

3 Accumulation and Provision of Information on Natural Disasters and Disaster Reduction

3-4 Construction of 'Comprehensive Database on Asian Natural Disasters in the 20th Century

Information on major disasters which have occurred in the past, the countermeasures that were taken for each type of disaster (scale, etc.), and the effects, inadequacies, and lessons learned is essential to the planning of disaster reduction measures in the future. The construction of a database which includes such information on disasters that have occurred in the Asian region this century is expected to serve as a valuable information asset in the next century.

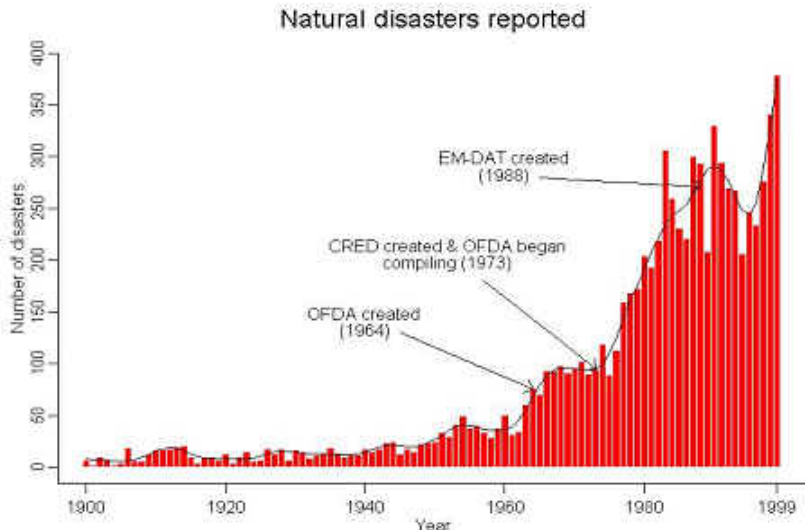
Currently, the Center for Research on the Epidemiology of Disaster (CRED), Louvain Catholic University, Belgium has a database of statistical data on natural disasters which occurred this century. The United Nations Office for the Coordination of Humanitarian Affairs (UN-OCHA) provides reports of major disasters at their WebSite. Disaster related information is also available from other organizations on the Internet.

During the ADRC International Meeting in December 1999, the ADRC verified the need for constructing an extensive database on natural disasters in the 20th century using these existing databases through cooperation with other organizations. It also reached a consensus on cooperation from member countries concerning the construction of the database.

3-4-1 Emergency Events Database (EM-DAT) of the Center for Research on the Epidemiology of Disaster (CRED), Louvain Catholic University, Belgium

CRED has been accumulating statistical data in EM-DAT on disasters that have occurred around the world after 1900 that resulted in more than 10 people killed, or more than 100 people affected. This has been achieved through collaboration with the Office of U.S. Foreign Disaster Assistance (US OFDA). (Refer to Fig. 3-4-1-1.)

Fig. 3-4-1-1 Natural Disasters in the World <No. which Occurred (1900 to 1999)>



This database is considered to be the most reliable disaster statistics database in the world, with its statistical data adopted as the fundamental statistics by the World Disaster Report of the International Federation of Red Cross and Red Crescent Societies, and the Disaster Reduction White Papers of the Japanese and Netherlands governments. Already widely used by those related to disaster reduction activities in the world, the ADRC will construct its new database while referencing this EM-DAT database.

Until 1998, as the EM-DAT database had not been available to the general public, any data required had to be requested in writing to CRED. After request, CRED would send back a categorized table. In fiscal 1999, the ADRC requested categorized tables of the number of disasters, etc. which had occurred in each of its member countries by scale of disaster (refer to the 1998 Asian Disaster Reduction Center Annual Report) from CRED. However, the EM-DAT database became available on the Internet as of autumn 1999, thus enabling the downloading and use of all EM-DAT raw data together with summary tables, graphs, etc.

3-4-2 Verification of CRED Data on Member Countries

The availability of the EM-DAT database on the Internet now allows the ADRC access to raw data on natural disasters in member countries, send the data to member countries, and have the member countries verify the conformity of the statistical data with the governments' data of each country.

Table 3-4-2-1 shows the results. Though there are some differences in the number of deaths, the EM-DAT data is relatively close to the governments' figures. However, regarding other items, considerable differences with the governments' figures can be seen.

Some reasons for this are:

* The sources of the EM-DAT data are mostly the reports of reinsurance companies, and only a few are from governmental organizations. (Table 3-4-2-2)

* Accumulation of the data began with the establishment of CRED in 1973, and disaster statistics prior to that were not collected systematically (this may explain the sharp increase in the number of disasters registered in the EM-DAT from 1973 as shown in Fig. 3-4-1-1).

*Even at the governmental organizations of each country, no records on the damage costs are available, especially for disasters which occurred tens of years ago.

Table 3-4-2-1 Comparison of Statistical Data of Government with EM-DAT

日本 <1900-1996>						
	Number	Killed	Injured	Affected	Homeless	Damage K.US\$
Government	228	211,098	196,923	7,348,649	36,540	?
EM-DAT	233	217,447	35,894	7,452,437	42,040	163,913,000
Coverage(%)	102%	103%	18%	101%	115%	

大韓民国 <1970-1998>						
	Number	Killed	Injured	Affected	Homeless	Damage K.US\$
Government	125	6,354	3,934		2,040,645	6,434,533
EM-DAT	45	3,733	2,263		980,757	3,731,254
Coverage(%)	36%	59%	58%		48%	58%

ベトナム<1952-1999.10>						
	Number	Killed	Injured	Affected	Homeless	Damage K.US\$
Government		24,944	13,526	9,475,295	148,221	2,568,940
EM-DAT		22,439	66,060	37,180,329	1,300,766	2,078,628
Coverage(%)		90%	488%	392%	878%	81%

ロシア連邦
部分的に補足

バブアニューギニア
ほぼ正確

バングラデシュ
ほとんど補足している

Table 3-4-2-2 Information Source of EM-DAT

1) Government	237	6) Private : Uni., Res.	127
2) UNDHA - OCHA	567	7) WHO	27
3) OFDA/USAID	316	8) Other UN (UNDP, UNISEF)	125
4) IFRC	106	9) Lloyd's Casualty Week	636
5) RE-insurance*	1,508	10) Mass Media	438
*Swiss-Re, Munich-Re		TOTAL (1995-)	4,087

3-4-3 Joint Projects with CRED

Since 1998, the ADRC has been discussing about its plans of this project to construct 'Comprehensive Database on Asian natural Disasters in the 20th Century' with CRED, and has asked them to provide the required data. ADRC also visited CRED in July and October 1999 in an effort to build a joint partnership and trust relationship between the two parties.

CRED has also indicated its awareness of the inadequacies of its EM-DAT data as described above, and expressed its strong interests in enhancing the reliability of its data using the ADRC's network with the 22 countries in Asia. Through this process, the ADRC and CRED signed the "Memorandum of agreement on collaboration on information and data on disasters" on November 5, 1999, to achieve the aim of both parties of collaborating to enhance the reliability of the EM-DAT, as well as to collect, organize, and make available related disaster information other than statistical data.

3-4-4 Disasters in Asia Registered in CRED Database

To outline natural disasters in its member countries, the ADRC obtained the standard data of the EM-DAT. It processed the raw data of each of its member countries to compare disasters around the world with those in the Asian region, as well as to compile and illustrate on drawings the number of disasters and the number of deaths by member country for every ten years and by disaster type. ADRC submitted proposals to CRED on how to make the CRED data more easy to use, and successfully add some changes in the formats of the standard data and enhanced data of the EM-DAT.

1) Disasters in Asia compared to disasters in the world

Fig. 3-4-4-1 is a graph of the average annual transition in the number of disasters by region from 1900 for every ten years (Up to 1998 for the 90's).

The graph indicates that the number of disasters registered in the EM-DAT rose sharply from around 1973, the year CRED started its activities, as mentioned earlier. The number of disasters registered is expected to be revised upward with the progress of the joint project between CRED and ADRC. Determining that the qualitative trends can be traced, we decided to analyze the statistics after 1950. However, due to the scarcity of registered data before 1950, they were omitted from the analysis.

Fig. 3-4-4-2 is a graph of the data aggregated on the number of disasters by region after 1950 for every ten years. The frequency of disasters which occurred within the Asian region, compared to the global figures, varies at a limited range from 40 to 50%. Considering that Asia makes up about 20% of the world's total area, these are extremely large figures.

Fig. 3-4-4-1. No. of Disasters by Region

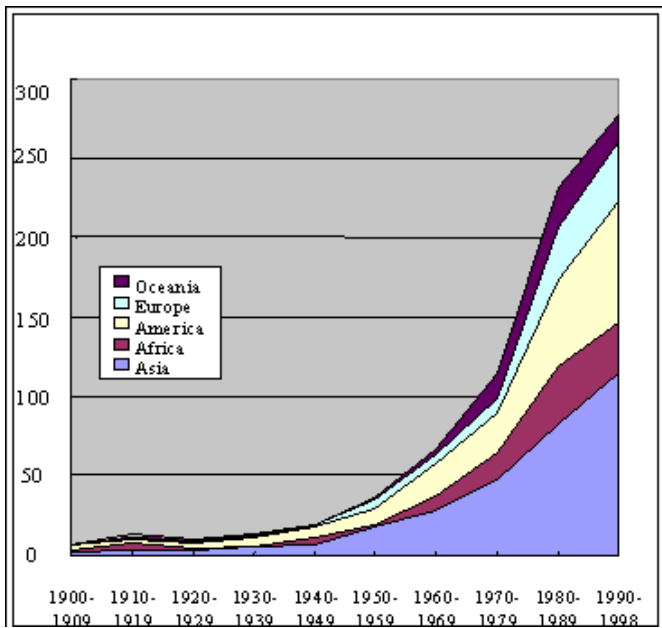


Fig. 3-4-4-2 No. of Disasters by Region (left)

Fig. 3-4-4-3 No. of Deaths by Region and Disaster Type <1950 to 1998> (right)

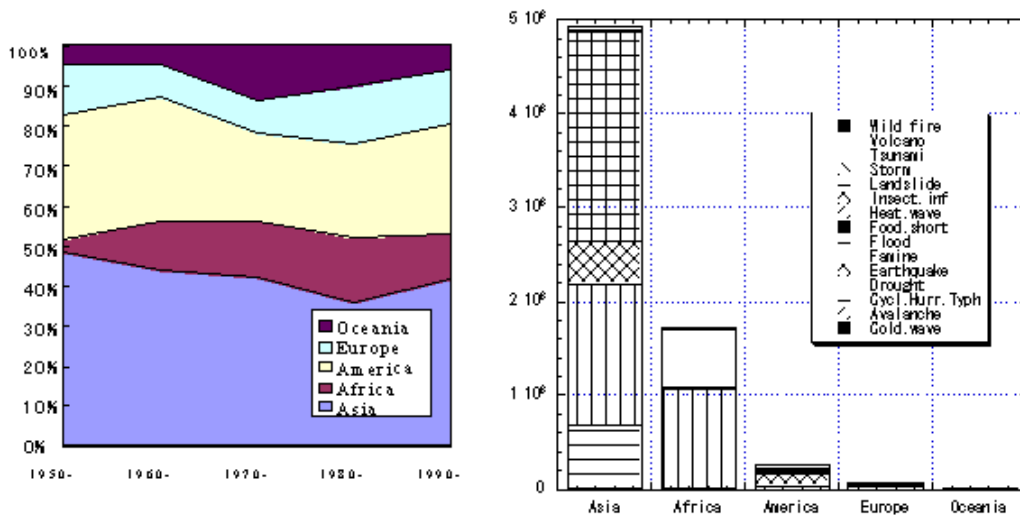


Fig. 3-4-4-3 indicates the number of deaths by region and disaster type. Asia shows a relatively large number of deaths compared to other regions. The total deaths between 1950 and 1998 were about 4,900,000 persons, and exceeds 70% of the total number of deaths in the world. This figure is quite large compared to the percentage of Asia's population in the world (58%). By disaster, droughts account for most of the deaths in Asia and Africa. Damages by floods, earthquakes, and typhoons are also serious in Asia, increasing the number of deaths. In particular, the number of deaths by flood makes up about 45% of all disasters in Asia, which characterizes the damage in this region.

2) Natural disasters in member countries

Fig. 3-4-4-4 is the graph of the transition in the number of disasters which have occurred in member countries for every ten years by disaster. Fig. 3-4-4-5 shows the same kind of graph for the number of deaths. The total number of deaths by category is provided in Table 3-4-4-1.

Comparison of the two graphs indicates that while the number of disasters is rising, there is a downward trend in the number of deaths on the whole, despite the fact that the figures in the 90s are greater than in the 80s. This is because various measures for disaster reduction are being implemented in developing countries.

The large peak in the number of deaths between the 20s and 50s shown in the graph is due to the deaths registered in millions that were caused by famine, droughts, and floods in China, India, Soviet Union, and Bangladesh. It must be noted that these statistics do not necessarily match the trends of the overall Asian region.

Table 3-4-4-1 No. of Deaths by Member Countries, Year (Every 10 Years), and Disaster

Fig. 3-4-4-4 No. of Disasters in Member Countries (by decade/ type) <1900-1998>

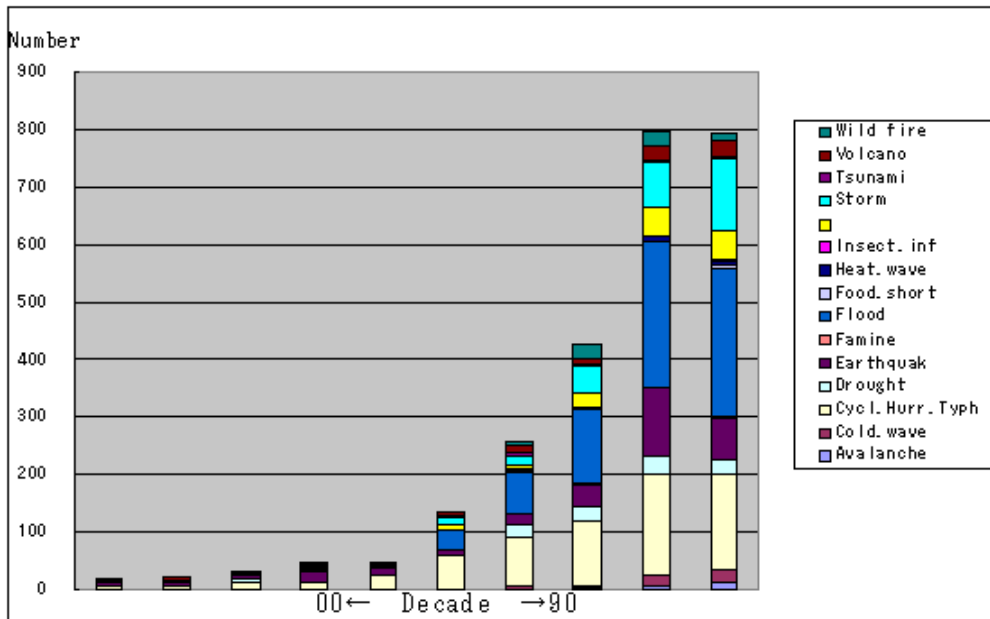
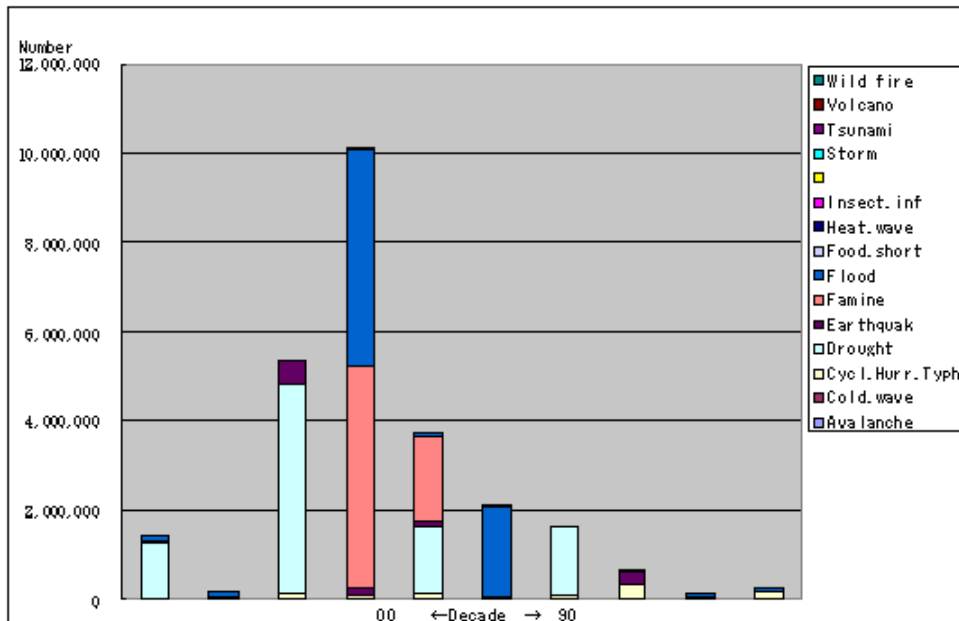


Fig. 3-4-4-5 Number of Deaths in Member Countries (by decade/ type)<1900-1998>



The countries hit by disasters can be broadly divided into the following groups, looking at the number of deaths by country (excludes famine):

- *Bangladesh, Korea, Sri Lanka, Viet Nam, and Cambodia which suffer frequent weather related disasters, such as floods and cyclones.
- *Indonesia, Japan, Mongol, and PNG which suffer frequent ground disasters such as earthquakes and volcanic eruptions.
- *China, India, Nepal, the Philippines, Russia (few floods), and Myanmar which suffer both types of disaster frequently.
- *Laos (weather), Malaysia (weather), Singapore (None), and Thailand (weather) which have a relatively lower frequency of disasters.

Nepal has been classified as an earthquake prone country due to the major earthquake in 1934 which resulted in about 9,000 deaths. There have been no major earthquakes since then, and it should be noted that the people of Nepal believe that earthquakes are infrequent in their country.

The ADRC is planning to compile the EM-DAT raw data which will serve as the fundamental data of the above statistics in a separate report, and also place this on its homepage.

3-4-5 Future Tasks

In fiscal 1999, the ADRC has compared the fundamental data from the EM-DAT with the statistical data of each government. To enhance the reliability of the EM-DAT, the ADRC is also planning to check and revise the expanded data of the EM-DAT, including epicenter information etc. in the next fiscal year.

We will then list the major disasters in each country, gather information on related lessons learned, countermeasures taken, and other information, and summarize this information into a format (Table 3-4-5-1) which allows a link to each information source from this sheet.

We are currently considering gathering related information from CRED documents, Relief Web of the United Nations Office for the Coordination of Humanitarian Affairs (OCHA), the government related organizations of various countries, research institutes, existing databases of universities, and country reports.

At the same time, we will provide assistance to member countries in creating Internet homepages to carry related disaster reduction information. We are planning to construct a network system which will enable access to the information source of the homepage of each country.

"Comprehensive Database on Asian Natural Disasters in the 20th Century" will list an index of natural disaster information provided by various organizations around the world, and of the natural disaster information available on the homepages of member countries to be created in the future. It will also include search engine that allows the effective use of the information resources around the world, which might be realized in the days of the Internet.

Table 3-4-5-1 Data Format (example)

Identification

Disaster ID Number (Unique Code)	98,374	
Country (ISO No.)	Viet Nam	704 Link to ReliefWeb Country Profile -> CIA
Location (Region/ City...)	South Central Provinces	
Type (Earthquake, Flood, Cyclone..)	Tropical cyclone	
NAME (Ex. Kobe Earthquake...)	Elvis/Dawn/Chip	
DATE (yyyy/mm/dd)	1998/11/25	

Basic Statistics from EM-DAT

Killed	283	
(Missing...included in killed)	16	
Injured	92	
Affected Population	2,400,000	
Homeless (Evacuated, Resettled)		
Estimated Amount of Damage / Losses	93,000,000 US\$	
Additional Info(Epicenter/Wind/Area..)		
Data Source	UNDP Viet Nam	Link to UNDP Viet Nam

Additional Discription

By Member Countries

Houses destroyed (Totally)	9,821	
(Partially)	470,176	
Loss of Cattle	375,768	big/small live stock, Poultry
Loss of Cattle Sheds		
International Appeal (Yes -> Date of issue)		
Data Source	UNDP Viet Nam	

Country Paper

Link to Gov't HP	Introduction	Situation Rep.	Damage
Needs	Maps	Pictures	

Related Information

Link to Related HP	
Jump to the related web sites such as	ReliefWeb Discovery Channel
in case of earthquake	USGS IRIS RETEC