

Graduate School of Disaster Prevention Kangwon National University

1Joongang-Ro Samcheok-city, Gangwon-Do, Republic of Korea

<http://college.kangwon.ac.kr/prevention/main.jsp>



Outline

Natural disasters such as heavy rain and flood those caused by unusual changes in the weather happen frequently and these days. Moreover, big fires and explosions in industrialized cities cause extensive damages. It is urgent to cultivate professionals who research about how to predict disasters before it happens and to strengthen safety measures to improve the quality of our lives. Graduate School of Disaster Prevention at Kangwon National University offers master's degree and doctoral degree of fire protection equipment major, disaster prevention major, disaster prevention in urban and environment major, and disaster prevention of mining pollution and ground major.

The purpose of these new programs is for the safety of this country based on the cooperation with school, laboratory, industry, and government. It is to contribute to the development of the country by educating professionals and researchers

- Divisions and Departments

Department of Disaster Prevention Equipment

Department of Disaster Prevention

Department of Urban and Environmental Disaster Prevention

Department of Mining Pollution and Geological Disaster Prevention

Department of Disaster Prevention and Management



Research Achievements and Challenges

✚ Department of Disaster Prevention Equipment

The purpose of this major is to educate professionals who research systematically and scientifically about fire prevention equipment including electrical and mechanical equipment, architectural equipment, explosion prevention installation, and various digitalized disaster prevention systems to take precautions against disasters caused by man in this industrialized society.

- Electrical equipment of fire prevention
- Mechanical equipment of fire prevention
- Architectural equipment of fire prevention
- Explosion prevention installation

✚ Department of Disaster Prevention

The Department of Disaster Prevention aims to train professional human resources with both theory and practices of the prevention of forest fire, firefighting and man-made disasters through systematic teaching methods and practical research activities focused on systematic management about prevention, countermeasure and rehabilitation of forest fire, building fire (an explosion, an collapse, a dangerous good administration and etc.), special case of building fire (ship, tanker, train, laboratory and etc.) and man made disaster.

- Conduct test and of forest fire combustion behavior and spread
- Analysis flame spread pattern by adjusting geographical feature into flatland, simple, etc
- Prediction of forest fire occurrence for adaptation of climate change
- Analysis of fire severity and damage assessment technique
- Analysis of forest fire suppression technique & resources
- Study of forest fire cause determination

✚ Department of Mining Pollution and Geological Disaster Prevention

The development, digging, or construction related to underground resources, undersea resources and underground space can cause disasters and geological interactions (volcano, earthquake, tidal wave, typhoon, landslide, snow-slide, and forest fire). The purpose of this major is to educate professionals who will work for prevention, restoration, and rescue related to these kinds of natural or artificial disasters

✚ Department of Disaster Prevention and Management

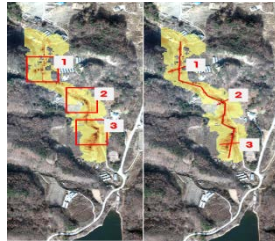
The Department of Disaster Prevention and Management aims to train professional manpower with theory and practice through understanding the characteristics in the occurrence of natural disasters, systematic disaster prevention education and scientific research for social disaster management, i.e. relief of victims, disaster insurance, special disaster area management, and crisis management of national critical infrastructure, and, as well as through technical correspondence towards natural disasters, such as establishment of countermeasures against natural disasters, disaster forecasting and warning, natural disaster damage analysis and recovery, and regional safety diagnosis in order to systematically prepare, cope with, and manage enlarged and diversified disasters and catastrophes.

- Survey and analysis of damaged region by natural disaster
- Research on disaster by debris flow and soil erosion
- Monitoring river disaster
- Disaster numerical modeling and model experiment (river, debris flow)
- Mapping of disasters using GIS(Remote sensing)
- Establishment of damage reduction plan for storm and flood

- Establishment and management of disaster prevention policy Major Achievements
- Survey and analysis of debris flow damage area using LiDAR
- Numerical simulation on debris flow damage area
- Monitoring river disaster
- Mountainous disaster (river, debris flow)
- Establishment of damage reduction plan for storm and flood



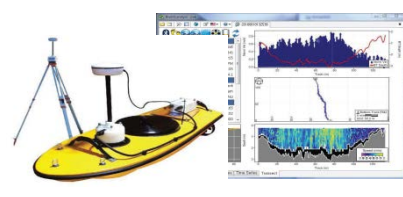
LiDAR measurement



Numerical simulation on debris flow damage area



Debris flow experiment



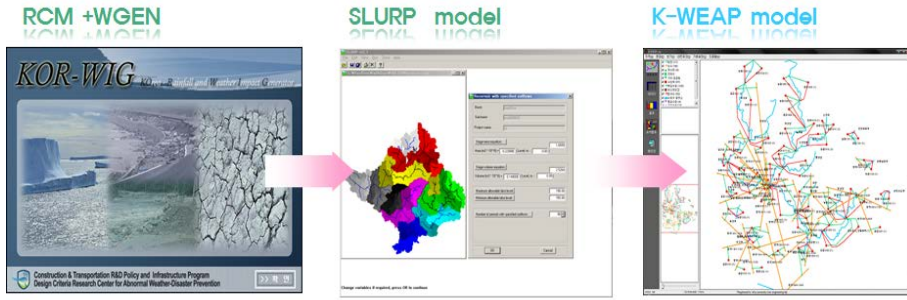
Monitoring river disaster

🚩 Department of Urban and Environmental Disaster Prevention

The development of city and the advent of megalopolis cause enlargement of the constructions and the facilities, and it increases the large-scale accidents by the increase in the use. It also causes environmental pollution and global warming. These affect natural disasters such as a weather accident, typhoon, flood, earthquake and tsunami, etc. And it occurs frequently and its damage scale increases. The students in this Dept. learn how to prevent and to restore the urban and environmental disasters which caused by nature or human.

The educational purpose is to educate professionals who study and research scientifically the theory to the advanced technology of urban and environmental disaster prevention and practice systematically them.

- Urban Engineering (construction, road, railroad, bridge, etc.)
- Urban disaster prevention system technology (GIS, U-city disaster prevention)
- Urban environment disaster prevention system technology
- Urban soil pollution & disaster prevention technology
- Climate Change and Water Resource, Downscaling Technique
- Radar Hydrology and flood forecasting
- Extreme Flood and Vulnerability Assessment
- Disaster (Flood, Debris flow) Damage Function Estimation



Prediction and evaluation of future shortages of water resulting from changes in demand and supply

● “S-RAT is the Grid-based Conceptual Distributed runoff model”

This block contains several related images. At the top left is the S-RAT Ver 1.0 Spatial Runoff Assessment Tool interface, featuring a mouse mascot and a 3D Viewer window with a table of data. To the right are three maps: a DEM (Digital Elevation Model) in green, a Land-use Map in green, and a Soil Map in yellow. Below these is a Hydrograph showing runoff (mm) over time. At the bottom is the F2MAP v.2 interface, titled 'Flash Flood Monitoring and Prediction', which includes a 3D view of a dam and a grid of radar rainfall maps.

< Radar Rainfall and Flash Flood Forecasting Tool >



<Tool for Estimation of Extreme event >