

国立国会図書館 調査及び立法考査局

Research and Legislative Reference Bureau
National Diet Library

論題 Title	Summary
他言語論題 Title in other language	
著者／所属 Author(s)	
書名 Title of Book	極端気象の予測と防災：科学技術に関する調査プロジェクト報告書 (Forecast and Response to Extreme Weather)
シリーズ Series	調査資料 2018-4 (Research Materials 2018-4)
編集 Editor	国立国会図書館 調査及び立法考査局
発行 Publisher	国立国会図書館
刊行日 Issue Date	2019-3-29
ページ Pages	99-103
ISBN	978-4-87582-837-2
本文の言語 Language	英語 (English)
キーワード keywords	
摘要 Abstract	

- * 掲載論文等は、調査及び立法考査局内において、国政審議に係る有用性、記述の中立性、客観性及び正確性、論旨の明晰（めいせき）性等の観点からの審査を経たものです。
- * 意見にわたる部分は、筆者の個人的見解であることをお断りしておきます。

Science and Technology Research Project 2018

Forecast and Response to Extreme Weather

Published by National Diet Library (NDL), Tokyo
Edited by Research and Legislative Reference Bureau (RLRB), NDL

March 2019

Summary

I Extreme Weather and Forecasting

Extreme Weather and Observation/Prediction Technology

Extreme Weather and Global Warming

II Disaster Prevention

Extreme Weather and Disaster Prevention: How Do We Deal with Nature?

Problems in Implementing Effective Education for Disaster Risk Reduction

Disaster Information Concerning Heavy Rain and Evacuation of Residents

III Recovery and Reconstruction after Disaster

The Law and Measures for Extreme Weather: Legislative System for Disaster Countermeasures and Issues with Disaster Waste

I Extreme Weather and Forecasting

Extreme Weather and Observation/Prediction Technology

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In recent years, extreme weather events have occurred with high frequency. Extreme weather events in Japan are characterized by torrential rain and local hot weather. Torrential rain is difficult to observe and predict and it often causes unexpected disasters. Technical research is being conducted on observation techniques such as weather radar, numerical forecasting, and rain forecasting. It is necessary for all people to gain a better understanding of weather forecasting and disaster prevention on their own initiative.

Extreme Weather and Global Warming

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It is said that global warming increases the frequency of extreme weather events. The global mean surface temperature has risen by 0.85°C during the period from 1880 to 2012. As the world has warmed, an increased frequency of extreme weather events has been observed. The global mean surface temperature is expected to increase by between 2.6°C and 4.8°C by the end of the 21st century under the scenario of comparatively high greenhouse gas emissions. That is expected to be accompanied by an additional increase in the frequency of extreme weather events.

II Disaster Prevention

Extreme Weather and Disaster Prevention: How Do We Deal with Nature?

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Since modern times in Japan, natural disasters have been considered as a matter of science and technology, and the national and local governments focused on improving flood control facilities, which led to a view that disaster prevention is a duty of the government. But studies on flood damage point out that it has amplified the impact of disasters, and the extreme weather in recent years increases the necessity to face these facts. This paper gives some ideas to think about, based on understanding that extreme weather and disasters encourage us to reconsider our attitude toward nature in society and the relationship between community and individuals.

Problems in Implementing Effective Education for Disaster Risk Reduction

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Disaster management in Japan progressed dramatically with the Disaster Countermeasures Basic Act in 1961. Its enactment coincided with a period of relative calm in which no disaster occurred with more than one thousand deaths. However, the Great Hanshin-Awaji Earthquake in 1995 was a major disaster, with more than six thousand victims including related deaths. This earthquake led to recognition of the importance of soft countermeasures in addition to hard countermeasures. In addition, it was also pointed out that there was a limit to countermeasures being taken only by experts, and efforts by citizens on the local level is essential.

With this background, disaster prevention education in Japan came to be conducted more seriously after the Great Hanshin-Awaji Earthquake, but its history is short, at only 25 years. The search for effective education is still underway. The word “education” is often associated with school education, which is the most familiar. Consequently, some efforts follow the assumption that disaster education should be teaching the correct knowledge and skills by adapting the concepts of school education to disaster education. However, when we look into the circumstances surrounding disasters and disaster prevention in Japan, there exist many cases in which the problem is not the lack of knowledge and skills. A perception that only the transfer of knowledge and skills from those who have it (experts) to those who don’t (citizens) is disaster prevention education could be considered to be stagnating the role of disaster prevention.

Accordingly, this paper will make clear the current situation of disasters and disaster prevention in Japan, and what disaster countermeasures should be implemented. Furthermore, direction will be given for disaster prevention education which will enable these disaster countermeasures to be implemented, along with examples of practices. It is vital to consider learning as a process in which experts and citizens can change their mindsets and behaviors together.

Disaster Information Concerning Heavy Rain and Evacuation of Residents

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Emergency warnings are one countermeasure against torrential rainfalls. The Meteorological Agency has advanced efforts to improve emergency warnings for torrential rainfall. It created new warnings to inform residents of especially dangerous situation. They can now grasp which areas are dangerous due to the rainfall in real-time, in more detail than before. One of the biggest problems is that sometimes they hesitate to evacuate despite the emergency warnings and information for evacuation issued by municipalities with reference to emergency warnings.

III Recovery and Reconstruction after Disaster

The Law and Measures for Extreme Weather: Legislative System for Disaster Countermeasures and Issues with Disaster Waste

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Every year, many natural disasters occur in Japan. Even though the Disaster Countermeasures Basic Act exists as the basic law for disasters, legislative acts are independently required every time natural disaster occurs. The main purposes of this article are the following two points. First, introducing legislative systems for disaster countermeasures and the disasters which are the reasons those acts were established. Second, focusing on issues with disaster waste disposal and giving a legislative proposal because disaster waste disposal is a serious problem after tsunami and floods.