

Spatial Analysis of the Behaviour of Residents after the 2004 Chuetsu Earthquake. A Case Study of Kawaguchi Village

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Japan is a country with a high number of earthquakes due to its geographical position and geomorphological structure. Niigata prefecture, located on the Honshu Island to the coast of the Sea of Japan, has been affected by a large number of earthquakes in the last decade. Even if anti-seismic construction technology and investigations on natural disasters are rapidly developing, there is no guarantee of safety.

The aim of this study is to spatially analyse the behaviour of people living in rural areas, using GIS to understand the situation during a seismic event, the short time recovery process and proposing more reliable solutions for emergency evacuation procedures.

The area of study chosen is Kawaguchi Village, located in the central part of the Niigata Prefecture. In 2004, one of the strongest earthquakes (magnitude 6.8) of this century in Japan struck this area, provoking large amount of damages to houses, public administrations and schools, as well as fatalities. This situation was due to the low amount of anti-seismic structures adopted in this area and to the geomorphological constitution of the soil that produced a large number of landslides.

The experiences and behaviours of residents were collected by performing random interviews inside the study area. The digitalised data allowed to understand the lack of preparation and organisation inside the village, but at the same time the strong connection within the community. The results show how the geographical location has a deep impact on the behaviour and the organisation of the community. In fact, the isolated areas are disposed of a better organisation within the community rather than the central areas. Nevertheless, it appears that their behaviour is not due to a preventive organisation but partly due to the necessity of the situation.

Hence, it is believed that cultivating and enhancing the community connections and precautions will lead to a more efficient and effective preparation to natural disasters.

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