

## GIS using analyses of the variable landslides in Japan

Hiromitsu Yamagishi<sup>1\*</sup>, Netra Prakash Bahndary<sup>2</sup>, Shoji Doshida<sup>3</sup>

<sup>1</sup>CDMIR, Ehime University, <sup>2</sup>Depart. Civil & Env. Eng., Ehime Univ., <sup>3</sup>NIED

GIS is an useful tool for analyzing and modeling of variable landslides. Recently, many geological and topographical digital data have been provided from several governmental organizations. Therefore, it is becoming more easy to deal using GIS with the digital landslide data, related to the topographical and geological digital data such as 10m\_DEM from Geographical Survey Institute of Japan(GSI), geologic maps from Geological Survey of Japan(Geo\_DB), and variable airphotos from Ministry of Land, Infrastructure, Transport and Tourism (MLITT).

We have using GIS analyzed the landslide data, combined with digital data on geography and geology from several governmental organizations, such as elevation models from Geographical Survey of Institute of Japan (GSI) and geological map from Geological Survey of Japan (Geo\_DB). In particular, we are doing GIS analyses on the heavy rainfall-induced shallow landslides occurring at several places such as 2003 Hidaka, Hokkaido, 2004, Niihama, Ehime, 2004, Izumozaki, Niigata, 2007, Houfu, Yamaguchi. In addition, we have been doing statistical and engineering analyses of the deep-seated old landslide GIS data which are derived from the NIED and Yamagishi, H. (1993), for defining the criteria for the reactivation of such old landslides. Furthermore, we have been making clear how these old landslides are related to the roads, rivers, farms, cultural heritages and historical disasters in Shikoku and Hokkaido.

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