map of India and a dropdown menu for **State** (currently set to ANDHRA PRADESH). Below this are links for **Andhra Pradesh** and **Asset Mapping**, and a list of updates and downloads for the state.

At the bottom left, the URL [https://bhuvan.nrsc.gov.in/bhuvan\\_links.php#](https://bhuvan.nrsc.gov.in/bhuvan_links.php#) is visible. At the bottom right, there is a "Contact" link and a "Last Updated: 31 Feb 2017" timestamp.

# STEP 3-

Uttarakhand Page will be displayed where one can select various layers such as Circle, Division, Range, Block, Beat.

Selection can be made through this panel

Uttarakhand Forest

Welcome User [Login](#)

Enter City or Lat, Lon(ex:chennai or 13

Tools | [Link](#) | [Home](#)

**Know your Forest**

Circle Choose ...

Division Select Circle First

Range Select Division First

Block Select Range First

Beat Select Block First

[View](#)

- Land Use Land Cover 50K 2005-06
- Land Use Land Cover 50K 2011-2012
- Wasteland 50K 2008-09
- Geomorphology 50K 2005-06
- Lineament 50K 2005-06
- Weather Information

**Fire Management**

**Asset Management**

**Eco-Tourism**

**Wild Life Management**

**Departmental Maps**

JAMMU & KASHMIR

UTTARAKHAND

HARYANA

Map | Satellite | Hybrid | Terrain | More

Discussion Forum | Send Mail | Legend

Contact us | About us | Disclaimer

# VIEW & DETAIL OF A FIRE ALERT DETECTED WITH IN RF

Indian Geo-Platform of ISRO

Uttarakhand Forest

Welcome User [Login](#)

Enter City or Lat, Lon(ex:chennai or 1)

Tools [Link](#) [Home](#)

Map |

**Know your Forest**

**Fire Management**

**Current Fire Locations**  
Dated:2017-04-12

Aqua-MODIS

- 01:56 hrs
- 12:49 hrs
- 14:26 hrs

Terra-MODIS

- 09:42 hrs
- 11:20 hrs

S-NPP VIIRS(375m)

- 01:53 hrs
- 13:03 hrs
- 14:43 hrs

S-NPP VIIRS(750m)

- 01:53 hrs
- 13:03 hrs
- 14:43 hrs

Forest Fire Locations (Day-wise)

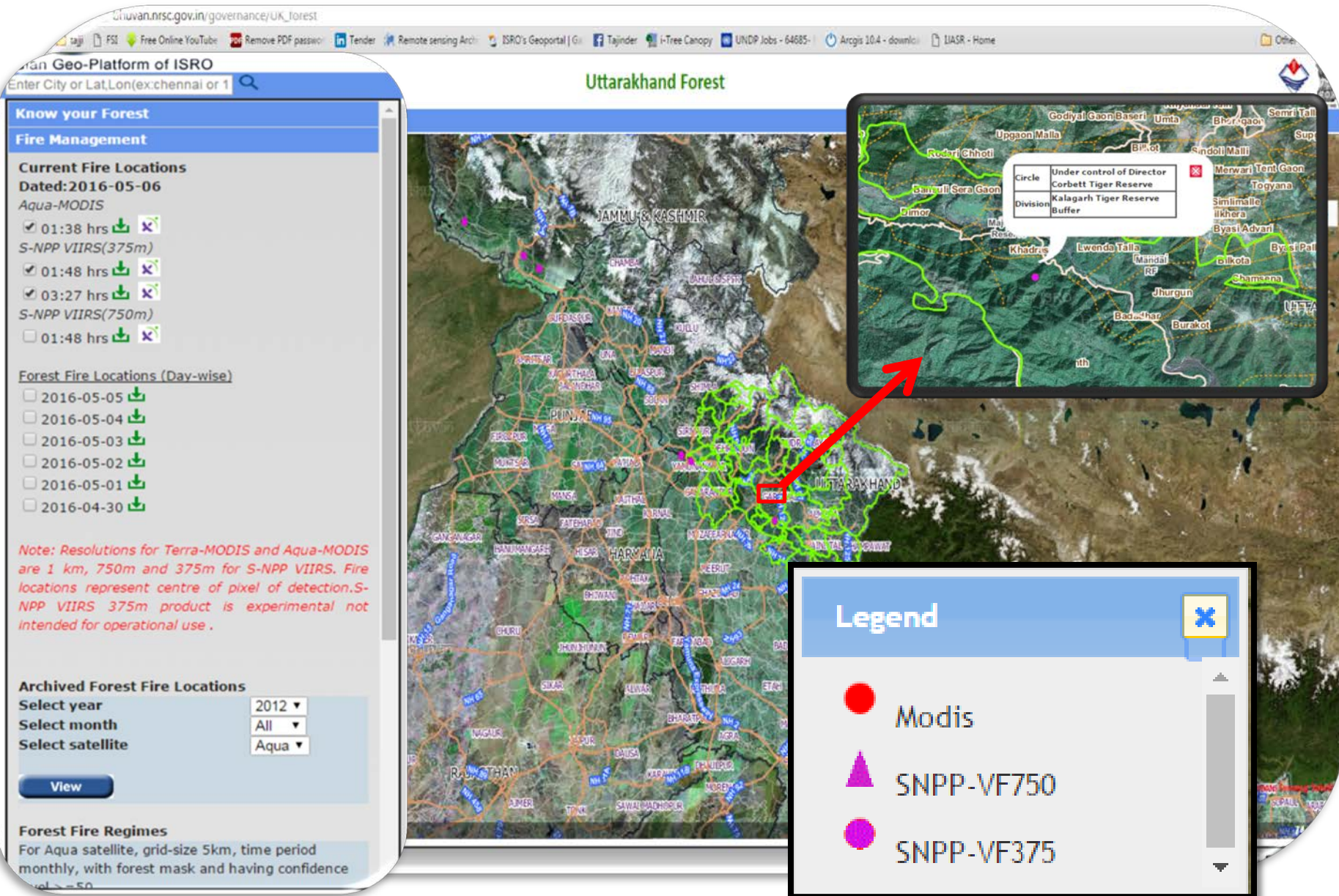
- 2017-04-11
- 2017-04-10
- 2017-04-09

Circle	Western Circle
Division	Tarai West
Range	Bailparao Range
Block	Eastern Chandni Block
Beat	East Chandni Beat

Indian Remote Sensing Satellites

79.73, 29.65

# Active Fire points Monitoring over BHUVAN



# STEP 4-

In this step boundaries of selected layers will be displayed & now **LEFT CLICK FIRE MANAGEMENT**

**FIRE MANAGEMENT TAB**

The screenshot displays a GIS web application interface. At the top, there is a search bar with the text "Enter City or Lat, Lon(ex:chennai or 13, )". Navigation links for "Tools", "Link", and "Home" are visible. The main map area shows a satellite view of a region in northern India, with a green outline highlighting a specific area in Uttarakhand. The map includes labels for various districts and states, such as Jammu & Kashmir, Himachal Pradesh, Uttarakhand, and Haryana. A toolbar on the right side of the map allows switching between "Map", "Satellite", "Hybrid", "Terrain", and "More" views. On the left side, there is a panel titled "Know your Forest" with several dropdown menus for "Circle", "Division", "Range", "Block", and "Beat". Below these are several checkboxes for different data layers, including "Land Use Land Cover 50K 2005-06", "Land Use Land Cover 50K 2011-2012", "Wasteland 50K 2008-09", "Geomorphology 50K 2005-06", "Lineament 50K 2005-06", and "Weather Information". At the bottom left, there is a vertical menu with items: "Fire Management", "Asset Management", "Eco-Tourism", "Wild Life Management", and "Departmental Maps". A red arrow points from the text "LEFT CLICK FIRE MANAGEMENT" to the "Fire Management" menu item.

# STEP 5-

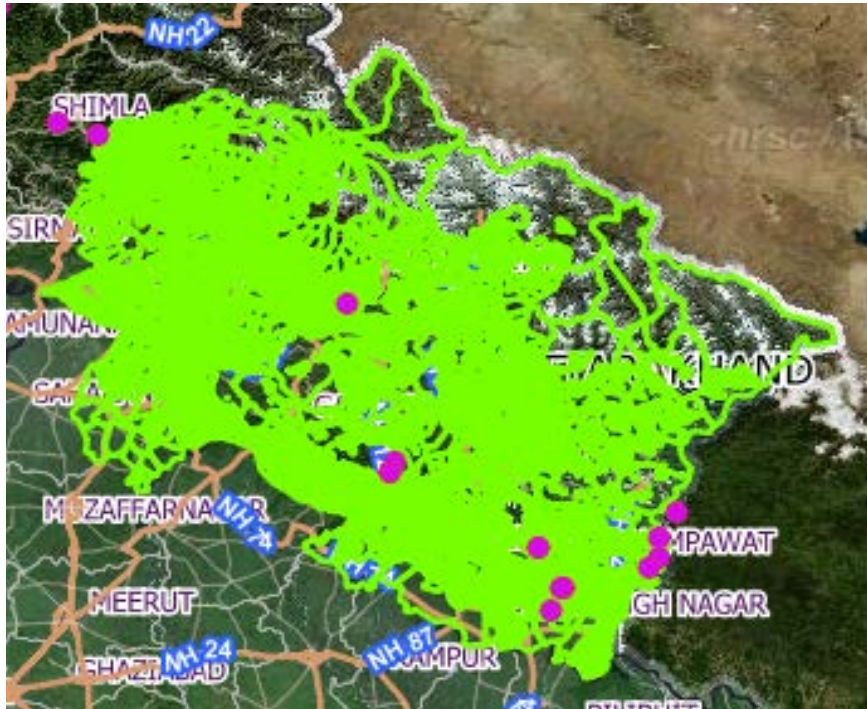
Select (Tick the checkbox) required fire location to view fire point

MODIS & SNPP VIIRS points updated at different point of day

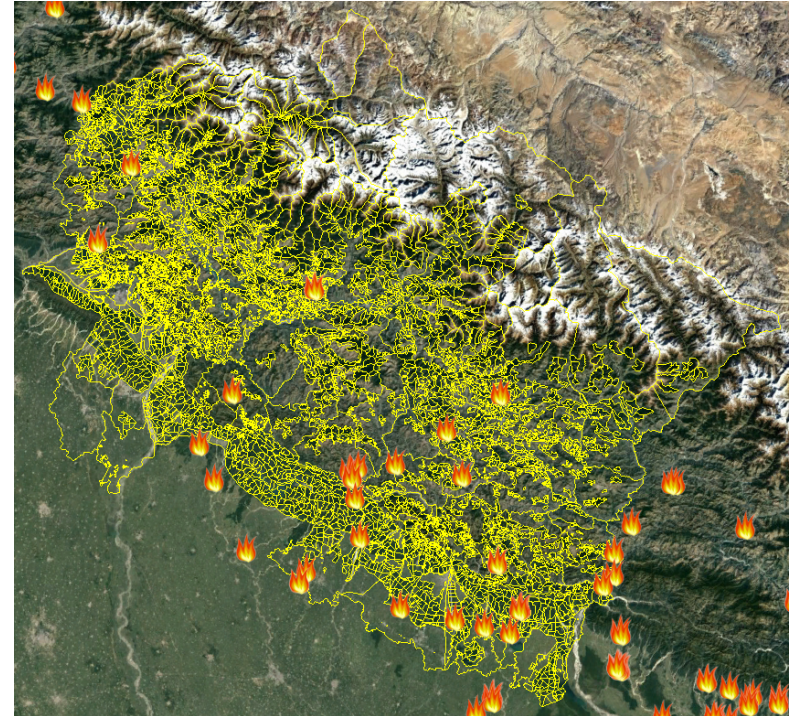
The screenshot displays the 'Uttarakhand Forest' web application interface. At the top, it features the logos of NRSC and ISRO, the text 'Indian Geo-Platform of ISRO', and a 'Welcome User Login' link. The main map area shows Uttarakhand with various districts labeled, including Chamra, Lahul & Spiti, Kullu, Mandi, Shimla, Solan, Dehra Dun, and Uttarakhand. A green outline highlights a specific region in the central-eastern part of the state. A sidebar on the left contains a 'Know your Forest' section with a 'Fire Management' sub-section. Under 'Current Fire Locations Dated: 2017-04-12', there are two categories: 'Aqua-MODIS' and 'Terra-MODIS', each with three time slots (01:56, 12:49, 14:26 hrs) and checkboxes. Below these are 'S-NPP VIIRS (375m)' and 'S-NPP VIIRS (750m)' categories, each with three time slots (01:53, 13:03, 14:43 hrs) and checkboxes. At the bottom of the sidebar is a 'Forest Fire Locations (Day-wise)' section with three dates (2017-04-11, 2017-04-10, 2017-04-09) and checkboxes. The map includes navigation controls like a scale bar, zoom in/out buttons, and a map style selector (Map, Satellite, Hybrid, Terrain, More). The bottom right corner shows the coordinates '74.31, 30.48'.

# Active Fire as on 17 April 2017

Bhuvan



FIRMS



# Fire Monitoring By Bhuvan

## Strengths

- Beat wise fire locations on Indian Geoportal
- No Need for installation of Google Earth
- Can View the fire location any time anywhere
- All the setellite sensed fire points can be viewed at the same time

## Weakness

- Only RF boundaries are there
- Can not link the fire with district or tehsil
- UKFD dependency on NRSC for any updation
- Variation in number of fire points as compared to FIRMS

# **Forest Fire Management Strategy/ Standard Operating Procedure**

## **C. Forest Fire Management- By using FSI Data**

- Nodal Officer at ITGC and other registered forest officials of department are getting daily fire alerts from Forest Survey of India (FSI) through *e-mail* as well as through SMS.
- ITGC receives Google Earth compatible .kml file of fire locations from FSI on daily basis.
- This information is viewed with Uttarakhand administrative boundaries on Google Earth to get the satellite view of area location of the fire and other information already available over Google Earth such as Temperature, Terrain, Road, Place, GPS locations etc.

# Fire alerts from FSI in Public Domain

- Tabulated as and when received from NASA server
- Can be accessed by anyone
- Time lag is just less than 2 hours as per FSI
- DMs, DFOs or any district official can see
- Messages sent to State level officers, DMs, DFOs, ROs, and up to Beat guard level.
- DMs to get sms of incidents of the district, DFOs to get the incidents of Division and so on.

# Screen Shot of FSI webpage from where Fire Alerts are acquired.



## FOREST SURVEY OF INDIA

Ministry of Environment, Forest & Climate Change

भारतीय वन सर्वेक्षण

### Fire Points

Print

Export in Excel

Go Back

12 Record Found (Displaying 1 To 12)

S.No.	Date & Time	Latitude	Longitude	State	District	Circle	Division	Range	Block	Beat	Source Type
1.	15-04-2017 02:36:03	28 59 38N	80 04 53E	UTTARAKHAND	UDHAMSINGH NAGAR	WESTERN CIRCLE	TARAI EAST FOREST DIVISION	KHATIMA RANGE	KHATIMA RANGE	CHANDANI BEAT	SNPP
2.	15-04-2017 02:36:03	28 59 38N	80 04 53E	UTTARAKHAND	UDHAMSINGH NAGAR	WESTERN CIRCLE	TARAI EAST FOREST DIVISION	KHATIMA RANGE	KHATIMA RANGE	CHANDANI BEAT	SNPP
3.	15-04-2017 02:36:03	29 48 59N	79 31 22E	UTTARAKHAND	ALMORA	NORTH KUMAON CIRCLE	ALMORA FOREST DIVISION	SOMESHWAR RANGE	SOMESHWAR RANGE	GAGAS EAST BEAT	SNPP
4.	15-04-2017 13:19:36	30 07 51N	79 27 52E	UTTARAKHAND	CHAMOLI	GARHWAL CIRCLE	BADRINATH FOREST DIVISION	PINDAR WEST RANGE	PINDAR WEST RANGE	DEVAR BEAT	MODIS
5.	15-04-2017 13:19:36	30 07 51N	79 27 52E	UTTARAKHAND	CHAMOLI	GARHWAL CIRCLE	BADRINATH FOREST DIVISION	PINDAR CENTRAL RANGE	PINDAR CENTRAL RANGE	DEVALGWAR BEAT	MODIS
6.	15-04-2017 13:19:36	30 07 51N	79 27 52E	UTTARAKHAND	CHAMOLI	GARHWAL CIRCLE	BADRINATH FOREST DIVISION	PINDAR CENTRAL RANGE	PINDAR CENTRAL RANGE	DEVALGWAR BEAT	MODIS
7.	15-04-2017 13:19:36	29 48 59N	79 31 15E	UTTARAKHAND	ALMORA	NORTH KUMAON CIRCLE	ALMORA FOREST DIVISION	SOMESHWAR RANGE	SOMESHWAR RANGE	GAGAS EAST BEAT	MODIS
8.	15-04-2017 13:19:36	29 48 59N	79 31 15E	UTTARAKHAND	ALMORA	NORTH KUMAON CIRCLE	ALMORA FOREST DIVISION	SOMESHWAR RANGE	SOMESHWAR RANGE	GAGAS EAST BEAT	MODIS
9.	15-04-2017 13:19:36	29 48 59N	79 31 15E	UTTARAKHAND	ALMORA	NORTH KUMAON CIRCLE	ALMORA FOREST DIVISION	SOMESHWAR RANGE	SOMESHWAR RANGE	GAGAS EAST BEAT	MODIS
10.	15-04-2017 13:19:36	29 48 59N	79 31 15E	UTTARAKHAND	ALMORA	NORTH KUMAON CIRCLE	ALMORA FOREST DIVISION	SOMESHWAR RANGE	SOMESHWAR RANGE	GAGAS EAST BEAT	MODIS
11.	15-04-2017 13:19:36	28 51 12N	79 55 50E	UTTARAKHAND	UDHAMSINGH NAGAR	WESTERN CIRCLE	TARAI EAST FOREST DIVISION	SURAI RANGE	SURAI RANGE	NF	MODIS
12.	15-04-2017 13:19:36	28 51 12N	79 55 50E	UTTARAKHAND	UDHAMSINGH NAGAR	WESTERN CIRCLE	TARAI EAST FOREST DIVISION	SURAI RANGE	SURAI RANGE	JHANKAIYA- I BEAT	MODIS

Saturday, April 15, 2017

V

10 Nos. of fires detected in  
UTTARAKHAND by  
SNPP(375mx375m) on  
[14-04-17 02:55:03](#) Click to  
view Fire Points [https://  
goo.gl/MZcV8r](https://goo.gl/MZcV8r) Click [https://  
goo.gl/O3JA7G](https://goo.gl/O3JA7G) for feedback.

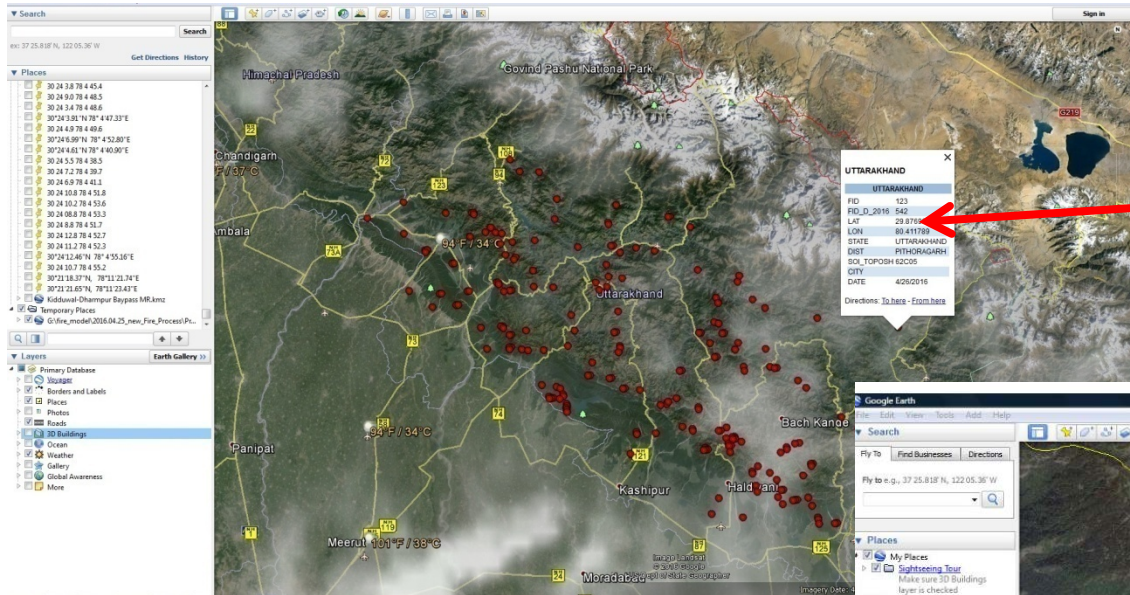
 SMS 2:25 PM



Enter message

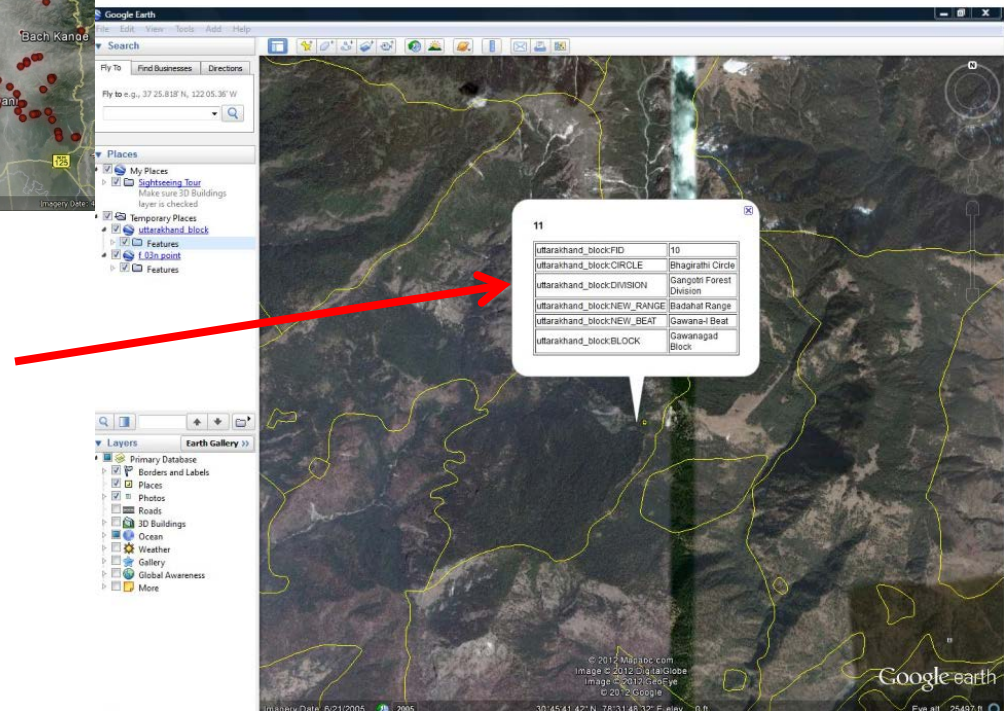


# KML File of Forest Fire Location as per the data received by FSI



Point Information

Forest Administrative unit information where fire point is visible



# Fire Monitoring By FSI

## Strengths

- Compartment Level Information Dissemination
- Near Real Time due to automatic Technology
- Dissemination via different modes: SMS Alerts, Website, email of KML files
- Many duplicate entries of fire points

## Weakness

- Only RF boundaries are there so can't disseminate information to Non Reserve Areas
- Can not link the fire with tehsil or villages

# Forest Fire Management Strategy/ SOP-

## D. Ensuring Effective Co-ordination and Sharing of Information:

➤ ITGC has coordination with State Emergency Operation Center for disasters such as Forest Fire mitigation strategies, resource mobilization, ground reporting of fire incidences etc.

➤ Information is also received from crew station staff on patrol, fire danger rating analysis by Master Control Room established in each forest division, local villagers and any other person through the use helpline numbers such as WhatsApp (7455054828), State Disaster Helpline Toll Free Number 1070, and District Disaster Helpline Toll Free Number 1077.

➤ For public use the link is given to our website [www.forest.uk.gov.in](http://www.forest.uk.gov.in) which contains fire dedicated link having following information:

- |  |  |
|--|--|
| 1.Pre fire   | 6.Weather report                         |
| 2.Post fire  | 7.Fire trend                             |
| 3.Fire Sensitive Maps                                | 8.Fire location map by NRSC etc.         |
| 4.Advertisements                                     | 9. Uttarakhand Forest BHUVAN Link        |
| 5.Daily Fire Reports Received From various Divisions | 10. Link to Weather forecasting websites |



# Use of Information Communication Technology (ICT):

## Daily Updated Forest Fire Alerts, Reports & Information over Website - [www.forest.uk.gov.in](http://www.forest.uk.gov.in)

The screenshot displays the website for the Uttarakhand Forest Department, Government of Uttarakhand. The page features a navigation menu with links for Home, About Us, Research & Training, Acts & Office Orders, SAMADHAN, and External Links. A search bar is located in the top right corner. The main content area includes a large banner image of a forest. Below the banner, there is a paragraph describing Uttarakhand's geographical location and a link to 'Read More'. A second paragraph details the Forest Department's responsibilities and lists various species, with another 'Read More' link. A red circle highlights a 'Fire Alert-Information' link in the bottom left, with a red arrow pointing to it from a text box on the right. The text box contains the text 'Dedicated Link For Fire Information'. Other visible elements include a 'Budget' section for the Forest Department, 'PRESS RELEASES', and a list of services such as 'ONLINE BOOKING', 'PRESS NOTES', 'WORKING PLANS', 'FOREST FIRE INFO', 'MAPS & CHARTS', and 'RECRUITMENT'.

Uttarakhand Forest  
Government of Uttarakhand

Search within website

Home About Us Research & Training Acts & Office Orders SAMADHAN External Links

Uttarakhand the 27<sup>th</sup> state of Republic of India lies between 28° 44' & 31° 28' N Latitude and 77° 35' & 81° 01' East longitude. It was carved out of UP on 9<sup>th</sup> November 2000 with 13 Districts. The geographical area of the state is 53483 sq.km and the terrain and topography of the state is largely hilly with large areas under snow cover and steep slopes. [Read More](#)

Forest Department in Uttarakhand has the responsibility for managing some of the richest forests and biodiversity in India . These are spread over a landscape that includes plains where the tall Sal trees and myriad other plant species hold sway. Tigers, Elephants, Deer, Antelopes, Pythons, a large number of bird species, amongst so many other species, inhabit these forests and grasslands. [Read More](#)

[Fire Alert-Information](#)

Forest Department ONLINE APPLICATION

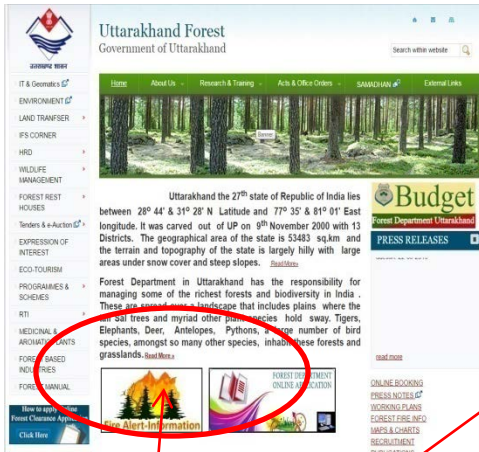
**Budget**  
Forest Department Uttarakhand  
PRESS RELEASES

[ONLINE BOOKING](#)  
[PRESS NOTES](#)  
[WORKING PLANS](#)  
[FOREST FIRE INFO](#)  
[MAPS & CHARTS](#)  
[RECRUITMENT](#)

How to apply Online Forest Clearance Application  
[Click Here](#)

Dedicated Link For Fire Information

# Up to date Forest Fire Information Available over Website



On clicking

- › Tenders & Recruitment
- › EXPRESSION OF INTEREST
- › ECO-TOURISM
- › PROGRAMMES & SCHEMES
- › RTI
- › MEDICINAL & AROMATIC PLANTS
- › FOREST BASED INDUSTRIES
- › FOREST MANUAL

How to apply Online Forest Clearance Application  
[Click Here](#)

DOWNLOADS  
[CLICK HERE](#)

[uk.gov.in](http://uk.gov.in)  
 Uttarakhand Government Portal

[india.gov.in](http://india.gov.in)  
 The national portal of India

## FOREST FIRE INFORMATION-2016

**PRE-FOREST FIRE ALERT**  
SOURCE: ISRO

**Advertisement regarding Forest Fire Protection-2016. [CLICK HERE](#)**

**FOREST FIRE SENSITIVE ZONE MAP**

**DISTRICT & TEHSIL WISE FIRE INFORMATION**  
(Based on the past 10 years data)

Divisionwise Fire Incidences & Affected Area Bar Graph

REGIONWISE SUMMARY OF FOREST FIRE

DIVISIONWISE SUMMARY OF FOREST FIRE

**FIRE TREND GRAPH**

**WEATHER NOW**

**DAILY FOREST FIRE MAPS**  
(Fire points from 15-02-2016 to Till date)

**DAILY FOREST FIRE UPDATES**  
CLICK HERE

DISTRICTWISE SUMMARY OF FOREST FIRE

WEATHER FORECAST

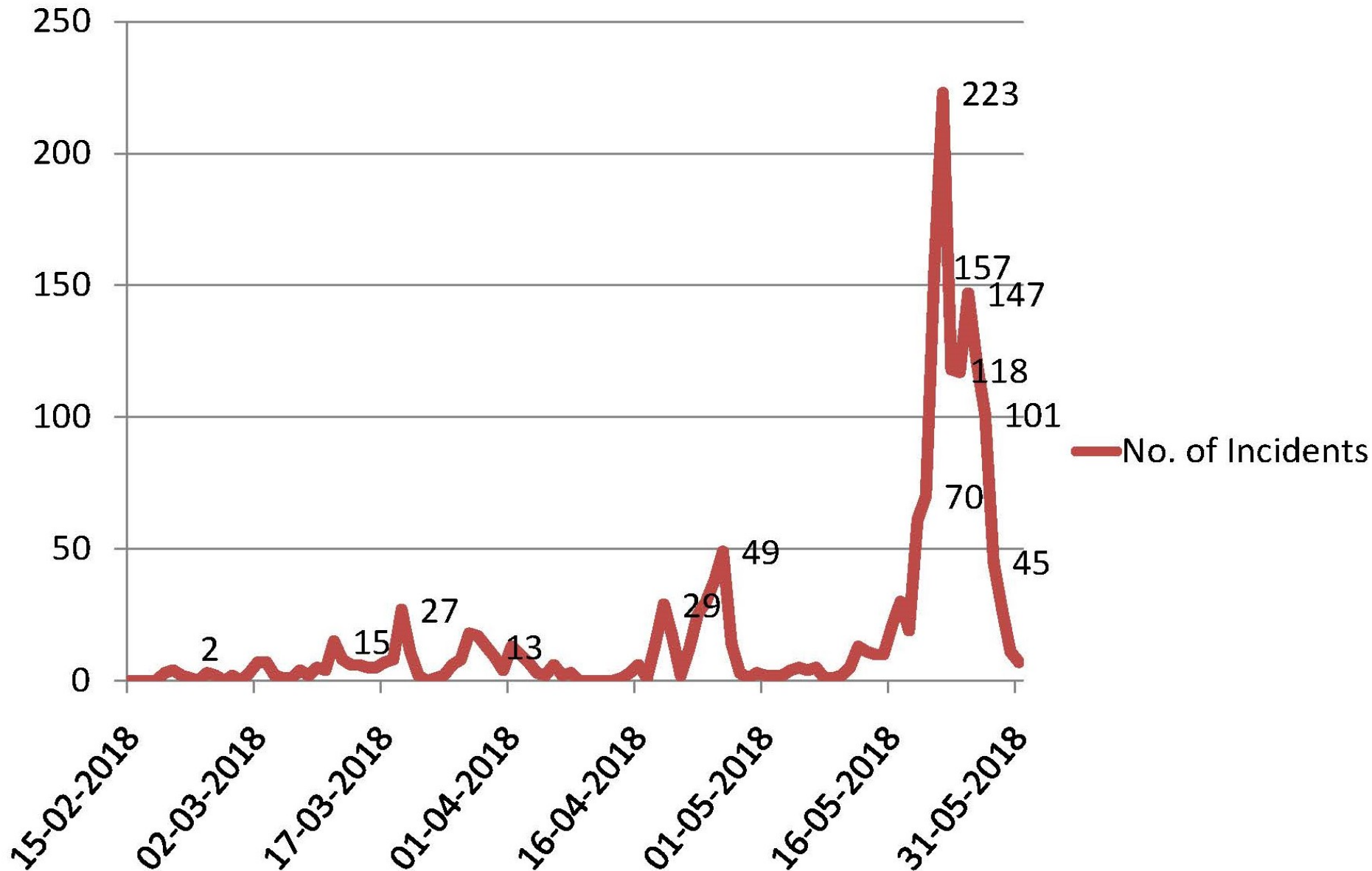
**POST FOREST FIRE WARNING - (DEVELOPED BY ITGC BASED ON NASA EOSDIS-NASA INFORMATION)**

FOREST FIRE AS ON 07-05-2016

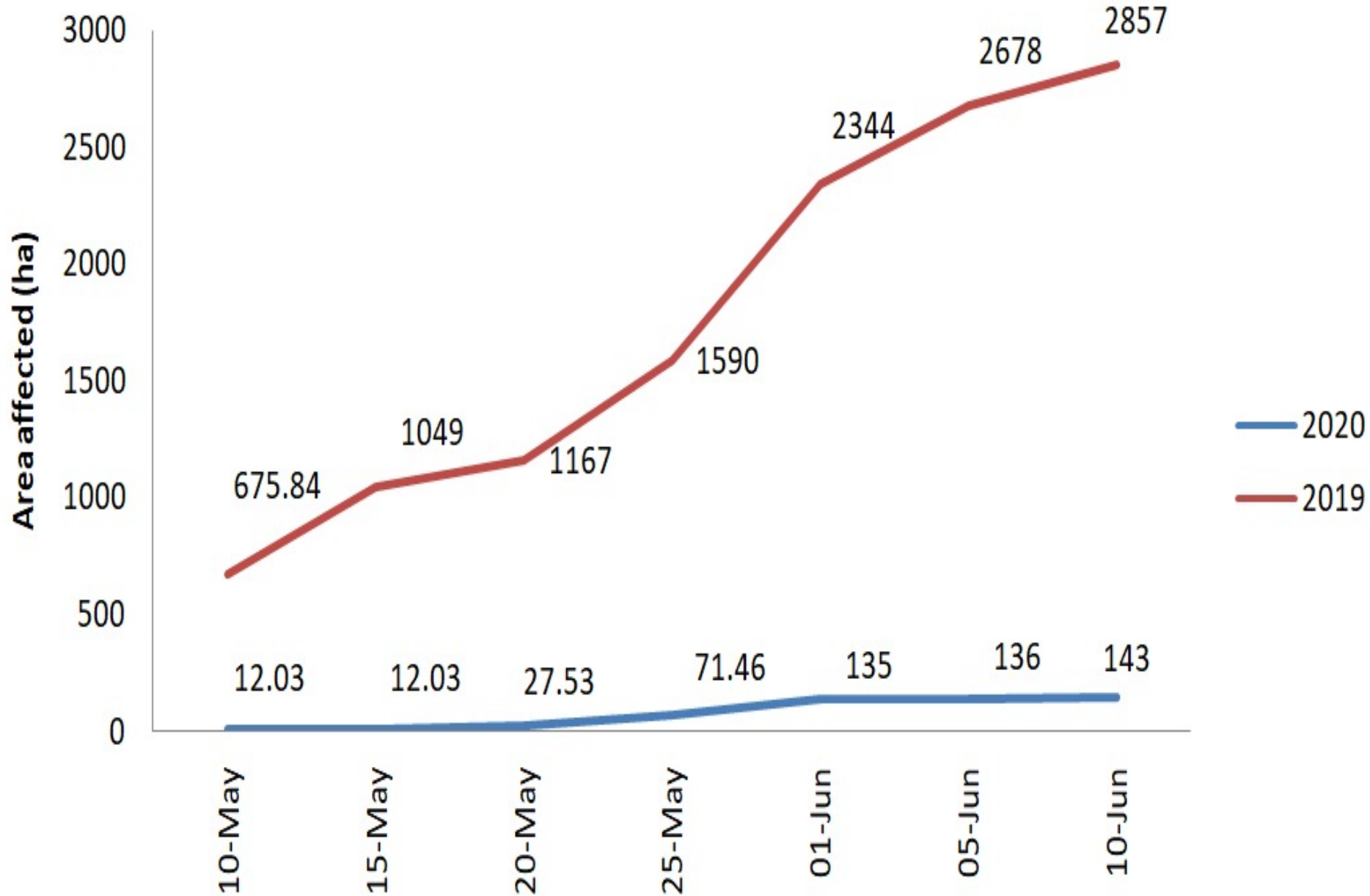
-->NO FOREST FIRE POINT

# Forest Fire Trend Graph till 31-05-2018

## No. of Incidents



# 2019 vs 2020




# Forest Fire Management Strategy/ SOP-

## E. Daily and Extended Weather Forecast

➤ Nodal officer receives weather forecast from IMD through email and the same is disseminated through social media (WhatsApp), SMS and email. Weather forecasting is also linked with the official website of the forest department.

भारत सरकार  
पृथ्वी विज्ञान मंत्रालय  
भारत मौसम विज्ञान विभाग  
मौसम विज्ञान केन्द्र, देहरादून



Government of India  
Ministry of Earth sciences  
India Meteorological Department  
Meteorological Centre, Dehra Dun

**ई-मेल/फैक्स सन्देश दिनांक 07-05-2016 (13:00 IST)**  
**मौसम विज्ञान केन्द्र देहरादून द्वारा उत्तराखण्ड राज्य के लिए जारी मौसम पूर्वानुमान**  
**Weather Forecast for Uttarakhand for next five days.**  
**(Up to 08:30 hours IST of 12<sup>th</sup> May, 2016)**

**07.05.2016:** Mainly clear to generally cloudy sky. Very light to light rain/thunderstorm likely to occur at isolated places especially in Uttarkashi, Chamoli, Rudraprayag and Pithoragarh districts of Uttarakhand.

**08.05.2016:** Mainly clear to generally cloudy sky. Very light to light rain/thunderstorm likely to occur at isolated places especially in Uttarkashi, Chamoli, Rudraprayag and Pithoragarh districts of Uttarakhand.

**09.05.2016:** Generally cloudy sky. Very light to light rain/thunderstorm likely to occur at a few places in Uttarakhand.

**10.05.2016:** Generally cloudy sky. Very light to moderate rain/thunderstorm likely to occur at a few places in Uttarakhand.

**11.05.2016:** Generally cloudy sky. Very light to moderate rain/thunderstorm very likely to occur at many places in Uttarakhand.

**WARNING**  
**NIL.**

**Outlook for next two days**  
**(From 08:30 hours IST of 12<sup>th</sup> May, 2016 to 08:30 hours IST of 14<sup>th</sup> May, 2016)**  
No large change.

(बिक्रम सिंह)  
वैज्ञानिक-ई/निदेशक, मौसम विज्ञान केन्द्र, देहरादून

Forecast and Warning for a particular day is valid from 0830 hours IST of day till 0830 hours IST of next day.  
Legends: (As per the new guidelines w.e.f January 1, 2016 )

<b>Unlikely</b> = probability of occurrence up to 25%	<b>Likely</b> = probability of occurrence between 26 & 50%	
<b>Very likely</b> = probability of occurrence between 51 & 75%	<b>Most likely</b> = probability of occurrence above 75%	
<b>Very light rain:</b> Trace - 2.4 mm	<b>Light rain:</b> 2.5- 15.5 mm	<b>Moderate rain:</b> 15.6 – 64.4 mm
<b>Heavy rain:</b> 64.5- 115.5 mm	<b>Very heavy rain:</b> 115.6- 204.4 mm	<b>Extremely heavy:</b> > 204.4 mm

- ❖ Heavy snow: 64.5 – 115.5 cm (in depth) & Very heavy snow: 115.6 – 204.4 cm (in depth). (As per the new guidelines w.e.f January 1, 2016).
- ❖ Daily district level forecast of all 13 districts is being issued separately.
- ❖ Isolated places: Less than or equal to 25% area. Few places: 26%- 50% area.
- ❖ Many places: 51% - 75% area. Most places: 76% - 100% area.

WARNING (TAKE ACTION)	WATCH(BE UPDATED)
ALERT(BE PREPARED)	NO WARNING (NO ACTION)

Data Source: IMD



मौसम विज्ञान केंद्र, देहरादून द्वारा जारी ई-मेल/फैक्स सन्देश दिनांक 10.06.2020 (17:30 IST)

दिनांक/Date	उत्तराखंड राज्य के लिए पांच दिन का मौसम पूर्वानुमान	Five Days Weather Forecast for Uttarakhand
10.06.2020	आसमान मुख्यतः साफ रहने से लेकर आंशिक रूप से बादल छाये रहेंगे   उत्तराखंड के पर्वतीय क्षेत्रों में कहीं-कहीं विशेषकर उत्तरकाशी, रुद्रप्रयाग, चमोली तथा पिथौरागढ़ जनपदों में हल्की से मध्यम वर्षा/गर्जन के साथ वर्षा होने की संभावना   राज्य के अन्य स्थानों में मौसम शुष्क रहेगा	Mainly clear to partly cloudy sky. Light to moderate rainfall/thunderstorm likely to occur at isolated places in hills especially Uttarkashi, Rudraprayag, Chamoli and Pithoragarh districts of Uttarakhand. Dry weather likely to prevail in rest of the state.
11.06.2020	आसमान में आंशिक रूप से लेकर आमतौर पर बादल छाए रहेंगे   उत्तराखंड में कहीं-कहीं हल्की से मध्यम वर्षा/गर्जन के साथ वर्षा होने की संभावना	Partly to generally cloudy sky. Light to moderate rainfall/thunderstorm likely to occur at isolated places in Uttarakhand.
12.06.2020	आसमान में आंशिक रूप से लेकर आमतौर पर बादल छाए रहेंगे   उत्तराखंड में कुमाऊं क्षेत्र के कुछ स्थानों तथा गढ़वाल क्षेत्र में कहीं-कहीं हल्की से मध्यम वर्षा/गर्जन के साथ वर्षा हो सकती है   उत्तराखंड के मैदानी क्षेत्रों में कहीं-कहीं झोंकेदार हवाएं (वायु गति 30-40 किमी/घंटा) चलने की संभावना	Partly to generally cloudy sky. Light to moderate rainfall/thunderstorm likely to occur at a few places of Kumaon region and isolated places of Garhwal region in Uttarakhand. Gusty wind (Wind Speed 30-40 Kmph) likely to occur at isolated places in plains of Uttarakhand.
13.06.2020	आसमान में आंशिक रूप से लेकर आमतौर पर बादल छाए रहेंगे   उत्तराखंड के कुछ स्थानों में हल्की से मध्यम वर्षा/गर्जन के साथ वर्षा हो सकती है   उत्तराखंड के मैदानी क्षेत्रों में कहीं-कहीं झोंकेदार हवाएं (वायु गति 30-40 किमी/घंटा) चलने की संभावना	Partly to generally cloudy sky. Light to moderate rainfall/thunderstorm likely to occur at a few places in Uttarakhand. Gusty wind (Wind Speed 30-40 Kmph) likely to occur at isolated places in plains of Uttarakhand.
14.06.2020	आसमान में आंशिक रूप से लेकर आमतौर पर बादल छाए रहेंगे   उत्तराखंड के कुछ स्थानों में हल्की से मध्यम वर्षा/गर्जन के साथ वर्षा हो सकती है	Partly to generally cloudy sky. Light to moderate rainfall/thunderstorm likely to occur at a few places in Uttarakhand.
15 जून, 2020, 08:30 बजे से 17 जून, 2020, 08:30 बजे तक का मौसम दृष्टिकोण		Weather outlook from 08:30 hours IST of 15 <sup>th</sup> June, 2020 to 08:30 hours IST of 17 <sup>th</sup> June, 2020
वर्षा की तीव्रता में कमी		Decrease in rainfall intensity.
दिनांक/Date	मौसम चेतावनी	WEATHER WARNING
10.06.2020	कुछ नहीं	NIL
11.06.2020	कुछ नहीं	NIL

12.06.2020	<ul style="list-style-type: none"> <li>उत्तराखंड के कुमाऊं क्षेत्र में कहीं-कहीं भारी वर्षा का तीव्र दौर होने की सम्भावना  </li> <li>उत्तराखंड के कुमाऊं क्षेत्र में कहीं-कहीं ओलावृष्टि/आकाशीय बिजली चमकने की सम्भावना  </li> </ul>	<ul style="list-style-type: none"> <li>Heavy rainfall with intense spell likely to occur at isolated places in Kumaon region of Uttarakhand.</li> <li>Hail/lightning likely to occur at isolated places in hills especially Kumaon region of Uttarakhand.</li> </ul>
13.06.2020	<ul style="list-style-type: none"> <li>उत्तराखंड के कुमाऊं क्षेत्र में कहीं-कहीं भारी वर्षा का तीव्र दौर होने की सम्भावना  </li> <li>उत्तराखंड के कुमाऊं क्षेत्र में कहीं-कहीं ओलावृष्टि/आकाशीय बिजली चमकने की सम्भावना  </li> </ul>	<ul style="list-style-type: none"> <li>Heavy rainfall with intense spell likely to occur at isolated places in Kumaon region of Uttarakhand.</li> <li>Hail/lightning likely to occur at isolated places in hills especially Kumaon region of Uttarakhand.</li> </ul>
14.06.2020	<ul style="list-style-type: none"> <li>उत्तराखंड के कुमाऊं क्षेत्र में कहीं-कहीं भारी वर्षा का तीव्र दौर होने की सम्भावना  </li> </ul>	<ul style="list-style-type: none"> <li>Heavy rainfall with intense spell likely to occur at isolated places in Kumaon region of Uttarakhand.</li> </ul>

(बिक्रम सिंह)  
निदेशक/ वैज्ञानिक- 'एफ',  
मौसम विज्ञान केंद्र, देहरादून

Forecast and Warning for a particular day is valid from 0830 hours IST of day till 0830 hours IST of next day

WARNING (TAKE ACTION)	WATCH (BE UPDATED)
ALERT (BE PREPARED)	NO WARNING (NO ACTION)

Legends: (As per the new guidelines w.e.f January 1, 2016)		
Unlikely = probability of occurrence up to 25%	Likely = probability of occurrence between 26 & 50%	
Very likely = probability of occurrence between 51 & 75%	Most likely = probability of occurrence above 75%	
Very light rain: Trace - 2.4 mm	Light rain: 2.5 - 15.5 mm	Moderate rain: 15.6 - 64.4 mm
Heavy rain: 64.5 - 115.5 mm	Very heavy rain: 115.6 - 204.4 mm	Extremely heavy: > 204.4 mm

- ❖ Heavy snow: 64.5 - 115.5 cm (in depth) & Very heavy snow: 115.6 - 204.4 cm (in depth). (As per the new guidelines w.e.f January 1, 2016).
- ❖ Daily district level forecast of all 13 districts is being issued separately.
- ❖ Isolated places: Less than or equal to 25% area. Few places: 26% - 50% area.
- ❖ Many places: 51% - 75% area. Most places: 76% - 100% area.



# UTTARAKHAND FOREST FIRE BULLETIN

Issue Number and Date- XV/16 June 2020

Timing: 1800 hrs

## #UttarakhandForestFireUpdate

**ZERO Forest Fire incident** detected in the state of Uttarakhand, India.

Till Now, **129 Forest Fire Incidents** have occurred effecting 160.39 hectares of area.

### Summary of Forest Fire Incidents in Uttarakhand:

Sl. No.	Zone	Total Number of Forest Fire incidents	Total Affected area (Hectares)	Number of Forest Fire Crew Stations	Number of Watch Towers	Evaluation of Losses (In Rs.)
1	Kumaon	64	80.88	682	59	225980
2	Garhwal	49	69.85	570	51	174975
3	Wildlife	16	9.66	185	64	8830
	<b>Grand Total</b>	<b>129</b>	<b>160.39</b>	<b>1437</b>	<b>174</b>	<b>409785</b>

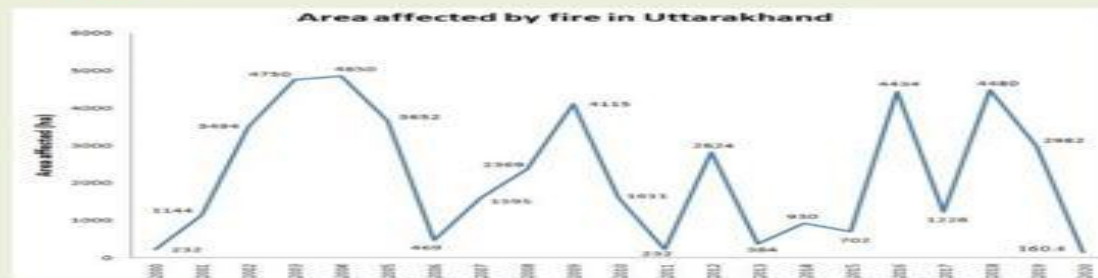
### Human and Animal Casualties due to Forest fire in Uttarakhand during 2020:

Sl. No.	Zone	Human Injury	Human Death	Animal Injury	Animal Death
1	Kumaon	1	2	0	0
2	Garhwal	0	0	0	0
3	Wildlife	0	0	0	0
	<b>Grand Total</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>0</b>

### Summary of Wireless Communication System for Forest Fire Mitigation:

A total of 506 Base sets, 199 Mobile sets, 1631 Hand sets & 35 Repeater stations are operational for 2020 Forest fire season.

Comparative analysis of Forest Fire in the state of Uttarakhand for the fire season 2000 to 2020 is given below:



### WEATHER WARNING:

Dated	WEATHER WARNING
16-06-2020	Intense shower/gusty wind (30-40 KMPH) likely to occur at isolated places in Nainital, Almora and Pithoragarh districts of Uttarakhand.

(Source:- India Meteorological Department)

(For Social Media Circulation)

### SMS Forest Fire Alert System

To get regular SMS of Forest Fire Alerts on your mobile phone, click on this link & register [www.forestfireuk.org](http://www.forestfireuk.org)

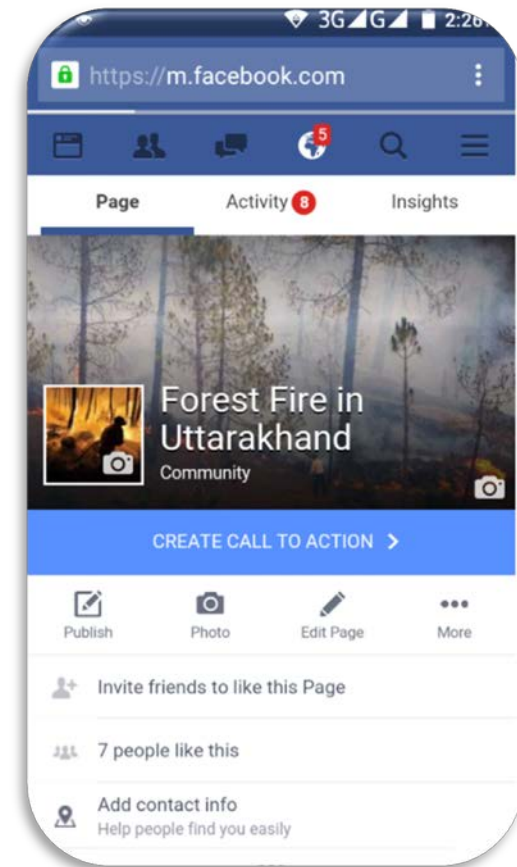
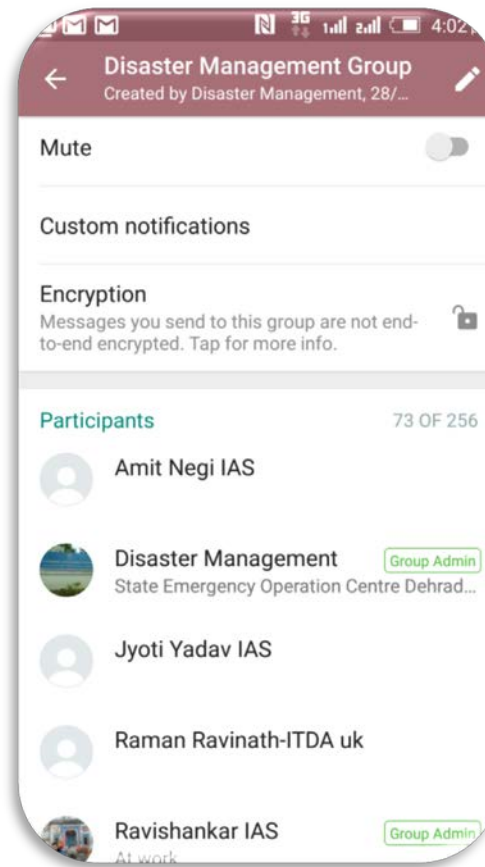
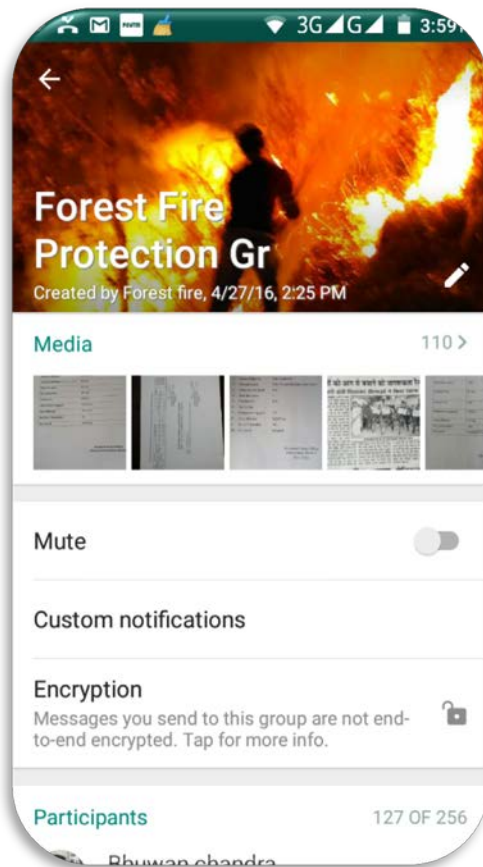
Toll Free Number for Forest Fire Mitigation **18001804141**

For further information, Please Log in to website of Uttarakhand Forest Department [www.forest.uk.gov.in](http://www.forest.uk.gov.in)

# Forest Fire Management Strategy/ SOP-

## F. Extensive Use of Social Media in Forest Fire Management:

➤ Social Media application such as FACEBOOK page and WhatsApp Groups are being used very effectively for communication, information collection & dissemination, coordination, prompt response and reporting back, awareness generation, Emergency Alerts and Severe Weather Updates and forecasts etc.



Thank You...