

A Practical Fog Detection and Dissipating System for the Preventing Fog Hazards of the Long-Span Bridge

Sanghoon LEE
Senior Researcher/Ph.D.
Korea Institute of Construction
Technology
Goyang-shi, Republic of Korea
sanghoon@kict.re.kr



Sanghoon Lee obtained his M.Sc. and Ph.D. in geographic information & geomatics from the Seoul National University in 2002 and 2010, respectively. He worked as a GIS researcher and consultant for supporting government policy making and technical planning in the past 15 years. His current interests include spatial data mining, ubiquitous GIS and disaster management.

Summary

A transportation development in recent years is quite remarkable. The occurrence and prediction of fog have been significant operational issues for quite some time, particularly with regard to transportation. A poor visibility arose from heavy fog and high vehicle speeds often causes terrible accidents such as Seohae grand bridge's case at 2006 in Korea. Therefore, It is very important to quickly detect a fog occurrence, to notify users, and to practically be able to dissipate fog. In this study, we have proposed intelligent system to be aware of fog-occurrence, to deliver high intensity fog area and to operate fog-dissipating system at the long-span bridge. Well-tailored fog potential index can be provided to the two types of mobile application for the bridge's manager and users. In the case of forecasting high intensity fog through calculated fog potential index, fiber net of far-infrared radiation is unfolded to hinder approaching fog and dissipate fog inside the bridge, which results in increasing more than 300m visibility distance capable to ordinarily drive. We expect this practical system to effectively respond fog hazards in the long span bridge, and have a plan to strengthen forecasting method through probabilistic analysis in the future.

Keywords: *fog disasters; fog-detection; fog-dissipation; awareness system; long-span bridge*

1. Introduction

Fog is a widespread meteorological phenomenon that always has influenced human beings. It may be expensive freaks of nature at the latest as civilization began to drive cars, sail on ships or fly airplanes, due to reduce visibility. Economic and scientific interests encouraged many researchers to detect or dissipate inconvenient fog. Many efforts have been made on attempts to increase the visibility range on the road and airport.

A transportation development in recent years is quite remarkable. The occurrence and prediction of fog have been significant operational issues for quite some time, particularly with regard to transportation. A poor visibility arose from heavy fog and high vehicle speeds often causes terrible accidents such as Seohae grand bridge's case at 2006 in Korea. There have been many automobile accidents due to severe lower driver visibility around world. After Seohae bridge's accidents, the