

# **Spatio-temporal Variability of Lightning Activity and Characteristics of Wildfires in different natural zones of Western Siberia over the period of 2016-2021**

---

**Kharyutkina E.V., Moraru E.I., Pustovalov K.N.**

Institute of Monitoring of Climatic and Ecological Systems of the Siberian Branch of the Russian Academy of Sciences, Tomsk, Russia

e-mail: kh\_ev@mail2000.ru

In the framework of the study the analysis of the spatial and temporal variability of the distribution of fires and lightning activity for different natural zones of Western Siberia (50-70 N and 60-90 E) is carried out for March-October 2016-2021.

Information on lightning discharges are obtained from the Worldwide Lightning Location Network (WWLLN), and on the location of fires and areas of forest fires - from the Fire Information for Resource Management System (FIRMS)). The territory of Western Siberia is divided into several natural zones, in accordance with the prevailing type of vegetation (MODIS Land Cover images).

It was revealed that the greatest number of fires is observed in the central part of Western Siberia, while the fires and areas of lightning activity is most often coincide near the Gulf of Ob, near Khanty-Mansiysk, Kemerovo and in the Altai Territory. In the central part of Western Siberia, the greatest similarity is observed almost every year of the period of under study.

Moreover, lightning here is much more intense than in other parts of the region. The results of the study make it possible to identify areas with the greatest risk of fires as a result of lightning. At the same time, in the future, in this comparison, it is worth to take into consideration other climatic parameters, such as atmospheric precipitation, air and soil temperature and humidity characteristics. This is important for a comprehensive analysis of the conditions leading to the formation of "dry" thunderstorms, as well as for developing a methodology for assessing fire danger in various natural zones of the Siberian region, which will make it possible to take timely measures to adapt to changing natural environmental conditions.

This research is supported by Russian Science Foundation (RSF), project № 22-27-00494, <https://www.rscf.ru/en/27-00494>.