Satellite assessment of post-fire forest regeneration in the Zabaikal region

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Fires are one of the most significant impacts on forests in Russia. Each year an area of several million hectares is exposed to the forest fires, with a significant increase in the burned area in certain years. In several regions of Russia, especially in the forests of southern Siberia an increase in fire frequency and the duration of the fire season is observed. The forests of Zabaikal region are among the most fire disturbed areas in Russia.
In this study we used MODIS 500-m surface reflectance products (MCD43A4) and 1-km active fire product (MOD14A1) over 2000 –2015 to monitor fire disturbed areas in south-west part of Zabaikal region. Joint analysis of vegetation indices (shortwave vegetation index –SWVI) derived from MODIS data and materials of in-situ research allowed us to distinguish areas with successful and poor forest regeneration on fire disturbed territories. The linear trend of the SWVI after the fire event was used to assess the state of forest regeneration. The area with poor regeneration was estimated to be more than 900 thousand hectares. Large areas of the Zabaikal region considered in this were exposed to repeated fires. An analysis of vegetation indices dynamics showed that areas affected by fires 2 times or more during the study period often experienced forest regeneration failure.
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