

# Weather Conditions During Large-Scale Widespread Forest Fires in Siberia: Conditions in Southern Sakha

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In this vast Russian boreal forest, forest fires occur every year in various places. By analyzing Moderate Resolution Imaging Spectroradiometer (MODIS) hotspot data for more than 10 years, frequent fire regions in the Russian Forest are gradually becoming evident. In this report, we show the results of analyzing weather conditions of large forest fires in the boreal forest of Southern Sakha.

Large-scale forest fires depend on weather conditions after the occurrence of a fire. The authors have already clarified and reported synoptic scale weather conditions for recent large-scale fires in Alaska by analyzing MODIS hotspot data from 2003 to 2015. In Alaska, the top four fire periods occurred under similar unique high-pressure fire weather conditions related to Rossby wave breaking (RWB). Following the ignition of wildfires, fire weather conditions related to RWB events typically result in two hotspot peaks occurring before and after high-pressure systems move from south to north across Alaska. A ridge in the Gulf of Alaska resulted in southwesterly wind during the first hotspot peak. After the high-pressure system moved north under RWB conditions, the Beaufort Sea High developed and resulted in relatively strong easterly wind in Interior Alaska and a second (largest) hotspot peak during each fire period. In addition to these weather conditions, low-pressure-related fire weather conditions occurring under cyclogenesis in the Arctic also resulted in high fire activity under southwesterly wind with a single large hotspot peak. In boreal forest of Southern Sakha, large-scale forest fires occurred in 2002 and 2012. As a result of examining the weather conditions of four hotspot peaks in July and August of both years, two patterns of high-pressure and low pressure were also confirmed like in Alaska. In the high-pressure type, ridge was formed north of Yakutsk. In the low-pressure type, it became clear that low-pressure system in the Arctic Ocean played important role.

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