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# Weather Conditions for Large Scale Forest Fire Occurrence in Alaska

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Under a rapid climate change in recent years, a frequent occurrence tendency of a large-scale forest fire is seen in Alaska. Behind this tendency, it is thought that there is an influence of the increased number of lightning flashes under the global warming trend. In the present study, the fire data from 1956 and the thunder data from about 2000 provided by Alaska fire service (AFS) were analyzed, the occurrence characteristic of a fire of Alaska was clarified, and then the weather condition for large-scale fire occurrence was discussed.

Although Alaska is located at around 60 degree north in latitude, maximum air temperature in summer exceeds 30 degree C. and lightning occurs. There is a day when number of lightning flashes exceeds 10,000 or more in a day and a fire in the boreal forest caused by lightning could occur. Actually, the area of 26,700km2 burnt in the most disastrous fire year for Alaska in 2004 due to large-scale lightning caused fires. The nine large-scale fires that exceed burnt area of 1,000 km2 occurred under a record-high temperature and a strong drought.

Total burn area in 2004 was the largest since record-keeping began in Alaska in 1956. Combined with an additional 19,000km2 burned in 2005, the area accounted for 10% of Alaska’s boreal forests in just two years.

To clarify weather condition of active fire year, past fires during about half a century from 1956 to 2012 were analyzed. The number of active fire years that exceed burnt area of 5,000km2 was 11 years in above-mentioned 2004, 2005, etc. It became clear from the fire occurrence tendency of these years that the large-scale fire has mainly started from June in Alaska. In addition, other conditions between fire and weather condition of 11 large-scale years were examined in detail.

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