

## Forest Fire Occurrence Detected by NOAA Near Yakutsk, Eastern Siberia (Extended Abstract)

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*Forest Fire Occurrence Detected by NOAA Near Yakutsk,  
Eastern Sibreia (Extended Abstract)*

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Recently numbers of forest and wild fires tend to increase in eastern Siberia. It is one of extraordinary summer season in 2002 as lots of fire occurred. Present authors developed new algorism for detection of forest fire and tendency of fire occurrence was correlated to local weather condition. As to detect fire occurrence on the ground, NOAA AVHRR image data were used in this study. The fire detection algorithm consists of two stages: The first selects candidate pixels which could potentially be fires and the second confirms by human eyes.

A pixel is selected as a potential fire if:

$$Tch3 > 316 \text{ K} \quad (1)$$

and

$$Tch3 - Tch4 > 10 \text{ K} \quad (2)$$

and

$$Tch4 > 250 \text{ K} \quad (3)$$

Where, Tch 3 and Tch 4 are AVHRR brightness temperatures in channel 3 and 4 respectively. The choice of thresholds used in these tests was driven by our experience.

Confirms by human eyes.

The second stage confirms that the potential fire selected in the first stage is definitely a fire. For each potential fire, this decision made in light of some knowledge of the potential fire pixel and its neighbours. Indeed, if a long beam smoke appears with potential fire, this potential fire is selected as fire.

The one of detected results is shown in Fig. 1. Daily occurrences of fire were plotted in Fig. 2. Accumulated area of total burned was obtained as 14,300 km<sup>2</sup> over one million km<sup>2</sup>, which is larger by twice than in last year. The causes of high fire occurrence in this summer are summarized as follows;

Low summer precipitations

Low snow accumulation in winter

Low water contents in soil

Prevailing southern wind in summer.

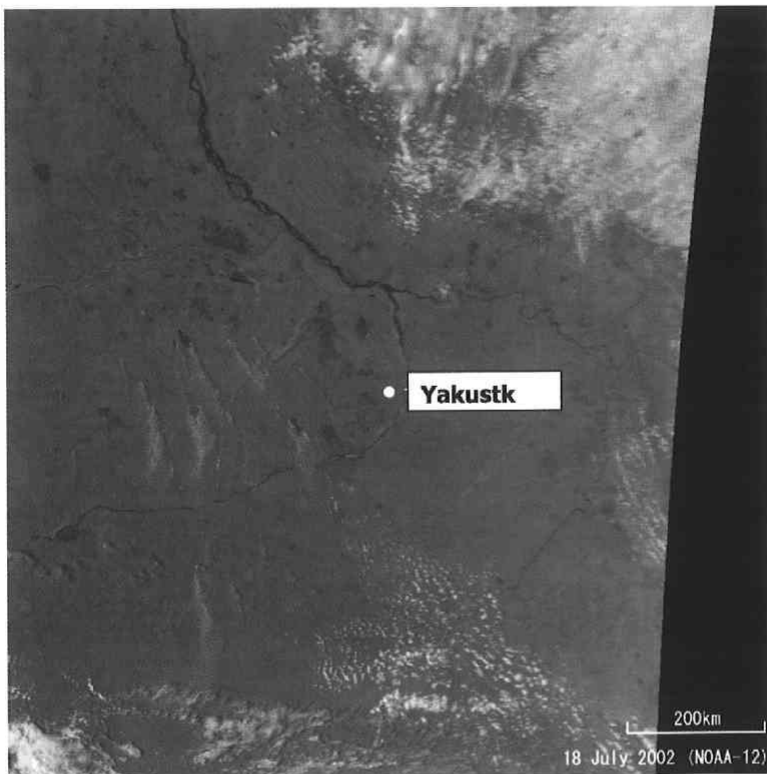


Fig. 1. Detected Forest Fire on 18th July 2002

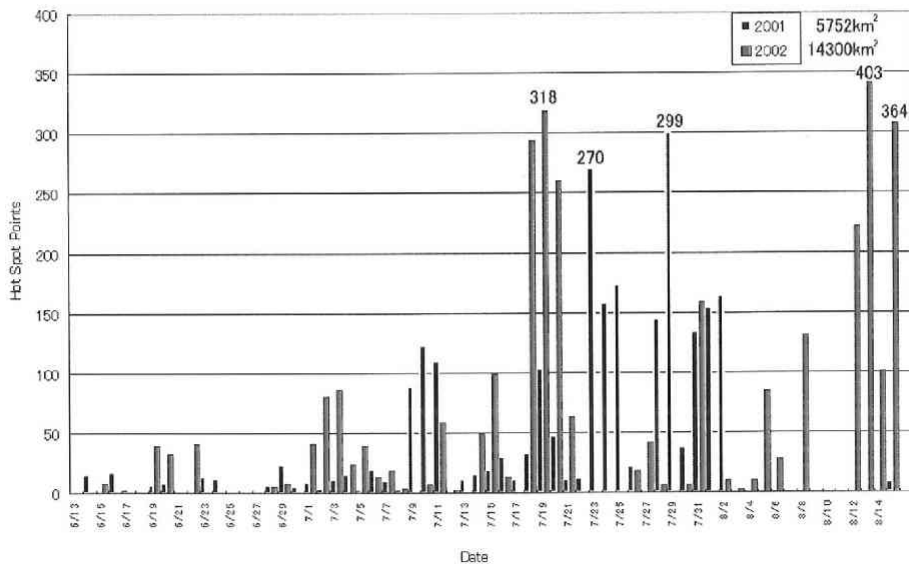


Fig. 2. Detected Fire points in summer season 2002