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Early hazard estimation using landform classfication information

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The method of estimation of disaster damage using geo-spatial information is useful to countermeasure against expected disasters as soon as possible. In this study, the author has been trying the fusibility study to expect real disasters using geo-spatial information. Landform classification dataset of Land condition maps are recently published as the vector data format by Geographical Survey Institute. It is easy to analyses combing variable national land data by GIS. In this study, the author analyzed the relationship between landform classification and earthquake damages by combining landform classification polygons and disaster damage distribution by using GIS. On terrace or fluvial fan, housing damages are relatively small and on valley plain or flood plain, coastal plain or delta and natural levee, they are relatively large. As the results of GIS analysis using boring data, there are heavy building damages on the soft mud deposited area. The housing damages caused by the 2007 Niigata-ken Chuetsu-Oki Earthquake are concentrated in the area located on the ridge of sand dune along back marsh. The geomorphologic condition of these areas is the sand dune on the soft lowland deposits. The ground deformations due to the liquefaction and the lateral flow of soils on the sand dune were detected. These results indicate that it is important to consider the landform evolution.Just after one hour when big earthquake occurred, the information of disaster situation is limited as seismic score, seismic intensity of each city area and so on. In this case, it is important to divide all Japan area into large geomorphologic units such as mountainous area, hill area, upland and lowland. And we produce data base which shows the relationship between geomorphologic units and expected disaster situation, combining variable geo-spatial information such as 50m grid DEM, landform classification on middle scale, landslide distribution and geological maps.

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