



## **Comparison of time series NDVI between two different seasonal forest fires in Daxing'anling region, China**

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The Normalized Difference Vegetation Index (NDVI) changes with the variation in the chlorophyll content and the intracellular spaces in spongy mesophyll of plant leaves. Some previous studies indicate that NDVI would drop sharply during fire occurrence and recover in a few years after fire. Obviously, it can be used as an assistant tool for detecting fire, mapping burned area and monitoring vegetation recovery. The aim of this study was to compare the change of NDVI values during fire occurrence and after fire between two forest fires that happened in different seasons. The MYD09Q1 (8 days composite product) and MYD13Q1 (16 days composite product) data were taken into consideration in this study.

Investigations are conducted in two fires which happened in Daxing'anling region located in northeastern China in different seasons. The first fire happened on April 27, 2009 and lasted for several days (spring fire). The second fire happened on June 28, 2010 (summer fire). The NDVI time series values of fire-affected pixels of each fire were extracted from MYD09Q1 and MYD13Q1 respectively. Then the periodic oscillation was removed from the NDVI time series data. The results show that 1) the NDVI time series values of fire affected pixels in spring fire have a slight decrease whereas the NDVI time series values of summer fire decreased sharply during the fire occurrence; 2) the NDVI time series values of spring fire recovered rapidly in a few month (the maximum of NDVI in one year recovered to the same level with that of before fire) whereas that of the summer fire didn't recover in a few years after fire. The results of these two different seasonal fires are obviously different. The reason of the significant difference may be that the vegetations are in different status in different seasons. In summary, the NDVI values has difference among before fire, fire occurrence and after fire, but the season in which the fires happen should be taken into account as a factor in future studies in this region.

**Key words:** NDVI, forest fire, MODIS, time series analysis