Geophysical Research Abstracts
Vol. 12, EGU2010-8686-1, 2010
EGU General Assembly 2010

Natural hazards education in global environment leaders education programme for designing a low-carbon society

Han Soo Lee, Takao Yamashita, and Akimasa Fujiwara

Graduate School for International Developement and Cooperation, Hiroshima University, Higashi-Hiroshima, Japan (lee.hansoo@gmail.com, +81-82-424-4342)

Global environmental leader (GEL) education programme at graduate school for international development and cooperation (IDEC) in Hiroshima University is an education and training programme for graduate students especially from developing countries in Asian region to build and enhance their ability to become international environmental leaders. Through this programme, they will participate in regular course works and other activities to learn how to cope with the various environment and resource management issues from global to regional scales toward a low-carbon society via multi-disciplinary approaches considering sustainable development and climate change.

Under this GEL programme, there are five different research sub-groups as follows assuming a cause–effect relationship among interacting components of social, economic, and environmental systems; 1) urban system design to prevent global warming, 2) wise use of biomass resources, 3) environmental impact assessment, 4) policy and institutional design, and 5) development of environmental education programs. Candidate students of GEL programme belong to one of the five research sub-groups, perform their researches and participate in many activities under the cross-supervisions from faculty members of different sub-groups.

Under the third research group for environmental impact assessment, we use numerical models named as regional environment simulator (RES) as a tool for research and education for assessing the environmental impacts due to natural hazards. Developed at IDEC, Hiroshima University, RES is a meso-scale numerical model system that can be used for regional simulation of natural disasters and environmental problems caused by water and heat circulation in the atmosphere, hydrosphere, and biosphere. RES has three components: i) atmosphere–surface waves–ocean part, ii) atmosphere–land surface process–hydrologic part, and iii) coastal and estuarine part. Each part is constructed with state-of-the-art public domain numerical models that are combined synchronously by an own-developed model coupler. Therefore, RES can provide detailed insights from various aspects of interaction processes between each component in the earth system. For instance, RES has been used for the study of storm surges and the abnormally high ocean waves caused by typhoons, cyclones, hurricanes, and winter monsoon winds in Asian region; dam lake circulation; air–sea interaction of momentum, heat, and tracer material exchange; heavy rainfall and runoff simulation; estuarine circulation with cohesive sediment transport; and wave overtopping in coastal regions. Most recently, a project on the impact of reduced discharge of freshwater and sediment from the Yangtze River basin on the adjacent East China Sea has been initiated by using the RES.

Under the GEL programme, we found the RES can be an important and useful tool for graduate students not only from science and engineering background but also from social science so as to evaluate their policy and institutional design.