DIGITAL GEOLOGICAL MAP COMPILATION PROJECT IN EAST AND SOUTHEAST ASIA

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ABSTRACT

Geological Survey of Japan, AIST have been conducting project on digital compilation of geoscientific maps in east and Southeast Asia cooperating with CCOP member countries since 1993.

The first product of the projects was the digital geologic map of East and Southeast Asia at a scale of 1:2,000,000. The map was newly compiled by geological surveys and institutes of East and Southeast Asian countries and digitized using GIS software. This was the first trial of GIS application to geologic maps in the most of the countries. The final product was published as a CD-ROM "Digital Geologic Map of East and Southeast Asia 1:2,000,000, Geological Survey of Japan" in 1997.

The second product of the projects was the multi-layered digital data set of the urban areas of East and Southeast Asia. The project members were collected various geoscientific data set of the target cities, digitized and analyzed for the urban planning of the cities. Two types of CD-ROM sets were published for the project. One is data set of .rvc format and a viewer program "TNTatlas". Another is .shp files and a viewer program "Arcexplorer". Both of the CD-ROM sets were available now as Geological Survey publications.

The third data set is preparing now. New coming publication is digital data and a viewer program for the Asian Geological Hazards Map of East and Southeast Asia. The Hazard Map was published in paper in early this year from the Geological Survey of Japan. Now we are trying to produce a CD-ROM set for the digital data and viewer program of the Geological Hazards data set of the East and Southeast Asian region.

1. INTRODUCTION

The Geological Survey of Japan has been conducting various projects on geoscientific data compilation in the Southeast Asian region together with the CCOP countries. The Coordinating Committee for Coastal and Offshore Geoscience Programmes in East and Southeast Asia (CCOP) is an intergovernmental organization, established in 1966. Member

countries are Cambodia, China, Indonesia, Japan, Republic of Korea, Malaysia, Papua New Guinea, the Philippines, Singapore, Thailand and Vietnam, while Cooperating countries are Australia, Belgium, Canada, Denmark, France, Germany, Japan.

The DCGM project was proposed by the Geological Survey of Japan as a CCOP project in 1991. Its main objective is to construct digital multidisciplinary Geoscientific maps of CCOP regions, to transfer the technology to analyze multilayered data sets under the Geographical Information System (GIS), to develop the geoinformation service system for citizens. Phase I project produced a digital geologic map at a scale of 1:2,000,000, and published the data on CD-ROM (Coordinating Committee for Coastal and Offshore Geoscience Programmes in East and Southeast Asia and the Geological Survey of Japan, 1997). Phase II project treated the offshore sediments and mineral & industrial resources of East and Southeast Asia. Phase III collected and digitized multi-layered data sets of large urban areas in East and Southeast Asia.

2. URBAN GEOSCIENTIFIC DATA OF EAST AND SOUTHEAST ASIA

Digital Compilation of Geoscientific Map of East and Southeast Asia, Phase III (DCGM III) Project is one of the projects of the Coordinating Committee for Coastal and Offshore Geoscience Programmes in East and Southeast Asia (CCOP). The DCGM III project was proposed by the Geological Survey of Japan as a CCOP project in 1991. The main objective of the DCGM III project is to construct the digital interdisciplinary geoscientific maps of large urban areas of CCOP regions for preliminary urban planning. The duration of the DCGM Phase III was from 1998 to 2001.

Each national compiler selected one target city for their respective countries, and collected various geoscientific information for the target city. The target cities for DCGM III are Nagoya (Japan), Ulsan (Korea), Guangzhou-Foshan & Dongying (China), Kuala Lumpur (Malaysia), Phnom Penh (Cambodia), Cebu (Philippines), Hanoi (Vietnam), Phuket (Thailand), Bandung (Indonesia), and Port Moresby (Papua New Guinea). Data collected in Phase III include geologic map, hydrogeologic map, basement depth contour map, geohazard map, active fault map, land subsidence map, land slide map, land use map, geomorphologic map, life line map, bore hole data and others. The data collected vary between the target cities.

DCGM III CD-ROM sets can provide answers which all of the geological institutions of the CCOP member countries can consider contribution to the urgent problems in the urban. The final products were published as two CD-ROM sets (DCGM III Working Group, 2001a,b). The products will serve as the first step for CCOP, GSJ and other member countries' institutes

to contribute for better urban environments in Asian countries.

3. EASTERN ASIA GEOLOGIC HAZARDS MAP

Eastern Asia Natural Hazards Mapping Project (EANHMP) was proposed and promoted by the Geological Survey of Japan since 1994, and a contribution to the International Decade for Natural Disaster Reduction (IDNDR). The EANHMP was implemented by each national committee in East and Southeast countries and supported by international organizations, especially Coordinating Committee for Coastal and Offshore Geoscience Programmes in East and Southeast Asia (CCOP) and Commission for the Geological map of the World (CGMW).

This map consists of two sheet (at a scale of 1:10,000,000), namely one is to show mainly the geologic hazards of endodynamic origin such as seismic hazard including Tsunami and volcanic hazard, and another is to show geologic hazards of exodynamic origins partly induced by human activities such as landslide, coastal erosion/deposition etc. with background geology.

Occurrences of geologic hazards and the amount of damages are closely related to the geological background in a given area. Earthquakes are classified by the magnitude, focal depth and numbers of casualties. Most of active volcanoes are distributed along the margins of plates. Therefore, island arc regions are essentially prone areas of volcanic hazard at a small scale. All Quaternary volcanoes, 2 million years old or younger, are plotted as symbols. The shape, size and color of each symbol represent the type of volcanic activity, volume of volcano and rock type. Slope disasters such as landslide, Toppling/Fall, Debris flow / Avalanche, Mud flow / Lahar and Creep etc. give us a lot of serious damage. Large landslides whose volumes are larger than 10^7 m^3 were documented in the common format, however in this small-scale map each landslide is not represented because landslide susceptibility should be shown. Shoreline changes caused by coastal erosion and deposition are not always geological hazards in the strict sense because they are induced by not only natural factors but also various artificial factors especially with big civil works of land development.

4. REFERENCES

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