

GEOETHICAL IMPORTANCE OF INFORMATION MANAGEMENT BEFORE/AFTER NATURAL HAZARDS

Abstract

Accurate information is important for the political decision of safeguard system planning to protect the natural hazard and reduce the disaster damage. The hazard map is prepared based on estimation of natural hazard, and the geological information is unavoidable to predict the time, size, area and mechanism of natural hazard. The estimation contains errors of various sources, such as the type of hazard model, simulation model, computation algorithm, geological model, and data type and size used. Geologists should not only supply the more accurate and concrete information, but also explain the significance and limitation of the information which will be used for the estimation. The geological information should be opened to public, which is helpful for the better understanding of the natural hazard and proper refuge from disaster.

Keywords: Natural hazard, Hazard map, Safeguard system, Geological Information, Political decision

1. Introduction

The information is very important before the natural hazard to construct the safeguard system to prevent and reduce the damage. Also it is important after the hazard to rescue the suffered persons, recover and revive the damaged area.

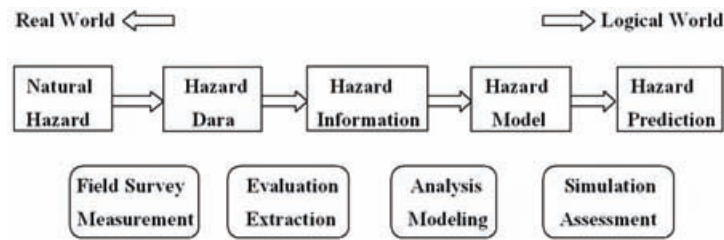
The M9.0 earthquake attacked the northeast Japan on March 11th, 2011, and it was followed by the tremendous Tsunami hazard and the accidents of nuclear power plant. There are many discussions on the risk management and information control by Japanese government and the power company.

In this paper, the importance of information before and after the natural hazard is discussed from the geoethical view point.

2. Information Flow on Natural Hazards

It is possible for the natural hazard to approve the general informational flow from the real world to logical world as follows.

The hazard data are obtained by the field survey, analysis of remote sensing data and geophysical data, laboratory work, etc. The hazard information is extracted by correlation, evaluation, standardization, and other processing of hazard data. The knowledge is synthesized to the hazard model by mathematical and statistical analysis and numerical modeling of hazard information. The natural hazard is simulated on the basis of a hazard model, and the more realistic hazard map is produced by the assessment with geological information.



3. Level of Information

There are 7 levels of information before the hazardous event.

Level 0: No Information

No information on the natural hazard is available, and no one knows whether the natural hazard will occur or not in the future. The society in this level has no understanding on the natural hazard, and no safeguard system for the natural hazard.

Level 1: Presence/Absence of Information

The general understanding of the natural hazard is commonly accepted in the society, and only the presence or absence of the natural hazard is available, without any evaluation of the information. In this society some safeguard system will be constructed without the discussion on whether the system will work or not, nor whether the system is necessary or not.

Level 2: Reliability of Information

The reliability of the information on the natural hazard is available, and the safeguard system will be constructed by detailed discussion on its necessity and scale for the possible hazard size. However, it is impossible to examine the reliability of information, because no original information was given.

Level 3: Summary of Information

The source information on the natural hazard is available, and the detailed planning of safeguard system is possible by the simulation based on the summary information. However, it is impossible to examine the information itself, which is extracted from the source data by using specific methods that are not always specified.

Level 4: Selected Data for Summary Information

The significant and/or reliable data, which are selected from the source data set and used to extract the information, are available, and the examination of the information is possible by other scientists. However, the criteria of such selection are not always given, and also the criteria may change according to the development of science. It means that only the limited examination is possible. Many official publications are up to this stage at present.

Level 5: Synthesized Data

The synthesized data which are accumulated, standardized, evaluated and stored in the database are available. The data can be used for the cross examination of the analytical process, though specific knowledge, techniques and experiences are required to use the data, and also it is necessary to obtain the permission to access the data. The scientific research is in this stage, where the source data are also provided in some forms

separately from the paper. Most governmental and commercial issues are under this stage at present, but there is a change to open the source data when asking public comments before political decisions. Even common citizens without special knowledge can examine by asking the analysis to the consultants. It is, however, to examine each individual datum from this database, in which no detailed information on the experiments and/or measurements are attached.

Level 6: Individual Data

If some doubt or inconsistency occurred, it is indispensable to examine not only the synthesized data but also individual data. In the scientific discussion the data source and technical information on the individual data should be opened within related scientists, but it is rare and difficult to open them on governmental and commercial issues because of political and secure restrictions.

4. Required Characteristics to Information

The following characteristics are required to the information on the natural hazard, especially just after the severe hazard.

1. Accuracy

The accuracy of information on the hazard is essential to prevent the disaster, escape from hazard, rescue refugees, and recover damaged area. The best accuracy should be asked even if there is the limit by the observation system and man powers.

2. Speed

The speedy announcement of information is required especially in the initial stage of the natural hazard. There is an inverse relationship between the speed and accuracy, but the initial information should be as prompt as possible with the limitation of the accuracy.

3. Reliability

The reliability is also indispensable, and only the reliable information should be selected. The false rumor is very dangerous after the natural hazard, and it should be carefully removed. It is very under the Internet environment to discriminate the reliable information from the surge of valuable information, but the specialists should guide the people to the right information.

4. Simplicity

It is impossible for the refugees to listen the complex and detailed explanation just after the natural hazard, and to judge which is better to select from many choices. The information should be announced as simple as possible, though important points should be clearly stated. It is especially important to clearly prohibit the dangerous matter, even if it is inconvenient for the people.

5. Consensus

After the natural hazard many people may be stimulated, and they can only accept the proposal which gives them some imminent and direct advantage. It should be avoided to propose the long-range planning to the people who cannot have the ordinal life. It is necessary to give the information which helps the refugees immediately, and which give them expectations to the future.

5. Advantage and Disadvantage

Peoples with information on the natural hazard have many advantages. For example, they can select their residence in the safe area, reduce the damage by avoiding dangerous area, or to construct the home which prevent the disaster. On the other hand, peoples without information have many disadvantages. For example, they may select unstable area, construct no protection to the natural hazard, and have the severe damages by the hazard.

Of course some natural hazards not always occur within a person's life time, and majority of people do not know any disaster. It is, of course, good for them that they have no damage by the natural hazard in their life even if they are living in the unstable and/or dangerous area. If they know the risk, they are uneasy in their daily life, even if they protect against natural hazard as possible as they can. On the other hand, if they don't know the fact, they are comfortable living without any protection from the natural hazard, though they should have severe damage if the hazard would occur.

The people have the right to select their life style within two terminal options. One is the pessimistic life which seeks the maximum safety by avoiding the risk of natural hazard as much as possible, and the other is the optimistic life to seek maximum comfort without protecting against natural hazards. This selection is realized only when the information on the natural hazard is provided as properly as possible.

6. Ethical Rule for Information on Natural Hazard

The information on the natural hazard should be managed according to the guidelines cited above, and the information should be announced equally for the whole peoples. Not only the presenter of information such as the governments and companies, but also the communicators such as the mass-media and Internet providers, should follow the former, and the latter is realized.

The right to receive the information on the natural hazard should be guaranteed equally to the whole humanities. Even if the natural hazard is local, it may affect to whole humanities in the world, and the information on the local hazard will help the peoples in the other regions. It means that the information on the natural hazard is the common knowledge of whole humanities, which should be globally circulated over the national boundaries and language boundaries.