Experiences from Nation-wide adoption of Satellite based Near Real Time Forest fire alerts to improve forest fire management in India

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ABSTRACT – Use of near-real time satellite data from MODIS and SNPP-VIIRS for monitoring forest fires have been part of the Integrated Fire Management Strategy of forest managers to monitor forest fire situation. In India, the Forest Fire Alerts System (FAST) by Forest Survey of India (FSI) has been in vogue for more than 15 years and presently has more than 50,000 users. The registered forest managers receive SMS alerts of forest fires in their jurisdiction as soon as the data is available from the satellite sensors with details of the pixel affected and administrative and management boundary information of the fire-affected location. All information related to the detected forest fires are made available by FSI through their website, which brings in transparency and accountability in fire management. In recent years, the focus has been to reduce the time lag between satellite overpass and receipt of fire alert SMS/email by users which has been achieved largely due to automation of the processes among all the agencies involved. A variety of technologies such as Python scripting to download fire hotspot data, process and create fire alert information, open-source MapServer based geo-portal, WMS and WFS to share data among States, bulk SMS system, MySQL database of fire points, a PHP based web-portal for management of users and other data by States and higher level Forest Management units have been deployed. Additionally, feedback from users help to track combat operations and also enable collection of data on cause of fire, type of fire etc. New features such as generating KMZ files of the locations, providing embedded link to the location through co-ordinates, publishing fire alert locations through geo-portal improved usage of data. Management of fire alert database, user database and their decentralized management are the recent steps that help forest managers to derive maximum benefits from the system. The latest version of the system was introduced in January 2019 wherein a module to automatedly identify and track Large Forest Fire Events was incorporated. With time, the system is widely used by foresters across the country and stands out as the largest forestry application in India.

Keywords: Forest Survey of India (FSI); Near-real time forest fire monitoring; Python automation; MapServer; Tactical firefighting; MODIS; SNPP-VIIRS

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