

## Recent forest fire in Uttarakhand

Uttarakhand has witnessed one of the worst forest fires in the recent times. As expected, majority of fire incidents are reported from the pine forests. Till 30 April 2016, around 20,000 hectare of the forest was engulfed by the fire and 10 people lost their lives<sup>1</sup>. In fact entire system looked helpless in front of the towering inferno in the Uttarakhand jungle. The fire was unprecedented as it virtually swept the entire Uttarakhand and part of Himachal. The disaster mitigation machinery and the forest department should discuss ways and means and evolve methodologies for preventing such incidences of fire in future.

In fact the warning signs of forest fire were given by the sporadic incidence of the fires during February (late winter). Fire during winter is unusual indicating that the litter and biomass in the forest is extremely dry which otherwise happens after April. The reason being this year and also last year, the winter monsoon driven by the westerlies failed. Westerlies contribute around 20% of the total precipitation in Uttarakhand and are vital for sustaining the soil moisture till the onset of monsoon, which in turn indirectly decelerate the fire proliferation. We should have anticipated the consequences of below normal winter precipitation in the region and it is likely that the dried litter in the forest is sitting like a fire bomb. As it happened in the past, this time also we failed miserably and the consequences were severe. For example, we have already lost significant forest and we do not have any estimate what we lost in terms of precious biodiversity, nutrient recycling and most importantly, how the barren slopes are going to respond during the coming monsoon?

A similar forest fire occurred during May 1995 and did we really learn anything out of that tragedy? The 1995 forest fire in Uttarakhand was studied by the Space Applications Center (SAC), Ahmedabad. SAC studied the nature and

extent of damage caused to the forests in Uttarakhand and suggested future course of action to be taken for mitigating such calamity<sup>2</sup>. According to the study, till 27 May 1995, 2115 sq. km area of Uttarakhand was burnt, with maximum forest damage in Almora (694 sq. km), followed by Tehri (684 sq. km) and Pauri (343 sq. km). The fire was initiated in the lower altitude (~600 m) and spread up to an altitude of >2000 m, suggesting the role of upwinds in spreading the fire. The forest that experienced maximum damage was Chir pine, followed by pine-oak mixed forest. According to the overlap area study of two IRS images pertaining to peak fire periods (26–27 May 1995), the fire was initiated in the south east (probably around Pithoragarh) and propagated towards the north west (towards Tehri and Uttarkashi) at the rate 3.2 sq. km per hour. This demonstrated that satellite remote sensing data, if used judiciously, can check the incidences of fire in future. In fact a similar suggestion towards utilizing the satellite remote sensing technique to map, monitor and create a predictive model for forest fire prone-areas of the country was made way back in 1992 (ref. 3). Unfortunately we never paid any serious consideration to such a suggestion even after SAC coming out with a detailed technical report on the 1995 forest fire<sup>2</sup>. This report recommended that high temporal resolution data if monitored during the onset of summer, can help in identifying the precise locations of fire initiation and the direction in which it can spread. This can help in executing immediate intervention by deploying the watersprayers, deciding the locations of fire lines specific information. This year also a similar trend of fire propagation was observed<sup>4</sup>.

On societal front we have discussed many a times, how to mitigate the proliferation of forest fires in Uttarakhand. In one such deliberation organized by Dasholi Gram Swaraj Mandal at Gopeshwar (Uttarakhand), Bhagwati Prasad Maletha,

the then Principal Chief Conservator of Forest (Uttarakhand) admitted that, incidences of forest fires cannot be brought under control by the forest officials only; the local people need to be involved for which Uttarakhand government will soon introduce a concept of Joint Forest Management (JFM)<sup>5</sup>. We do not know what happened to this concept and how far JFM really was in tune with the aspiration of the local inhabitants of Uttarakhand. Had there been an active involvement of the local people, we would not have seen the repeat of 1995 after 20 years. This indicates that we have not really done anything whatsoever, both on scientific and social front, to prevent recurrent incidences of forest fire in Uttarakhand.

1. <http://www.hindustantimes.com/india/wild-fire-engulfs-forests-in-j-k-after-uttarakhand-and-himachal/story-qYZH3Lh7O1tb3bid-AHSNnI.html>
2. Kimothi, M. M. and Jadhav, R. N., Forest fire in Central Himalaya, an assessment through IRS-LISS-I data, Scientific Note, SAC/RSAG/EISD/SN-04/95, 1995, p. 17.
3. Adiga, S. and Radhakrishnan, K., *NNRMS Bull.*, 1992, **16**, 25–26.
4. [https://www.google.co.in/search?q=forest+fire+in+uttarakhand+in+satellite+images&biw=1366&bih=643&source=lnms&tbnm=isch&sa=X&ved=0ahUKewij37vB8r3MA-hUOBo4KHTNLA1IQ\\_AUIBvgC#imgrc=y4HyfmJwFvNMfM%3A](https://www.google.co.in/search?q=forest+fire+in+uttarakhand+in+satellite+images&biw=1366&bih=643&source=lnms&tbnm=isch&sa=X&ved=0ahUKewij37vB8r3MA-hUOBo4KHTNLA1IQ_AUIBvgC#imgrc=y4HyfmJwFvNMfM%3A)
5. Juyal, N., Pant, R. K. and Bhatt, O. The calamity prone central Himalaya: a seminar report. Lok Suchna Evam Sahayata Kendra, DGSM, Gopeshwar, 1998, pp. 5–20.

S. P. SATI<sup>1</sup>\*  
NAVIN JUJAL<sup>2</sup>

<sup>1</sup>HNB Garhwal University,  
Srinagar (Garhwal) 246 174, India  
<sup>2</sup>Physical Research Laboratory,  
Ahmedabad 380 009, India  
\*e-mail: [spsatihnbgu@gmail.com](mailto:spsatihnbgu@gmail.com)