

# Near Real Time Monitoring of Active Fires Using MODIS Based Web Fire Mapper

## Background:

Forest fires are among the major causes of degradation of forests in India. As per an estimate by the Forest Survey of India (*the State of Forest Report, 1995*) which is based on field inventory, about 53% of India's forest are prone to fire; of this 9% forest area is affected by frequent fire while in 44% have occasional fires. The ecological and socio-economic consequences of forest fires in India include loss of timber, bio-diversity, wildlife habitat, wood and other forest products, damage to water and other natural resources, loss of natural regeneration etc. Bahuguna (2002) estimated that average annual loss due to forest fires in country is about Rs. 440 crore (US\$ 100 millions).

Effective forest fire control measures become difficult in India due to lack of timely information on forest fire occurrence. With the availability of some satellites in recent past, it has now become possible to detect active forest fires in near real time and take remedial measures. MODIS (Moderate Resolution Imaging Spectroradiometer) is one such satellite system launched by the NASA (USA) which detects active forest fires.

FSI has recently (since November 2004) taken initiative in active forest fire detection. It is using spatial information available on a website –the Web Fire Mapper (<http://maps.geog.umd.edu>) which displays active fire locations based on MODIS Rapid Response System- a collaboration between NASA and University of Maryland, USA. The coordinates of active forest fire locations from these sites are projected on the forest cover map of India to select active fire locations within forest cover. The information is then disseminated through fax/e-mail to the concerned State Forest Department for confirmation as well as remedial measures.

## Methodology:

The methodology involves following steps (Fig. 37):

### 1. Acquisition of Data from the website ([www.maps.geog.umd.edu](http://www.maps.geog.umd.edu)):

The attribute information of active forest fire is collected from the website (Web Fire Mapper). Main attributes include geo-coordinates, temperature, confidence level etc.

### 2. Processing of the point Data

The points taken from the website are saved in the excel sheets. The points showing zero confidence limit are removed from the database and then converted into text (.txt) file. The txt file is converted into ASCII (American

Standard Code for Information Interchange) format for further conversion into the arc coverage (point coverage) using Erdas Imagine 8.7 software.

### **3. Geometric correction**

The point coverage so obtained is then geo-referenced into Geographic Lat\Long projection system.

### **4. Joining of Attributes**

The points are joined with other attributes such as state, district, and SOI toposheet number using Arc Info 8.2 Software. These points are overlaid on the forest cover map prepared by FSI. Points, which are not falling over the forested region, are removed and points that are falling on the forest are retained for further processing.

### **5. Dissemination of information**

Details of the points falling within the forest cover like date of occurrence, geo-coordinates, state, district, and SOI toposheet no. are transferred to the excel sheet. The information so generated is disseminated to the concerned States through FAX/e-mail for taking remedial measures.

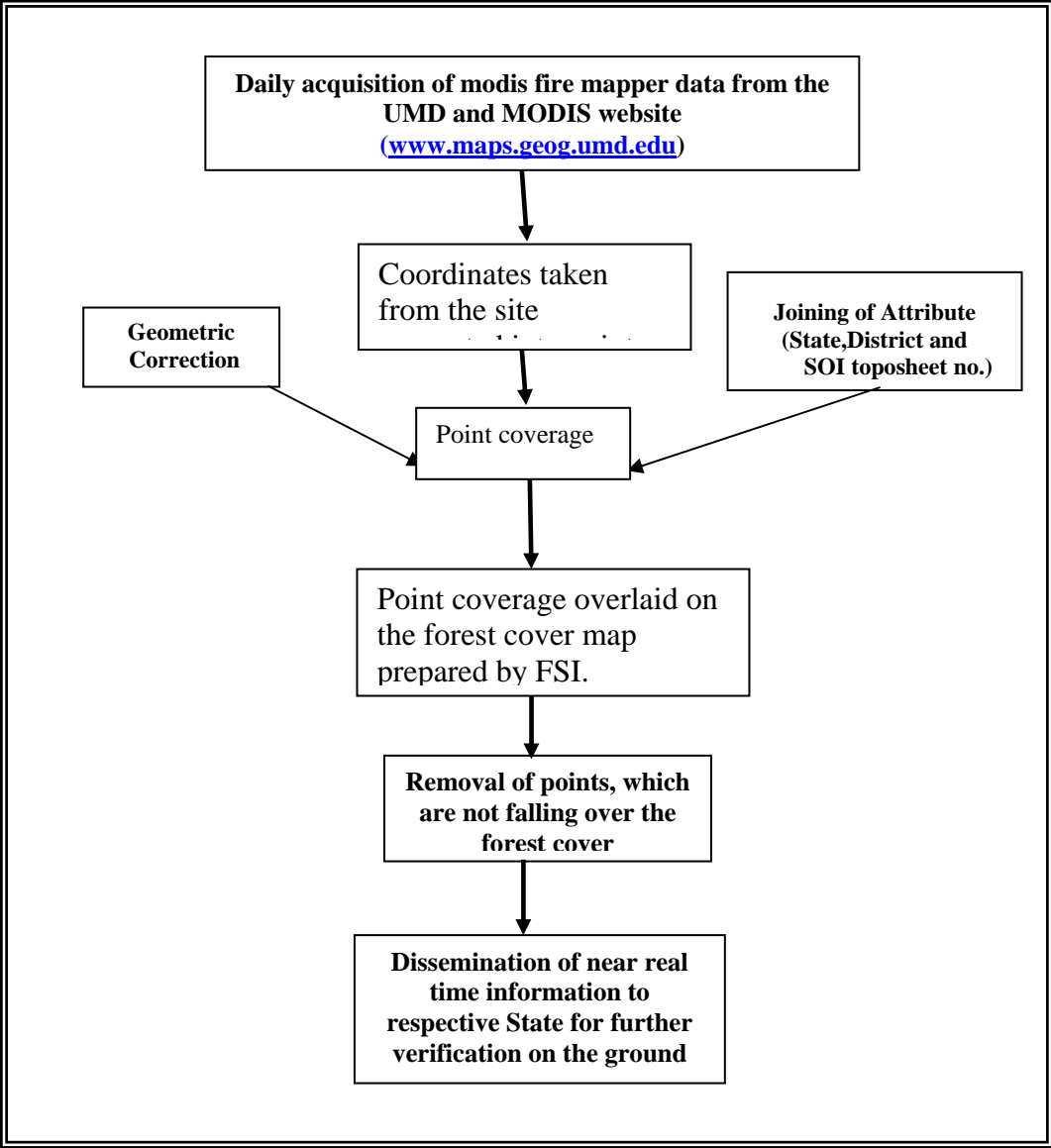


Fig. 37: Methodology for near real time monitoring of forest fire.