

## 2-6. Framework of Natural Disaster Databases

One of the very important means for the establishment of effective countermeasures for future natural disasters is information on previous disasters, including what measures were taken for what scale of natural disasters, how effective or ineffective they were, and what lessons were learned from the experiences. A comprehensive database on natural disasters that have occurred in Asia in this century will provide a valuable asset for the next century.

At present, several organizations have their own statistical databases on natural disasters that have occurred in this century. Natcat, a Munich reinsurer, has accumulated information on more than 20,000 disasters dating back as far as to 79 A.D., Sigma, a Swiss reinsurer, has a database containing information on more than 7,000 disasters which have occurred since 1970, and EM-DAT of the CRED (Centre for Research on the Epidemiology of Disasters, Universite Catholique de Louvain) in Belgium has information on more than 15,700 disasters dating back to 1900. In addition, disaster information is disseminated over the Internet by various organizations, including the UN OCHA that provides Situation Reports on major disasters experienced after 1980.

At the ADRC International Meeting (annual meeting of member countries) in December 1999, the ADRC stressed the importance of making good use of these existing databases, as well as the importance of constructing a comprehensive database of natural disasters in the 20th century, which is linked up with the existing databases. To promote such information networking globally, the ADRC became a member of GDIN (Global Disaster Information Network) in April 2000, and proposed the use of a global disaster ID system at the GDIN conference, Canberra, in March 2001. The disaster ID system proposed by the ADRC was launched as a pilot project in 2001. Since 2002, the ADRC has been encouraging various activities for more effective sharing of disaster information as an ISDR Inter-Agency Task Force member. In 2003, the ADRC co-organized a GLIDE technical meeting with the UN/ISDR and ReliefWeb. The intentions of the meeting were well received by many international/regional organizations. And since May 2004 GLIDENumber.net (<http://glidenumber.net/>) has been up and generating GLIDE numbers online.

### 2-6-1. Current Situation of Disaster Information Sharing

Many organizations collect and analyze disaster information relevant only to their own priority themes, and provide some of the results through media including the Internet. Many of these organizations link their websites to relevant organizations for information sharing.

Among such organizations, the UN OCHA has already started to provide highly reliable disaster information. The UN OCHA has set up ReliefWeb on the Internet to provide disaster information collected from all over the world. ReliefWeb contains detailed Situation Reports and other references on disasters experienced after 1980. These resources are available on document basis. Thus, the site allows access to the synopses of disasters that have occurred during the past 20 years, and those of countermeasures taken in response.

The UN OCHA opened its Kobe Office in August 2001, and has been providing disaster information on a 24/7 basis from three cities, Kobe, Geneva and New York.

The CRED in Brussels, Belgium, provides statistical data mainly of natural and technological disasters that have occurred with more than 10 deaths since 1900 over the Internet.

In addition, LaRED based in Latin America collects and provides information on small- to medium-scale natural disasters that are neither covered by ReliefWeb nor the CRED.

In addition to the organizations above, universities and institutes around the world have information on disasters that have occurred in their respective areas, and information related to their fields of interests, and give out some of their data over the Internet.

As for some disasters in the past, typically floods or droughts, however, it is often difficult to determine the exact time of occurrence. Recorded dates of disasters may vary depending on databases. Also, it frequently happens that a disaster is classified and named differently from source to source. These factors make it difficult to identify one disaster record available from one source with those from another, especially when the disaster happened in a distant past.

As for disasters that have occurred in Japan, comprehensive detailed references are available including the "Chronological Scientific Tables" and "Meteorological Yearbook". A list of major disasters in Japan registered on the "Disaster Prevention White Paper" is available on the Internet for download. The Disaster Reduction and Human Renovation Institution of Hyogo Prefecture launched a comprehensive disaster database using the GLIDE system, a global disaster ID system to be explained

in Section 2-6-3, to facilitate information sharing. The GLIDE system is also used by the national Research Institute for Earth Science and Disaster Prevention (NIED) for its "Digital Typhoon Project" site and database on typhoons that have occurred in the recent 50 years.

### **2-6-2. Data Book on Asia Natural Disaster 2006**

Natural disasters can have serious impact on social life in general and in particular on economic development. As revealed by the statistics over the past 100 years, Asia is more prone to natural disasters than any other region of the world, and accounts for more than 90% of the world's entire affected population and 50% of both the world's total death toll and economic losses. Therefore, it is very important to analyze individual disaster events in the past while examining their general tendencies over the years from the perspective of development mechanism. Based on its agreement with the Center for Research on the Epidemiology of Disasters (CRED), Catholic University of Louvain, the ADRC has been analyzing the data of the EM-DAT of the CRED.

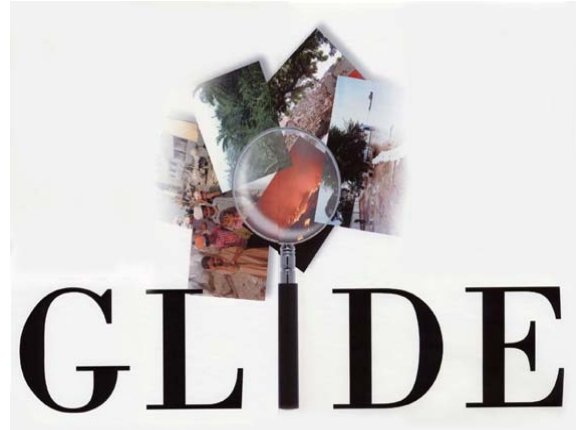
In July 2000, the ADRC published the Data Book on Asian Natural Disasters in the 20th Century, which incorporates the member country data accumulated on the EM-DAT into tables, and diverse statistics and analyses. In August 2002, its revised edition, Data Book on Asia Natural Disasters in the 20th Century Vol.2, was also published.

In addition, every year the ADRC published reports titled Natural Disasters Data Book in March, the following year. The ADRC published "Natural Data Book 2006" in March 2007. Through these data books, the ADRC provides helpful information to policy-makers, academicians, as well as grassroots-level activists involved in community disaster prevention activities.

### 2-6-3. Current Situation of "GLIDE"

#### 2-6-3-1 Disaster information sharing based on GLObal unique disaster IDentifier (GLIDE) number

There are many organizations that design and develop their own disaster databases for free access over the Internet. When a disaster occurs, information is distributed over the Internet not only by organizations in the affected country but also by organizations and the mass media in other countries. When a disaster occurs in any part of the world, the ADRC collects information from websites of relevant organizations and news agencies all over the world, or by sending e-mail to the contact person in the affected area. The "ADRC Latest Disaster Information" page on its website is the results of the ADRC's efforts in information collection.



The problems with the conventional information collection include:

- (1) It is necessary to search the Internet for websites of relevant individual organizations every time a disaster occurs.
- (2) There is no standardized naming protocol for disasters. With different organization naming same disasters differently, even search engines such as Google or Yahoo sometimes return no hits.
- (3) Website links may be lost when the structure of the database or homepage of an organization is modified.

The GLObal unique disaster IDentifier (GLIDE) number system will be a solution to these problems. The GLIDE system will significantly improve the efficiency of retrieval of information on past and on-going disasters from databases and the Web.

At the Global Disaster Information Network (GDIN) Conference held in Canberra, Australia in March 2001, the ADRC proposed to develop a standardized code system for managing information on disasters around the world. This proposal was accepted and launched as a pilot project.

In 2004, GLIDENumber.net, which the ADRC and the OCHA ReliefWeb jointly developed with technical assistance from LaRED, has become operational to issue GLIDE numbers to disasters immediately after their occurrences. Moreover, the ADRC, jointly with the CRED, IRI/Columbia University, the USAID/OFDA, the WMO, the IFRC, the UNDP, and the ISDR Secretariat, agreed to use the GLIDE number format as the standard format for disaster identification numbers.

The GLIDE number format was revised in 2004 as follows:

AA-BBBB-CCCCC-DDD-EEE

AA: Disaster classification

Drought	DR
Heat Wave	HW
Cold Wave	CW
Tropical Cyclone	TC
Extratropical Cyclone	EC
Tornado	TO
Violent Wind	VW
Severe Local Storm	ST
Flood	FL
Flash Flood	FF
Land Slide	LS
Snow Avalanche	AV
Mud Slide	MS
Volcano	VO
Earthquake	EQ

Fire	FR
Tsunami	TS
Storm Surge	SS
Epidemic	EP
Insect Infestation	IN
Wild Fire	WF
Others	OT
Complex Emergency	CE
Technological	AC

BBBB: Year of occurrence (4-digit numeric figure)

CCCCC: Serial number by year

DDD: Country code (ISO code. e.g., JPN for Japan)

EEE: Region code (e.g., 013 for Tokyo)

The region code at the end was added for the convenience of the user countries in organizing their national databases. The region code is not included in GLIDE numbers actually circulated.

The pilot phase of the GLIDE system started in January 2002. The GLIDE generation and notification procedure is as follows:

- (1) Upon the occurrence of a disaster, ReliefWeb generates a new GLIDE number and notifies the CRED via e-mail.
- (2) For disasters other than ones generated in (1) above, the CRED generates GLIDE numbers within one week from the dates of their occurrences.
- (3) The CRED informs the ADRC and other related organizations of the GLIDE numbers generated in (1) and (2) above on a weekly basis via e-mail.
- (4) The ADRC dispatches the GLIDE numbers to individual organizations through the "ADRC Highlights" communication channel.

This procedure was temporary and was replaced by GLIDENumber.net for full automation of the entire process, from GLIDE number issuance to notification, in May 2004.

A new GLIDE number is entered into the current version of database in the following three steps:

- (1) Add a GLIDE column to the database table on the screen.
- (2) Refer to data on past disasters at <http://www.cred.be/emdat/disdat1.htm>.
- (3) Search for the name and GLIDE number of the disaster registered. Enter the appropriate number into the column created in step 1 above.

Then, the GLIDE number is used as the key to retrieve the necessary data from the database:

- (4) Use the GLIDE number as the key to create a program for retrieving and displaying the necessary data from the database.

An organization that already allows open access to its databases has only to make minor adjustments to the existing program, and can add quick access links for visitors to jump to other sites containing relevant information. To add such a link, use the following method:

- (5) Create a button that contains a URL link to a relevant organization's site and the relevant GLIDE number in it.
- (6) Apply to GLIDENumber.net for the registration of your database.

Now the organization has its database connected to other databases all over the world via the GLIDE system.

In order to promote a wider use of the GLIDE system, the ADRC and the OCHA ReliefWeb have developed and started operating GLIDENumber.net (<http://glidenum.net/>). The GLIDENumber.net provides services and functions such as explanation of the GLIDE system, search of the latest disaster information, and registration to the GLIDE mailing list, registration for GLIDE membership, and generation of new GLIDE numbers. The ADRC expects GLIDENumber.net to help a wider use of the GLIDE system among member countries and disaster-related organizations. Databases connected via

the GLIDE system will provide the following advantages:

- A parameterized search function allows easy association between pieces of disaster information archived by various organizations.
- A search engine, developed with the focus placed on parameters particularly important for user organizations, allows a one-stop search and display of all the necessary data, eliminating the need of repeating search for data possessed separately by individual organizations (Note, however, the problem described in the following section).
- Thus, direct reference to the GLIDE numbers allows individual organizations to modify their database designs without preventing users from viewing the same data as the original one. Another benefit is the ease of changing the search method on the viewer's side.

### 2-6-3-2 Challenges in implementing the system

There are some challenges that must be overcome to ensure efficient operation of this system:

- The basic premise for the use of the GLIDE system for retrieval of data on a past disaster is that the disaster needs to have been registered in the GLIDE database. However, not every single disaster in the past has its own GLIDE number yet.
- A GLIDE member organization has to do extra preparatory works, such as incorporation of GLIDE numbers to its own open database(s) to accept inbound access requests via the GLIDE system.
- When direct search into an organization's database for content data is impossible because of the server's structure or for security reasons, an additional database will be necessary to incorporate ID codes into the organization metadata (storage location information).

As for the above problems, ADRC agreed with CRED to adopt CRED disaster number for each GLIDEnumber. ADRC is going to make an effort to solve these other challenges.

### 2-6-3-3 Further promotion of GLIDE

In order to further promote disaster information sharing, it is necessary to enhance GLIDEnumber.net for easier and faster registration and search of GLIDE numbers, and to increase partners for full-scale operation of the GLIDE system.

- a) The ADRC will use the UN/ISDR framework and host GLIDE partner conferences in order to discuss these issues in depth, to provide solutions to the tasks lying ahead, and to promote a wider use of the GLIDE system.

In 2007, PDC (Pacific Disaster Center), UNESCAP/WMO Typhoon Committee, Dartmouth University (U.S.A.), South Carolina University (U.S.A.), NDCC (the Philippines) joined the GLIDE partnership.

The current partnership situation is described in the below table.

	Name of organization	Status of GLIDE utilization
GLIDE number designation & utilization on database / disaster Web site	Asia Disaster Reduction Center (ADRC)	Uses to report latest disasters, interlocked with ReliefWeb.
	OCHA ReliefWeb (Office for the Coordination of Humanitarian Affairs, ReliefWeb)	Designates GLIDE number and makes linking via GLIDE number.
	LaRED	A disaster database in Latin America. Designates GLIDE number to their own database.
	IFRC (International Federation of Red Cross and Red Crescent Societies)	Issues GLIDE number when transmitting disaster information in the activities of Red Cross.
	JRC/GDACS (EU)	Disaster information Web site in EU
	Caribbean Disaster Emergency Response Agency (CDERA)	Utilizes GLIDE number in the disaster databases of Caribbean countries.
	OCD, NDCC (Phillipins)	Designated GLIDE number to disaster data in the past 35 years in a joint project with ADRC and publicizing them on the Web.
Utilization on disaster information Web site or database	UN Food and Agriculture Organization (FAO)	Implements linking with FAO's Mapping System of agricultural disasters through GLIDE.
	Japan Aerospace Exploration Agency (JAXA)	Scheduled to present the satellite information by linking with the latest disaster information of ADRC.

	Dartmouth Flood Observatory (Dartmouth University, USA)	Designates GLIDE number to the data of floods recorded over the world.
	UNOSAT	Utilizes GLIDE number in the presentation of satellite image information.
	Benfield (UK)	Research agency of a reinsurance company in UK. Utilizes GLIDE number at the Web site of disasters (inTERRAgate).
	SHELUUDUS (South Carolina University, USA)	Designates GLIDE number to the disaster data in USA. GLIDE can be used as a key for search.
	PDC (Pacific Disaster Center)	Designates GLIDE to the disaster Web site.
	National Research Institute of Earth Science & Disaster Prevention (NIED)	Links to the disaster information database via GLIDE number.
GLIDE supporting international organizations	United Nations Development Programs (UNDP), International Strategy for Disaster Reduction (ISDR), CRED, WMO	Propagation and promotion of GLIDE are supported by these UN organizations.

UNDP have accepted GLIDE as a core database tool in the project called as .GRIP (Global Risk Identification Program) and ADRC started the GLIDE promotion project as one of the important program of GRIP.

ADRC implemented the cooperative project in the Philippines and Mongolia, named as “Development of web-based GLIDE associated database” as a pilot project of GLIDE promotion. (please see <http://www.calamidat.ph>)

Further GLIDE promotion will be made through ASEAN-GLIDE database project, which will start very soon.

b) GLIDE promotion in UNESCAP/WMO Typhoon Committee

UNESCAP/WMO Typhoon Committee accepted GLIDE as an effective and efficient tool for disaster related information sharing and decided to promote the GLIDE for disaster risk reduction in ASEAN region, at the High- Level Workshop, held in Macao during 13-14 February 2008.

Specifically, GLIDE has been used as ID number at the disaster database, named as TCDIS (Typhoon Committee Disaster Information System; <http://www.tcdis.org/>) which is organized and operated by the Working Group on Disaster Prevention and Preparedness (WDPP), Typhoon Committee and also GLIDE has been used a guideline for promoting disaster database in TCDIS at each TC member country.