

論文の内容の要旨

論文題目 Multi-Scopic Evacuation Supporting System against Tsunami Disaster:
With Reference to the Great East Japan Earthquake in 2011
(行政規模に対応した津波災害避難計画支援システムの構築: 東日本
大震災の教訓から)

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The Great East Japan Earthquake of March 11th, 2011 was distinct from the 1995 Kobe earthquake, especially in the causes of deaths. The former was characterized mainly by deaths due to drowning from the tsunami, while the latter was characterized by deaths due to structures that collapsed in the earthquake. The tsunamis also required evacuees to escape distances of over 15km, and the Evacuation Action Plan (EAP) had recommended walking mode as the only official mode of escape. This study analyzed the emergency escape mode and pattern of evacuation based on the questionnaire survey data collected by the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) of Japan with 10,601 evacuees at shelters. The statistical results were derived from strategic designation of evacuation routes using the historical data. To illustrate the actual event during the disaster, I evaluated the situation using measures in terms of starting time of evacuation, evacuation distance and evacuation speed under the given geographical condition, population density, road network and time named EASY-LEE (Evacuation Action Supporting System-Leading Efficient Escaping) and STRONG-LEE (Shteter, Time, ROad-Netork, Geography-Leading Efficient Escaping). The results of such analysis were used as basis of appropriate recommendations for future decisions and political directions, such that the provision of a “needed more shelters” in hazardous prone area, “emergency parking area”, and assurance of “supporting car for evacuation” are some of the noted significant basic priorities which form the fundamental criteria for the evacuation route strategy. Residents living in Fukushima Prefecture did not have the advantage of escaping by walking. Iwate Prefecture had the advantage of car mode, but the EAP does not encourage this.