

## Recent Large Forest and Tundra Fires in Alaska

HAYASAKA, Hiroshi<sup>1\*</sup>

<sup>1</sup>Graduate School of Hokkaido University

Around 120,000 lightning flashes a year, or 3 times more than average, started around 300 fires in each year of 2004, 2005 and 2007 in Alaska. But each burnt area of these three years differed considerably. Burnt areas in 2004 and 2005 were the largest and third largest burnt area of last 55 years (1956-2010) respectively. But burnt area in 2007 was a little bit smaller than the average even though one largest tundra fire occurred. To explain backgrounds of two large burnt areas in 2004 and 2005, and one small burnt area in 2007, various fire characteristics were considered. Firstly, various fire characteristics such as fire distribution, fire size, fire duration, ignition by lightning, fatal fire day, detected date of fire, and number of live fires, were extracted from fire data by NASA and AFS (Alaska Fire Service). Secondly, an effect of weather condition on lightning and fire activity was examined by comparing hotspot data with daily precipitation, and with air temperature.

Comprehensive understanding for active forest fire occurrences in active lightning years in Alaska were made based on various fire characteristics with the help of statistics. Finally, various fire characteristics used in this paper cleared that after active lightning ignited whole Alaska forest in June and July, most large fires in 2004 and 2005 started and lasted until August. Number of daily live fires in each year reached 100 and many of them lasted until September except 2007. As large number of live fires, more than 80, in 2004 and 2005 could become active under occurrence of drought and high air temperature condition, very large burnt area in 2004 was achieved. In 2005, nevertheless continuous rainfall started from June, large burnt area was also made by a very active forest fire period occurred in August. On the contrarily, burnt area in 2007 was not so large due to lack of lightning occurrence in June, continuous rainfall from the top of June, and small number of live fires, less than 60.

Keywords: live fire, fire duration, hotspot, lightning, drought, precipitation