

A Case of Utilizing Results

Attempted wise use of roads by using ETC2.0 probe

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(Key words) ETC2.0, probe information, ITS, disaster

1. Introduction

The Ministry of Land, Infrastructure, Transport and Tourism has been installing roadside units (radio antennas for road-to-vehicle communication) on nationwide expressways and general roads since 2011. Road traffic information and so on is provided to in-vehicle devices supporting ETC2.0 by using these roadside units, and ETC2.0 probe information such as the running history is collected.

Accordingly, at the NILIM, we are conducting research to utilize ETC2.0 probe information to analyze the effect of new service routes and grasp the road conditions when a disaster occurs.

In this article, as an example of how the ETC2.0 probe information was utilized, we will show the analysis results for vehicle traffic paths when roads were closed because of heavy rain from a typhoon, along with a function of the ETC2.0 probe information system to display a traffic record assuming that the system is used during a disaster.

2. Analysis of influence of typhoon on road traffic paths

Because of the heavy rain caused by typhoon No. 12 in August 2014, the route between Kawano JCT and Susaki Higashi IC on the Kochi Expressway was closed for approximately 61 h from August 2nd to August 5th. We analyzed the ETC2.0 probe information and obtained the vehicle traffic paths for the normal and closed times, as shown in Figure 1 and Figure 2, respectively. A comparison and analysis of the data confirmed that national highway Route 194 was used as an alternative to the Kochi Expressway and Route 32 during the heavy rain.



Figure 1 Normal time

Figure 2 When roads were closed

3. Comparison between new and old systems and

discussion of how to utilize system during disaster

The ETC2.0 probe system was updated in February 2015, and a function was added to successively display the traffic records obtained 3 h before on the same day.

The new system can immediately display the traffic record of vehicles 3 h from the time of a disaster (Figure 3). Thus, it is possible to predict where roads are closed because of the disaster.

However, this result is just reference information that shows that vehicles passed a certain place at that time, and we still need to confirm whether there is actual traffic by using another method.

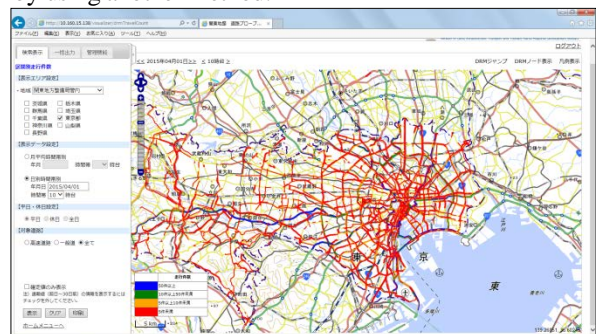


Figure 3 Display of a traffic record

4. Concluding remarks

In this article, we showed that we can grasp vehicle traffic paths during a disaster by using ETC2.0 probe information.

Thus, we can see that it is possible to grasp more detailed road conditions if roadside units are installed on roads where we need to confirm vehicle traffic situations, such as a mountain pass zone, a zone with traffic restriction due to rain, and a zone that is subject to the influence of snow.