

Early Fire Detection Methods: Video Monitoring

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Wildfires are not only the global natural disaster but one of the most important environmental problems in Russia. A forest burnt area is often several times more than the cuttings total area and the consequences affect the ecosystem in hundreds of years after the forest fire. Moreover, the wild-fire fighting problem is the sharpest social-economic problem. As a result of wildfires, huge volumes of carbon dioxide get emitted to the atmosphere every year, valuable plant and species are gone, production goods are destroyed as well as buildings and installations, cultural-historical monuments could be damaged, transport systems functioning rhythm is broken, and above all, people can be seriously injured or even die. Statistics of wildfires all over the world shows that their number and area are increasing annually.

According to this, one of the main tasks of forest fire management is operative management of forest fire fighting. Video monitoring is one of the methods of early fires detection, and the using of mathematical algorithms for this method is being studying in the article. The approximate algorithm of optimal positioning of video cameras on cell towers is developed for effective work of video monitoring system of early fire detection. The implementation of this algorithm in one of the Russian administrative districts has revealed the importance of multi-criteria optimization task solving.

Keywords: forest fires, video monitoring, early fire detection system.