

【Grant-in-Aid for Scientific Research(S)】

Integrated Disciplines (Complex systems)



Title of Project : Development of Behavioral Disaster Management

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Research Area : Complex systems

Keyword : Crisis management, Social technology for security(evacuation, mass guidance, information distribution, hazard map)

【Purpose and Background of the Research】

In this study, we aim to establish a new discipline called “Behavioral Disaster Management” to improve disaster resilience. By developing a theory of human decision making process based on “bounded rationality” in the context of disaster mitigation, preparedness, response and recovery.

The purpose of this study is to promote multi-disciplinary research for reducing disaster risk and curbing losses through knowledge-based human actions by understanding decision-making in complex and changing risk contexts in general. In particular, this study focuses on the reduction of human casualty due to strong shaking, tsunami, and fire caused by an anticipated “Nankai Trough earthquakes” which anticipate a total of more than 320,000 casualties in the worst case scenario.

【Research Methods】

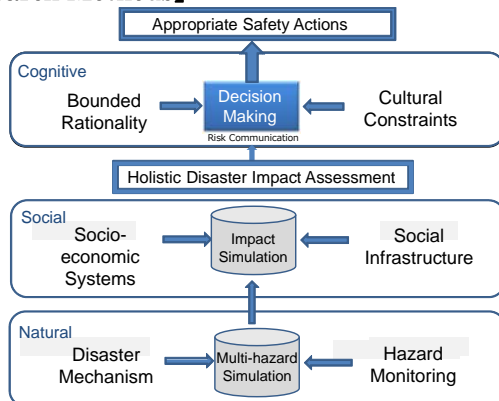


Figure 1 Research paradigm

In this study, five research domains will be set to promote interdisciplinary reach.

- (1) Development of quantitative behavioral and attitudinal measurement system to evaluate whether people may or can take appropriate safety actions;
- (2) Development of theory of decision making based on both bounded rationality and cultural constraints;
- (3) Development of holistic disaster impact

assessment methods to integrate damages to social infrastructure and damages to socio-economic systems:

- (4) Development of multi-hazard simulation method to reflect disaster mechanisms based on continuous hazard monitoring data; and
- (5) Development of information integration methods of achievements from the abovementioned four domains using web-GIS “Masy-up” technologies.

【Expected Research Achievements and Scientific Significance】

A clear example of disaster reduction would be the contribution to decrease the preventable deaths due to the tsunami attack accompanied by anticipated Nankai Trough earthquake. A total of 230,000 people would be killed by tsunami in the worst case scenario. By applying structural mitigation measures, expected loss reduction would be by 85,000. Immediate evacuation, as an example of appropriate human behavior, may reduce casualty by 105,000 or more.

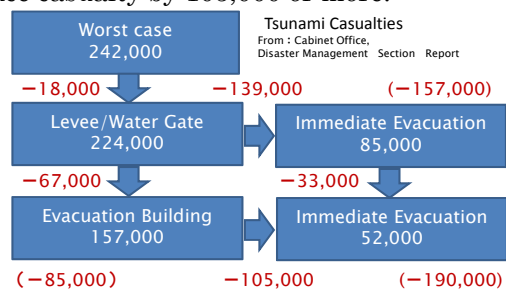


Figure 2, Tsunami Casualty Reduction

【Publications Relevant to the Project】

Kahneman, D. "Thinking, Fast and Slow", Farrar Straus & Giroux, 2011

【Term of Project】 FY2013-2017

【Budget Allocation】 133,900 Thousand Yen

【Homepage Address and Other Contact Information】

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