

Examining Service Area of Fire Stations in Forest Fire with Network Analysis

Yasemin Ozkan, Aziz Sisman and Ridvan Ertugrul Yildirim (Turkey)

Key words: Risk management; FOREST FIRE; FIRE STATIONS; RESPONSE TIME; GEOGRAPHIC INFORMATION SYSTEMS

SUMMARY

Forests which are our primary recyclable sources must effectively be protected so as to meet the needs of current and next generations. As in the whole world, in Turkey, the main factor endangering the continuity of forests is forest fires. Forest fires are not only ecologically but also economically dangerous and environmental problems mostly threatening human life.

□ Fight against forest fires has to safely be carried out. The most significant stage of fight against forest fires is risk management. Determining the precautions to take in pre and post-fires beforehand provides successful results with less casualties in fight against forest fires. Identifying and classifying the areas which are sensitive to fire is important for pre-fire plans. Former statistics on this kind of area have to be assessed with the factors causing and spreading fires. These factors may be sorted as social pressure of area leading from human being, road condition, population, and topographical situation, meteorological features of the area and qualities and quantities of inflammable matters.

□ In order to early and effectively fight against forest fires, fire fighters have to arrive at the area on fire in critical time. The processes of taking emergency call, processing it and moving to scene of fire in critical time might be decreased to the most ideal periods through a successful fire management. However, the most crucial part of critical time is arrival time. Arrival time is affected by several factors which cannot be controlled. The most important one of these factors is the location of station and potential fire area. Additionally, traffic jam, average speed, habits of driver, situation of road network, time of the day, and the season may be the factors affecting the length of time of fighting fire.

□ Being able to successful in firefighting is possible thanks to taking necessary precautions properly

Examining Service Area of Fire Stations in Forest Fire with Network Analysis (8557)
Yasemin Ozkan, Aziz Sisman and Ridvan Ertugrul Yildirim (Turkey)

FIG Working Week 2017

Surveying the world of tomorrow - From digitalisation to augmented reality
Helsinki, Finland, May 29–June 2, 2017

at the right time and utilizing the sources effectively and economically. Moreover, developed technologies have to be utilized at every stage of firefighting. In this respect, much disciplined workings are required and Geographic Information Systems (GIS), which is the most significant part of decision support systems, are used. Due to these technologies, geographical datum are collected from different sources. Via method of analysis of GIS, products to help decisions of fire fighters might be created. Particularly, having a GIS support covering locational data analysis is very important in terms of the continuity of management of sources spreading on a large area.

□ This study was conducted for Atakum town in the province of Samsun. Taking the existing fire statistics and the location of the stations into consideration, the functions of locational analysis of Geographical Information Systems and possible fire areas which may be responded to a fire in 40-

study. In this context, the locations of existing fire stations and the locations of needed fire stations were determined. Accordance with these necessities, taking the existing fire statistics and the location of the stations into consideration, with the functions of locational search and analysis of GIS the areas which are sensitive to fire and, new service fields to be arrived at these areas and their numbers may be identified. Therefore, source use in fires and late intervention to fires might be minimized.