

Construction of lecture on high-level disaster education for core human resources at disaster prevention sites.

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1. Introduction

In Shizuoka prefecture, some basic lectures on disaster prevention have established. However the actual scene of disaster prevention demand more technical knowledge. There some core human resources for disaster prevention had been asked to more high level training of disaster prevention.

Therefore, we started “Fuji-no-Kuni Bousai-Fellow lecture course” to meet their expectation.

2. Summary of our lecture

We made two conditions to enter our lecture.

One is students are working in the disaster prevention section of municipality or the company. The other condition is students had studied basic knowledge of disaster prevention.

There are three requirements for completion of our lecture.

- 1) take 10 passes among 22 lectures
- 2) present the result of research at an academic meeting
- 3) join to “Chiiki-bousai Seminar”

All of lecture classes are not only hear speaker, but also must take some practice. For example of practices are calculation of statistical data, or draw figures, simulate a simple physical model, etc.

3. Result and discussion

We sent questionnaire for completed students at later one year to research the effect of our lecture. The result of questionnaire that roughly all students are answer that comes up to there expectation or more expected our lecture. No one answer that disappointment for our lecture.

Add, We sent another questionnaire for completed students and there superiors. We found that there were many good effect around of completed student from the answer of this questionnaire. More detailed results report in meeting.

Keywords: Human resource development, Disaster science, disaster prevention

Campus Precipitation Nowcasting using Digital Signage

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Well-developed thunderclouds cause local downpours. They sometimes bring hourly rainfall amounts that reach 100 mm in areas of a few square kilometers and cause flooding of small rivers, lowland inundation, and underpass damage. The Ministry of Land, Infrastructure, Transport and Tourism deployed 38 X-band polarimetric radars in major city areas to monitor localized heavy rainfalls, each with a spatial resolution of 250m and a temporal resolution of 1 minute. The present paper describes the development of very short range nowcasting of localized heavy rainfalls using X-band polarimetric radar. This nowcasting is based on a correlation method that extrapolates rainfall distribution in a 1.8 km square area with a 250m resolution, every minute, and 10 minutes in advance. To assess the usefulness of this extremely short range rainfall forecast, an on-campus survey of faculty and students has been underway since April 2015 at Kagoshima University. In the experiment, 10 minute nowcasting information is distributed via digital signage, PCs, mobile devices, digital terminals, and cell phones to examine the usefulness of each device. In the signage experiments, additional data such as campus information and messages from past large-scale disasters, showing their mechanisms and countermeasures, are displayed automatically in accordance with a pre-set schedule.

Keywords: nowcasting, precipitation, polarimetric radar, heavy rainfall, thunderstorm

Precise altitude tints map for the intuitive training of tsunami evacuation procedure

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About 18,500 people were killed or became missing by the huge tsunami of the Great East Japan Earthquake. In the victim, despite fled to shelter that was specified by the town office, many cases lost their lives in the shelter or in the route to go there. Considering those affected cases, if they were familiar to the natural terrain, the cases often are considered to be easily survived. However, it was difficult for a general resident to look for suitable place as a shelter and safe route to go there. Therefore it is necessary to develop a tool that help looking for a refuge in the neighborhood and a safe route even for a general inhabitant including a child. We developed a new technique (Precise Altitude Tints Map) that we can treat intuitively for the purpose. The technique consists of two kinds of topographic maps; the red relief image map and altitude tints map. The original altitude data are due to the DEM by Geospatial Information Authority of Japan. In this presentation, we will introduce the method and its application to the real tsunami disaster in Miyagi Prefecture.

Keywords: Tsunami, Disaster prevention education, Precise altitude tints map, Miyagi Prefecture, Great East Japan Earthquake

New Map for Disaster Prevention of Kota-cho, Aichi

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In late years various types of disaster prevention maps were made by the local governments. This kind of maps were made in Kota-cho, Aichi where the Fukozu active fault of the Mikawa earthquake appeared, and these maps were made depending on purpose such as disaster prevention, sightseeing, cultural assets, and so on. However, tourist does not know dangerous places or evacuation areas with a tourist map. It is necessary for the tourist to evacuate at the time of the disaster. Then we tried the making of map which geography information, the disaster information put together on a sightseeing map.

Keywords: Map for Disaster Prevention, Kota,Aichi

On the way to the comprehensive disaster prevention education

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A public session "Education for disaster-prevention and community-restoration" has been held in the JpGU meetings in 2012, 2013, and 2014. The meeting of this year is due to hold "Comprehensive disaster prevention education" as one of the regular sessions. Although the type of this session differs from the previous ones, the goal of our session is the same. The necessity to reconstruct disaster prevention education has been argued by many people after Great East Japan Earthquake (March 11, 2011). For example, one of the advisory committees of the Ministry of Education submitted a report that the contents of disaster prevention education have to be rearranged systematically. However, the educational curriculums shown in the report as examples seem to lead people to have passive behavior to disaster. The comprehensive disaster prevention education includes more subjects than those referred to in the report. In this paper, the author shows a new concept of the disaster prevention education, and suggests the necessity to cultivate more people facing disaster positively.

Keywords: Comprehensive disaster prevention education, Natural disaster, Disaster prevention, Disaster risk reduction

Learning Tsunami Physics by Numerical Simulation(Part 2): A Curriculum of Physical Oceanography Education in High School

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In this study, we have continued our previous study (Niwa et al., 2014) to develop the new curriculum for high school students to learn the physics of tsunami waves. A special feature of this curriculum is that students try to perform numerical simulations to understand the basic behavior and dynamics of tsunami waves. This curriculum is composed of two successive classes of basic physics for second grade high school students (each class is 45 minutes in length). In the first class, we explain the physical characteristics of tsunami waves, the physical laws governing tsunami waves, and the basics of numerical simulation approach. In the second class, every student plays the numerical simulations of tsunami waves by using PC. In the current study, we have conducted questionnaire survey to all the students after each class to investigate how performing numerical simulation improves the understanding of the behavior and dynamics of tsunami waves.

Keywords: Tsunami, Numerical Simulation, High School Physics

Volunteer program of falling down prevention of furniture in cooperation with local residents and its social and educational effects

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1. Introduction

The department of geography and the department of housing studies of Oita University jointly execute the activities for disaster prevention and mitigation by the university students continuously in cooperation with the self-governing body of Fukiura District at Saeki City, Oita Prefecture. The departments researched the consciousness and preparation for disaster prevention and mitigation of the district by the questionnaire for all households in 2013. As a result, they confirmed the realities of its awareness, and also confirmed that there were a lot of households could not accomplish the preparation by themselves. Therefore the both departments jointly planned in 2014 the volunteer program by the university students that fixing the work of furniture in the room for the household that could not practice the disaster prevention and mitigation measures, in consideration of the problem of the district of securing an escape route for many households.

2. Feature of the program

This program is not a mere social contribution activity that the student fixes furniture of the household, such as aged and living alone as mentioned above, but it has several advantages as below.

The first was to have executed it by cooperation with other departments of our university. Unfortunately, there are neither an education nor a research organization related to the disaster prevention and mitigation in our university. This program mobilized the technology and the knowledge that related to this program like the natural disaster, the residential design and the woodworking, etc. by cooperating with other departments.

The second is that the participating student has to be obligated to take the lectures in the university campus before and after the volunteer. The lectures included the contents such as the necessity of the disaster prevention and mitigation activity, the possibility of the natural disaster of Fukiura District and so on by the university staffs and NPO staff outside the university. Therefore, the student widely acquired related knowledge and skills necessary for the furniture fixation in advance.

The third is that each activity for the furniture fixation volunteer was basically executed by the group in a lateral department. The students had their own role in the activity based on their characteristic of each academic field, and they accomplished the activity in cooperation with each other.

The fourth was to receive the local residents' cooperation in the volunteer activity. Each group had one local resident, and they jointly took action in the preparatory research and the furniture fixation work.

3. Social and educational effects of the program

A provision in the region of the natural disaster is one of the major problems of modern Japan regardless of the city region or rural regions. This program was a small practice for our university and the local resident, but it contains an important key concept of as an international research program Future Earth, such as interdisciplinary approach that exceeded the fence in the academic fields of a natural science, the social science, and engineering and so on. And it also includes the concept stakeholder, and this program executed by the university student, the university staff and the local resident.

Questionnaire for the participating student at the start and the end of the program says that the program has improved the knowledge acquisition of natural disaster and the awareness for the natural disaster prevention and mitigation based on the actual region. In the post-program questionnaire, the targeted household mentioned the information about the program to their relatives and neighbors with their gratitude to the student. This program was connected with the durabilities of the awareness and activities of the disaster prevention and mitigation to each stakeholder's.

Keywords: Natural disaster, volunteer, Future earth, stakeholder