Emergency Preparedness Canada

Protection civile Canada

EPC Disaster Database and Its Characteristics

Technical Report 92-1

Canada

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Technical Report 92-1

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Evaluation and Analysis

Emergency Preparedness Canada

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Abstract

The purpose of this paper is to review the changes made to the structure of the database and outline the procedures for updating the database. The paper also summarizes the information gathered so far.

Résumé

Le but de ce document est de passer en revue les changements effectués sur la structure de la base de données et de donner un aperçu du processus de mise à jour de cette base de données. Le document résume aussi l'information recueillie jusqu'à présent.

Contents

Introduction

This is a follow-up to the author's Technical Report 91-2 entitled *A Canadian Disaster Database*. Since that report was published, a number of things have happened. Information was gathered for the years 1990 and 1991 to be included in the database. Moreover, a definition and an updating process were agreed upon by the interested parties.

The purpose of this paper is to review the changes made to the structure of the database and outline the procedures for updating the database. The paper also summarizes the information gathered so far.

Definition of a Disaster

Our definition of a disaster is a slight modification of the CRED (Centre for Research on the Epidemiology of Disasters) definition:

> *It is an interruption in time and space of normal processes causing death, injury or homelessness, direct material losses and/or negative economic impact. The interruption is beyond the coping capacity of the community. The interruption can be either sudden or gradual onset. The interruption precludes war.*

The key then for some event to be considered a disaster essentially depends on whether the community can cope with it or not.

We will say that a community is *coping with an event* if and only if

(i) there is no need for assistance from outside the community,
and (ii) the community can assume the cost of the event,
and (iii) normal community activity is not prevented because of the event.

Structure of the Database

As indicated on Figure 1 - Structure of the Database[1], the database's main file "CanDisaster" has 22 fields, 12 of which are of logical type and are new additions to the structure. These 12 logical fields represent the 10 provinces (**nf, pe, ns, nb, qb, on, mb, sk, ab, bc**) and 2 territories (**nw, yt**). They are flags set to "T" (true) when an event apply to the province or territory and set to "F" (false) or simply left blank otherwise.

Structure for database: Maverick 90:Significant Disasters DB:EPC Disaster
Database:CanDisaster.dbf
Number of data records: 229
Date of last update: 03/25/92

Field	Field Name	Type	Width	Dec
1	nf	Logical	1	
2	pe	Logical	1	
3	ns	Logical	1	
4	nb	Logical	1	
5	qb	Logical	1	
6	on	Logical	1	
7	mb	Logical	1	
8	sk	Logical	1	
9	nw	Logical	1	
10	ab	Logical	1	
11	yt	Logical	1	
12	bc	Logical	1	
13	magnitude	Numeric	3	1
14	origin	Character	2	
15	disno	Character	7	
16	d_strike	Character	10	
17	province	Character	2	
18	type	Character	2	
19	dead	Numeric	10	
20	evacuated	Numeric	10	
21	dollar_dam	Numeric	10	
22	injured	Numeric	10	
** Total **	79			

Figure 1: Structure of the Database

[1]Figure 1 was generated through the use of the "display structure to print" FoxBase command.

In the previous report we have seen that when an event affects more than one province or territory, the event was entered for each province or territory in addition to being entered under the category "Several". We have avoided this redundancy by creating these 12 logical fields.

magnitude, field 13, represents the magnitude of an earthquake on the Richter scale.

origin, field 14, is the field indicating the code corresponding to the information source. The information sources reside in another file also called "origin". Some slight changes were made to the sources, basically code 08 is now used for the Government Emergency Operations Coordination Centre (GEOCC) SITREPs (see Figure 2 - Sources of Information[2]). We have tried to tailor-make these categories to EPC's needs without too much reorganization.

disno, field 15, is a character type field containing the disaster number, an integer of 7 digits: the first four digits referring to the year of the event, the last three to the serial number. For example, the disaster number 1905005 corresponds to the landslide of 1905.08.13 at Spence's Bridge in British Columbia where a large gravel bank broke away from a mountain side and came crashing down on an Indian reserve. Comments on an event can be found in the file "CanCom". They are linked to the information in "CanDisaster" through **disno**.

d_strike, field 16, is the date that the event struck.

province, field 17, is the field indicating the code corresponding to the provinces or territories listed in file "provinces" (Figure 3). It takes the value "Several" when more than one province or territory is involved. For events which occurred outside the country but where Canada assumes a certain involvement it takes the value "International".

type, field 18, is the field indicating the code corresponding to disaster types listed in file "type". We modified the categories so that they would reflect better the type of disasters that our country faces and the level of detail we feel is necessary (see Figure 4).

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[2]Figures 2, 3 and 4 are the actual reports that have been created using FoxReport for the benefit of the general users.

EPC Disaster Database
developed from CRED Disaster Database

Table of Information Sources

Origin	Information Source	Comment
01	OFDA	Office for US Foreign Disaster Assistance
02	Insurance	Insurance Companies
03	CDC	Centers for Disease Control (US)
04	Japan	
05	OAU	Organization of African Unity
06	WHO/PAHO	World Health Organization/Pan American Health Organization
07	CRED SITREP	Centre for Research on the Epidemiology of Disasters, Situation Report
08	GEOCC SITREP	Government Emergency Operations Coordination Centre, Situation Report
09	WHO/AFRO	World Health Organization/Regional Office for Africa
10	Private	
11	UNDRO	United Nations Disaster Relief Organization
12	OTHER	
13	Press	
14	EPC	Emergency Preparedness Canada

Base de données des désastres de PCC
issue de la base de données des désastres du CRED

Table des sources d'information

Origine	Source d'information	Commentaire
01	OFDA	Office for US Foreign Disaster Assistance
02	Assurances	Compagnies d'assurance
03	CDC	Centers for Disease Control (US)
04	Japon	
05	OUA	Organisation de l'unité africaine
06	OMS/OPS	Organisation mondiale de la Santé/Organisation panaméricaine de la Santé
07	CRED SITREP	Centre de Recherche sur l' Épidémiologie des Désastres, compte rendu de situation
08	CCOUG SITREP	Centre de coordination des opérations d'urgence du gouvernement, compte rendu de situation
09	OMS/AFRO	Organisation mondiale de la Santé/Bureau régional de l'Afrique
10	Privé	
11	UNDRO	Bureau du Coordonnateur des Nations Unies pour les secours en cas de catastrophe
12	AUTRE	
13	Presse	
14	PCC	Protection civile Canada

Figure 2: Sources of Information

EPC Disaster Database
developed from CRED Disaster Database

Table of Provinces

Code	Province
BC	BC
AB	Alberta
SK	Saskatchewan
MB	Manitoba
ON	Ontario
QB	Quebec
NB	N Brunswick
NS	Nova Scotia
PE	PEI
NF	NFLD
YU	Yukon
NW	NWT
SV	Several
IN	International

Base de données des désastres de PCC
issue de la base de données des désastres du CRED

Table des provinces

Code	Province
BC	C-B
AB	Alberta
SK	Saskatchewan
MB	Manitoba
ON	Ontario
QB	Québec
NB	N-Brunswick
NS	N-Écosse
PE	Î-P-É
NF	Terre-Neuve
YU	Yukon
NW	T-N-O
SV	Plusieurs
IN	International

Figure 3: Provinces

Table of Disaster Types

Type	Disaster type
AM	Accident-Mining
AO	Accident-Other
AT	Accident-Transportation
AV	Avalanche
CU	Civil Unrest-Terrorism
CW	Cold Wave
DR	Drought
EP	Epidemic
EQ	Earthquake
FF	Forest Fire
FI	Fire-Other
FL	Flood
HC	Hazardous Chemicals
HU	Hurricane
HW	Heat Wave
LS	Landslide
OT	Other
ST	Storm
TO	Tornado
TS	Tsunami

Table des types de désastre

Type	Type de désastre
AM	Accident-Minier
AO	Accident-Autre
AT	Accident-Transport
AV	Avalanche
CU	Désordre civil-Terrorisme
CW	Vague de froid
DR	Sécheresse
EP	Épidémie
EQ	Tremblement de terre
FF	Incendie de forêt
FI	Incendie-Autre
FL	Inondation
HC	Matières dangereuses
HU	Ouragan
HW	Vague de chaleur
LS	Glissement de terrain
OT	Autre
ST	Tempête
TO	Tornade
TS	Tsunami

Figure 4: Types of Disaster

The fields **dead, evacuated, dollar_dam, injured**, fields 19, 20, 21 & 22 respectively, are numeric fields to quantify the event. **dollar_dam** represents the cost of the event in millions of Canadian dollars. The value is not indexed or adjusted for inflation and reflects the value in the reported year. **dead** replaces the term "killed" previously used. The field **affected** has been dropped while the field **homeless** has been replaced by **evacuated.** The reasons for this latter change relies on the ambiguity attached to the words "homeless" and "affected". Some might use the field **homeless** to record the number of people that have lost their homes following the event while others might use it for the number of evacuated who are "temporarily" without homes. The field **affected** was really too broad to be of any use. Indeed, for example, one could record the number of hostages caught in a hijacking just as well as the number of people affected by the polio epidemic of 1953.

The numbers stated for all these fields are often blank. This may indicate that no reliable estimate was available.

Note that if one disaster is followed by subsequent ones the events are entered with their respective codes but the linkage is noted in the comments.

Current Statistics

To most people, "probability" is a loosely defined term employed in everyday conversation to indicate the measure of one's belief in the occurrence of a future event. What is the probability of an earthquake? What are our chances of being hit by a tornado?

The following analysis summarizes and interprets the information contained in the database. We can see the database basically as a sample of all the disasters that have occurred and will occur in Canada. Our sample starts in 1900 and ends at the start of 1992[3]. It contains 229 elements i.e. there are 229 entries in the database. Our analysis is limited to the use of simple descriptive statistics such as the mean, the count, etc. for different reasons inherent to the nature of the data collected.

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[3]Entries for 1992 have not been made yet.

Indeed, if we consider a disaster as being a random event, we cannot assume independence between those events: an earthquake can provoke a tsunami, a drought can trigger forest fires and so on. The likelihood of one event happening in one province or one territory certainly can have some impact on the neighbouring province or territory. And finally, we have to admit that our database is probably not very accurate for the early part of this century.

Four subjects have piqued the author's curiosity and will be investigated here. First the origin: what are the sources of our entries? who or what organization has provided the information? Then, what are the differences between provinces? which provinces have the most to fear?... Generally, what are the most recurrent types of disasters? And, do the number of disasters change over time?

Concerning the information sources of the disasters present in the database, we find that:

74% come from the press
14% from other sources (among them some EMOs[4])
and 6% from EPC (other than GEOCC sitreps)[5].

These values are understandable when we consider that the original information in the database came from library sources and was classified as originating in the press. In the future, we expect our sources to come equally from the press and EPC's GEOCC.

As expected, the occurence of disasters differs from one province to another. From Figure 5, we see that in Canada, British Columbia, Ontario and Quebec are the provinces most often hit by disasters. Many reasons can explain these figures such as the geographic profile of a province, its size, its population, its industrial status. It is important to note that the counts and the percentages of disasters per province represent <u>all</u> disasters which occurred in <u>each</u> province or territory. Thus, the same event can be counted for two or more provinces if the scope of the event was such that it affected all these provinces.

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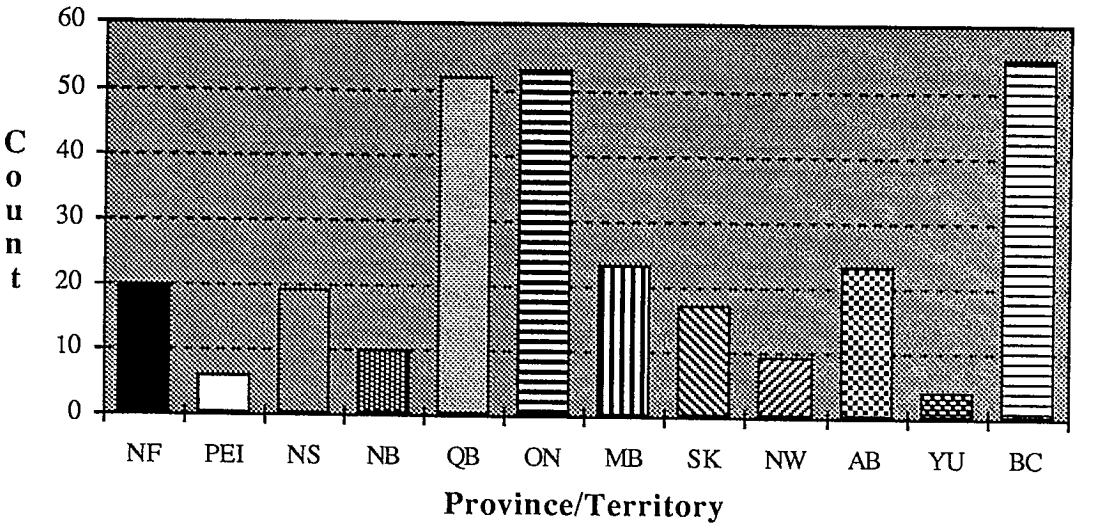
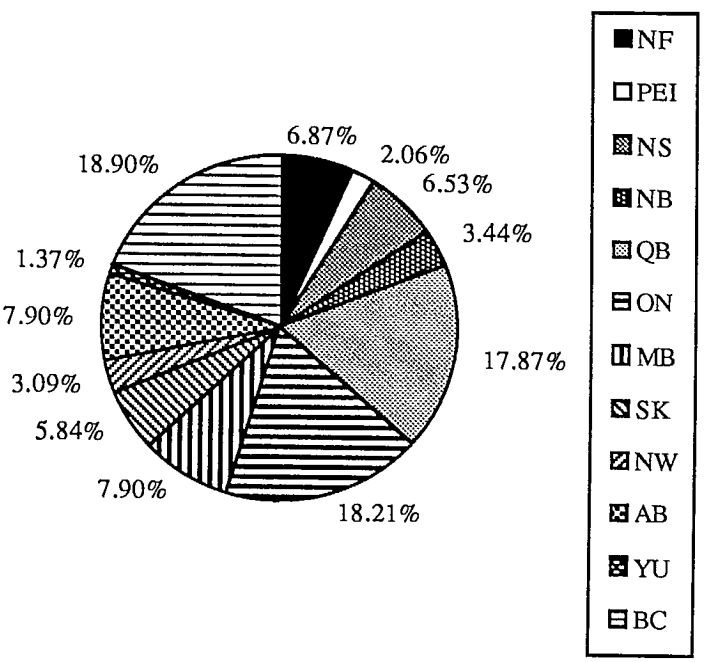
[4]Used here as a generic term to represent provincial emergency measures organizations.
[5]The rest of the sources were too insignificant to be mentioned.



(a) Bar chart with counts



(b) Pie chart with percentages

Figure 5: Disasters by Province/Territory 1900-1991 inclusive

What disasters most often strike Canada? A histogram of the frequency of disasters by type is shown in Figure 6. Transportation accidents are by far the most recurrent disasters. They represent 22% of disasters. Civil unrest is second at 14%. The interesting thing about those particular disasters is that they are essentially caused by humans.

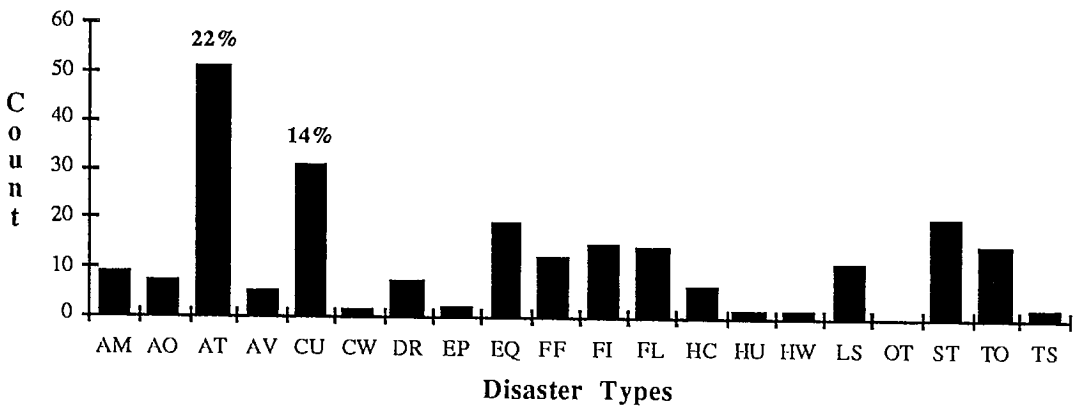


Figure 6: Number of disasters by type 1900-1991 inclusive

Over time, does the number of disasters increase? In order to address this question, the frequency of disasters in each decade of the 20th century was determined and is presented in Figure 7. The 1990-2000 decade not being completed yet, it is not shown here. Keeping in mind that the information gathered in the early part of this century is not very accurate, we might be inclined to think that there is an increase over time in the number of disasters, especially between 1950 and 1990.

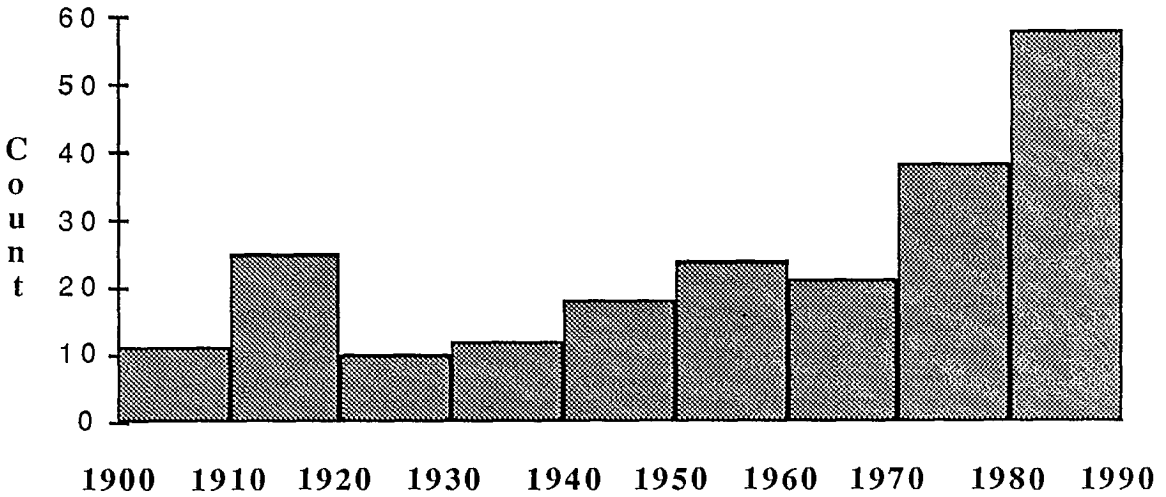


Figure 7: Frequency of disasters per decade

For the 1980s only, we have a total of 58 disasters, 10 of which attributed to transportation accidents and 9 to civil unrests. These last two values are higher than for earlier decades but do not account for the overall difference. Thus either we see the effect of a combination of small increases in the incidence of all types of disasters or we have been more thorough in our tabulation of events for that period, which is likely the case.

Some statistics of general interest: 19 earthquakes were registered in the database. The biggest was 8.1 on the Richter scale. It registered in British Columbia in the Queen Charlotte Islands on August 22, 1949.

According to our database, since 1900, a total of 60,068 people have been killed in Canada as a result of disasters.

Updating Process for the Database

For the time being, Evaluation and Analysis is responsible for combining information gathered by Communications and the GEOCC (mainly through its SITREPs). The results of this information-gathering is entered in the database by Evaluation and Analysis since the database is hosted in that EPC directorate.

This updating process is done on a semi-annual basis on the rationale that only 6 or 7 disasters are expected to occur in any given year.

The process will likely change when the administration of EPC's corporate databases becomes centralised. In the mean time Evaluation and Analysis has agreed to respect the above mentioned process.

Conclusion

In this paper, we have summarized the current structure of the EPC Disaster Database developed from CRED Disaster Database, and explained how we adapted it to Canadian perspectives. We also did a short and simple statistical analysis, partially to respond to our curiosity but also as an example of what can be achieved with the recorded information. Details of the additions, subtractions and modifications made to the data since publication of the first report can be found in the annex. We hope that the current structure of the database and its updating process will prove successful and useful to researchers and others in the future.

Annex

Several changes have been made to the database since the publication of Technical Report 91-2. They are divided into three:

- the subtractions (p. A-1);
- the modifications (p. A-2); and
- the additions (p. A-10).

The subtractions

The following entries have been removed from the database. The justification for each action is given below.

Entry	Justification for removal
1918/10/24, International, Accident, 343 dead	Duplication of 1918/10/23 entry
1955/07/11, Alberta, Avalanche, 7 skiers dead	Not a disaster
1979/02/14, British Columbia, Avalanche, 7 heli-skiers killed	Not a disaster
1981/02/23, British Columbia, Avalanche, 3 heli-skiers dead	Not a disaster
1987/03/23, British Columbia, Avalanche, 6 heli-skiers dead	Not a disaster
1982/01/09, Québec, Earthquake	False entry
1982/01/19, Newfoundland, Earthquake	False entry
1990/01/01, Ontario, Chemical Accident	Not a disaster
1990/02/11, Alberta, Avalanche, 4 skiers dead	Not a disaster
1990/04/12, Québec, Fire	Not a disaster
1991/03/12, British Columbia, Avalanche, 9 heli-skiers dead	Not a disaster

The modifications

The following modifications were made.

Entry	Modification
1918/03/28, Québec, Civil strife	Added comments
1919/05/15, Manitoba, Civil strife	Added comments
1936/07/06, Nation wide Heat wave	Not applicable to Yukon and NorthWest Territories
1982/01/01, New Brunswick, Earthquake	Date modified to 1982/01/09
1985/12/12, Newfoundland, Air crash	Number of American soldiers
1986/05/15, Fire (NB, NF)	It is not one disaster but two

Reports of modified entries follow.

Date: 1918.03.28 **# of dead:** 4

Province: Quebec **# of injured:**

Disaster type: Civil Unrest-Terrorism **# of evacuated:**

Magnitude:

Information source: Press

Damage (M$):

Comments:

Quebec City, Quebec; 28 March-1 April 1918; four people were killed during riots over conscription; on March 28 Dominion Police arrested a man who had draft exemption papers at home but not on him at the time of his arrest; several thousand demonstrators gathered and then burned the Dominion Police station; over the next 2 days the rioting became progressively worse and military reinforcements were sent from Toronto which caused some friction; on Easter Monday, 1 April the troops were pelted with missiles and returned the fire, killing 4 civilians.

Date: 1918.03.28 **# de morts:** 4

Province: Québec **# de blessés:**

Type de désastre: Désordre civil-Terrorisme **# d'évacués:**

Intensité:

Source d'information: Presse

Dommages (M$):

Commentaires:

Québec (Québec); 28 mars-1er avril 1918; quatre personnes sont tuées durant une émeute au sujet de la conscription; le 28 mars, la police du Dominion arrête un homme qui avait des papiers d'exemption chez lui, mais pas sur lui au moment de l'arrestation; plusieurs milliers de personnes se sont rassemblées et ont brûlé la station de police du Dominion; au cours des 2 jours suivants, les émeutes se sont aggravées et des renforts militaires ont été envoyés de Toronto causant une certaine friction; le lundi de Pâques (1er avril) les troupes se sont fait lancer des projectiles et ont ouvert le feu, tuant 4 civils.

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Date: 1919.05.15 **# of dead:** 2

Province: Manitoba **# of injured:**

Disaster type: Civil Unrest-Terrorism **# of evacuated:**

Magnitude:

Information source: Press

Damage (M$):

Comments:

Winnipeg, Manitoba; General Strike 15 May-25 June1919; the labour situation was complicated by the alien question (2/3 of Winnipeg's population of 180 000 in 1919 was Anglo-Saxon but the number of Europeans was increasing) and the returned soldiers (in January 1919 some 1500 to 2000 were faced with re-employment and shortage of housing); on 20 June, a veterans parade in defiance of the Mayor's ban, developed into a riot when mounted police charged the crowd; two men were killed.

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Date: 1919.05.15 **# de morts:** 2

Province: Manitoba **# de blessés:**

Type de désastre: Désordre civil-Terrorisme **# d'évacués:**

Intensité:

Source d'information: Presse

Dommages (M$):

Commentaires:

Winnipeg, Manitoba; grève générale 15 mai-25 juin 1919; la situation ouvrière s'est compliquée avec l'immigration (les 2/3 de la population de Winnipeg de 180000 habitants étaient anglo-saxons mais le nombre d'Européens augmentait) et le retour des soldats (en janvier 1919, quelque 1500 à 2000 soldats faisaient face au ré-embauchage et à une crise du logement); le 20 juin, une parade de vétérans, organisée en dépit de l'interdiction du maire, s'est transformée en un affrontement lorsque la police montée a chargé à travers la foule; 2 hommes sont morts.

EPC Disaster Database
developed from CRED Disaster Database

Date: 1936.07.06 **# of dead:** 500

Province: Several **# of injured:**

Disaster type: Heat Wave **# of evacuated:**

Magnitude:

Information source: OTHER

Damage (M$):

Comments:

2-week heat wave. source: Some of the Disasters in Canada Since 1900

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Date: 1936.07.06 **# de morts:** 500

Province: Plusieurs **# de blessés:**

Type de désastre: Vague de chaleur **# d'évacués:**

Intensité:

Source d'information: AUTRE

Dommages (M$):

Commentaires:

Deux semaines de vague de chaleur. source: Some of the Disasters in Canada Since 1900

EPC Disaster Database
developed from CRED Disaster Database

Date: 1982.01.09 **# of dead:**

Province: N Brunswick **# of injured:**

Disaster type: Earthquake **# of evacuated:**

Magnitude: 5.7

Information source: Press

Damage (M$):

Comments:

Miramichi Region, New Brunswick; magnit. 5.7 And 5.4 (1982).

Base de données des désastres de PCC
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Date: 1982.01.09 **# de morts:**

Province: N-Brunswick **# de blessés:**

Type de désastre: Tremblement de terre **# d'évacués:**

Intensité: 5.7

Source d'information: Presse

Dommages (M$):

Commentaires:

La région de Miramichi, Nouveau-Brunswick; intensité: 5,7 et 5,4 (1982).

Date: 1985.12.12 **# of dead:** 256

Province: NFLD **# of injured:**

Disaster type: Accident-Transportation **# of evacuated:**

Magnitude:

Information source: Press

Damage (M$):

Comments:

Gander; 256 dead (248 American soldiers and an aircrew of eight); a chartered Arrow Air DC-8 crashed seconds after take-off from a refueling stop; all aboard perished.

Date: 1985.12.12 **# de morts:** 256

Province: Terre-Neuve **# de blessés:**

Type de désastre: Accident-Transport **# d'évacués:**

Intensité:

Source d'information: Presse

Dommages (M$):

Commentaires:

Gander; 256 morts (248 soldats américains et huit membres d'équipage); un charter de Arrow Air (DC-8) s'écrase au moment du décollage après une escale de ravitaillement; tous à bord ont péri.

EPC Disaster Database
developed from CRED Disaster Database

Date: 1986.05.15 **# of dead:**

Province: N Brunswick **# of injured:**

Disaster type: Forest Fire **# of evacuated:** 1 000

Magnitude:

Information source: Press

Damage (M$):

Comments:

Upper George Town & Burton, New Brunswick; May 15-16, 1986;1000 evacuated between Upper George Town & Burton; among the worsts of a series of more than 100 forest fires burning across Eastern Canada as a result of unseasonably warm, dry weather.

Base de données des désastres de PCC
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Date: 1986.05.15 **# de morts:**

Province: N-Brunswick **# de blessés:**

Type de désastre: Incendie de forêt **# d'évacués:** 1 000

Intensité:

Source d'information: Presse

Dommages (M$):

Commentaires:

Villages de Upper George et de Burton (Nouveau-Brunswick), 1000 évacués; les 15 et 16 mai 1986; un des pires d'une série de plus de 100 incendies de forêt qui ont ravagé l'est du pays durant cet été chaud et sec.

EPC Disaster Database
developed from CRED Disaster Database

Date: 1986.05.15 **# of dead:**

Province: NFLD **# of injured:**

Disaster type: Forest Fire **# of evacuated:** 1 000

Magnitude:

Information source: Press

Damage (M$):

Comments:

Grand Falls, Newfoundland; May 15-16,1986; 1000 evacuated at Grand Falls; among the worsts of a series of more than 100 forest fires burning across Eastern Canada as a result of unseasonably warm, dry weather.

Base de données des désastres de PCC
issue de la base de données des désastres du CRED

Date: 1986.05.15 **# de morts:**

Province: Terre-Neuve **# de blessés:**

Type de désastre: Incendie de forêt **# d'évacués:** 1 000

Intensité:

Source d'information: Presse

Dommages (M$):

Commentaires:

Grand Falls (Terre-Neuve) 1000 évacués; les 15 et 16 mai 1986; un des pires d'une série de plus de 100 incendies de forêt qui ont ravagé l'est du pays durant cet été chaud et sec.

The Additions

11 new entries were made to the database. The details follow.

EPC Disaster Database
developed from CRED Disaster Database

Date: 1956.12.09 **# of dead:** 62

Province: BC **# of injured:**

Disaster type: Accident-Transportation **# of evacuated:**

Magnitude:

Information source: Press

Damage (M$):

Comments:

62 people killed when Trans-Canada Air Lines North Star disappeared outside Vancouver en route to Calgary. The plane was discovered on May 13 1957 on Mount Slesse, B.C.

Base de données des désastres de PCC
issue de la base de données des désastres du CRED

Date: 1956.12.09 **# de morts:** 62

Province: C-B **# de blessés:**

Type de désastre: Accident-Transport **# d'évacués:**

Intensité:

Source d'information: Presse

Dommages (M$):

Commentaires:

62 personnes sont tuées lorsqu'un North Star des lignes aériennes Trans-Canada disparaît après Vancouver en route pour Calgary. L'avion est découvert le 13 mai 1957 sur le Mont Slesse, C.-B.

EPC Disaster Database
developed from CRED Disaster Database

Date: 1957.08.11 **# of dead:** 79

Province: Quebec **# of injured:**

Disaster type: Accident-Transportation **# of evacuated:**

Magnitude:

Information source: Press

Damage (M$):

Comments:

79 people killed when Maritime Central Airways DC-4 crashed near Québec City.

Base de données des désastres de PCC
issue de la base de données des désastres du CRED

Date: 1957.08.11 **# de morts:** 79

Province: Québec **# de blessés:**

Type de désastre: Accident-Transport **# d'évacués:**

Intensité:

Source d'information: Presse

Dommages (M$):

Commentaires:

79 personnes sont tuées lorsqu'un DC-4 de Maritime Central Airways s'écrase près de Québec.

Date: 1965.07.08 **# of dead:** 52

Province: BC **# of injured:**

Disaster type: Accident-Transportation **# of evacuated:**

Magnitude:

Information source: Press

Damage (M$):

Comments:

52 people died when a Canadian Pacific Airlines DC-6B exploded and crashed northeast of Vancouver.

Date: 1965.07.08 **# de morts:** 52

Province: CB **# de blessés:**

Type de désastre: Accident-Transport **# d'évacués:**

Intensité:

Source d'information: Presse

Dommages (M$):

Commentaires:

52 personnes sont mortes quand un DC-6B du Canadien Pacifique a explosé et s'est écrasé au nord-est de Vancouver.

EPC Disaster Database
developed from CRED Disaster Database

Date: 1990.06.13 **# of dead:** 4

Province: BC **# of injured:**

Disaster type: Flood **# of evacuated:**

Magnitude:

Information source: GEOCC SITREP

Damage (M$): 10.

Comments:

Washouts and mudslides closed sections of three highways (5, 33, 97) and reduced the TransCanada Highway to one lane near Revelstoke; four homes were destroyed by a mudslide 16 km east of Enderby; three houses were destroyed at Stoner Creek; 2 people died 10 km south of Vavenby caught in a mudslide; 2 others 30 km SE of Kelowna also due to a mudslide; damage estimates are predicted to be 10 million.

Base de données des désastres de PCC
issue de la base de données des désastres du CRED

Date: 1990.06.13 **# de morts:** 4

Province: C-B **# de blessés:**

Type de désastre: Inondation **# d'évacués:**

Intensité:

Source d'information: CCOUG SITREP

Dommages (M$): 10.

Commentaires:

La route Transcanadienne a été réduite à une voie près de Revelstoke; des sections de trois routes (5, 33, 97) ont été fermées; le tout dû aux affouillements et glissements de terrain; 4 maisons ont été détruites par un glissement de terrain 16 km à l'est de Enderby; 3 maisons furent détruites à Stoner Creek; 2 personnes sont mortes, 10 km au sud de Vavenby, prises dans un glissement de terrain; 2 autres, 30 km au sud-est de Kelowna, encore à cause d'un glissement de terrain; les dommages sont évalués à 10 millions.

EPC Disaster Database
developed from CRED Disaster Database

Date: 1991.04.07 **# of dead:**

Province: Quebec **# of injured:**

Disaster type: Flood **# of evacuated:** 1 000

Magnitude:

Information source: GEOCC SITREP

Damage (M$): 5.

Comments:

Residents along the Chaudière River, south of Quebec City, experienced the highest flood levels in several years during the weekend of April 7th and 8th; many homes and business establishments have been damaged by water and ice; preliminary evaluation of damage indicated a figure between $5 and $10 million; 1000 residents were evacuated.

Base de données des désastres de PCC
issue de la base de données des désastres du CRED

Date: 1991.04.07 **# de morts:**

Province: Québec **# de blessés:**

Type de désastre: Inondation **# d'évacués:** 1 000

Intensité:

Source d'information: CCOUG SITREP

Dommages (M$): 5.

Commentaires:

Les résidents le long de la rivière Chaudière, au sud de la ville de Québec, ont subi les plus hauts niveaux d'eau en plusieurs années, la fin de semaine des 7 et 8 avril; plusieurs maisons et édifices à bureaux ont été endommagés par l'eau et la glace; une évaluation préliminaire des dommages indique des coûts s'élevant de 5 à 10 millions de dollars; 1000 personnes ont été évacuées.

EPC Disaster Database
developed from CRED Disaster Database

Date: 1991.06.29 **# of dead:**

Province: Quebec **# of injured:**

Disaster type: Forest Fire **# of evacuated:** 3 110

Magnitude:

Information source: GEOCC SITREP

Damage (M$):

Comments:

Residents of the Montagnais Reserve of Betsiamites and the community of Ragueneau were evacuated; nine fires declared in the area of Baie Comeau; fire fighting activity concentrated on the two largest fires; the larger fire covered 1900 square kilometres at Betsiamites, about 50 kilometres south of Baie Comeau; the second fire covered 900 square kilometres at Forestville, approximately 90 kilometres south of Baie Comeau; overall there were 3110 evacuees (Red Cross Statistics).

Base de données des désastres de PCC
issue de la base de données des désastres du CRED

Date: 1991.06.29 **# de morts:**

Province: Québec **# de blessés:**

Type de désastre: Incendie de forêt **# d'évacués:** 3 110

Intensité:

Source d'information: CCOUG SITREP

Dommages (M$):

Commentaires:

Les résidents de la réserve montagnaise de Betsiamites et la communauté de Ragueneau ont été évacués; 9 incendies se sont déclarés dans la région de Baie Comeau; le service d'incendie s'est concentré sur les deux incendies les plus importants; le plus grand couvrant 1900 km carrés à Betsiamites environ 50 km au sud de Baie Comeau, le second couvrant 900 km carrés à Forestville, environ 90 km au sud de Baie Comeau; au total 3110 personnes ont été évacuées (statistiques de la Croix Rouge).

EPC Disaster Database
developed from CRED Disaster Database

Date: 1991.07.09 **# of dead:**

Province: Manitoba **# of injured:**

Disaster type: Hazardous Chemicals **# of evacuated:** 400

Magnitude:

Information source: Press

Damage (M$):

Comments:

Twenty-four cars in an 88-car CN train jumped the tracks near the village of St-Lazare; ten of the derailed cars contained chlorine (three cars), methanol (three cars), caustic soda (two cars) and acetic anhydride (two cars); three types of chemicals, including the acetic anhydride, spilled causing the evacuation of the 400 residents of St. Lazare; one woman was treated briefly in hospital; the evacuation lasted for six days.

Base de données des désastres de PCC
issue de la base de données des désastres du CRED

Date: 1991.07.09 **# de morts:**

Province: Manitoba **# de blessés:**

Type de désastre: Matières dangereuses **# d'évacués:** 400

Intensité:

Source d'information: Presse

Dommages (M$):

Commentaires:

Vingt-quatre des 88 wagons d'un train du CN sont sortis des voies près du village de St-Lazare; 10 des wagons qui ont déraillé contenaient du chlore (3 wagons), du méthanol (3 wagons), de la soude caustique (2 wagons) et de l'anhydride acétique (2 wagons); 3 types de produits chimiques, incluant l'anhydride acétique, se sont renversés, causant l'évacuation des 400 résidents de St-Lazare; une femme fut traitée brièvement à l'hôpital; l'évacuation a duré six jours.

EPC Disaster Database
developed from CRED Disaster Database

Date: 1991.07.11 **# of dead:** 261
Province: International **# of injured:**
Disaster type: Accident-Transportation **# of evacuated:**

Magnitude:
Information source: Press
Damage (M$):

Comments:

Nationair DC-8 crashed in Saudi Arabia, killing 261 people.

Base de données des désastres de PCC
issue de la base de données des désastres du CRED

Date: 1991.07.11 **# de morts:** 261
Province: International **# de blessés:**
Type de désastre: Accident-Transport **# d'évacués:**

Intensité:
Source d'information: Presse
Dommages (M$):

Commentaires:

Un DC-8 de Nationair s'écrase en Arabie Saoudite, tuant 261 personnes.

EPC Disaster Database
developed from CRED Disaster Database

Date: 1991.08.27 **# of dead:**

Province: Quebec **# of injured:** 1

Disaster type: Tornado **# of evacuated:**

Magnitude:

Information source: GEOCC SITREP

Damage (M$): 13.

Comments:

The tornado affected the Village of Maskinongé; the tornado also crossed the St-Lawrence River and touched down in Notre-Dame de Pierreville where a few summer cottages were destroyed and some minor injuries occurred; it also touched down in St-Wenceslas where minor damage was reported; there were no death, 15 people injured, only one seriously; 60% of all buildings in the village of Maskinongé were damaged, the power lines were down and telephone service stopped; no drinking water was available; estimated 13 million in damage.

Base de données des désastres de PCC
issue de la base de données des désastres du CRED

Date: 1991.08.27 **# de morts:**

Province: Québec **# de blessés:** 1

Type de désastre: Tornade **# d'évacués:**

Intensité:

Source d'information: CCOUG SITREP

Dommages (M$): 13.

Commentaires:

La tornade a touché le village de Maskinongé; elle a traversé le fleuve St-Laurent et a touché le sol à Notre-Dame de Pierreville, où quelques chalets d'été ont été détruits et quelques blessures mineures ont été causées; elle a aussi touché le sol à St-Wenceslas, où des dommages mineurs ont été rapportés; il n'y a pas eu de morts, 15 personnes ont été blessées, seulement une sérieusement; 60% des immeubles du village de Maskinongé ont été endommagés; l'électricité, le service téléphonique se sont arrêtés; il n'y avait plus d'eau potable; les dommages furent estimés à 13 millions de dollars.

EPC Disaster Database
developed from CRED Disaster Database

Date: 1991.09.26 **# of dead:**
Province: Ontario **# of injured:** 1
Disaster type: Fire-Other **# of evacuated:** 1 300

Magnitude:
Information source: GEOCC SITREP
Damage (M$):

Comments:

Jarvis, Ontario; natural gas explosion destroyed one house; the owner of the home suffered burns from the blast and was hospitalized in stable condition; the explosion was caused when the gas seeped into a backyard well; all natural gas lines were turned off; electricity and phone lines were shut off to prevent sparks from triggering more explosions in the area off the north shore of Lake Erie; methane gas is a naturally occurring substance produced by decomposing organic material; the evacuation lasted 4 days.

Base de données des désastres de PCC
issue de la base de données des désastres du CRED

Date: 1991.09.26 **# de morts:**
Province: Ontario **# de blessés:** 1
Type de désastre: Incendie-Autre **# d'évacués:** 1 300

Intensité:
Source d'information: CCOUG SITREP
Dommages (M$):

Commentaires:

Jarvis, Ontario; une explosion de gaz naturel a détruit une maison; la propriétaire a souffert de brûlures dues à l'explosion et son état au moment de l'hospitalisation était stable; l'explosion s'est produite lorsque le gaz s'est infiltré dans un puits de la cour arrière; toutes les lignes de gaz naturel ont été fermées; l'électricité, les lignes téléphoniques ont également été fermées pour empêcher des étincelles qui auraient pu provoquer d'autres explosions sur la rive nord du lac Érié; le méthane est une substance produite naturellement par la décomposition de matière organique; l'évacuation a duré 4 jours.

Date: 1991.10.30 **# of dead:** 5

Province: NWT **# of injured:**

Disaster type: Accident-Transportation **# of evacuated:**

Magnitude:

Information source: GEOCC SITREP

Damage (M$):

Comments:

Alert, NWT; a C-130 Hercules transport plane from CFB Edmonton crashed about 20 km from the base; 18 people were on board; rescuers in the air and on the ground had been kept away by winds gusting up to 57 kilometres an hour; blowing snow meant ground rescue crews couldn't see a metre in front of them, and parachutists couldn't see where to jump until 11 PM 31/10/91; 10 hours later military helicopters airlifted survivors from the wreckage ending a two-day survival nightmare on the frozen tundra near the top of the world; five military personnel died in the crash. The crash was later attributed to pilot error.

Date: 1991.10.30 **# de morts:** 5

Province: T-N-O **# de blessés:**

Type de désastre: Accident-Transport **# d'évacués:**

Intensité:

Source d'information: CCOUG SITREP

Dommages (M$):

Commentaires:

Alert, T-N-O; un avion de transport Hercules C-130 de la base militaire d'Edmonton s'est écrasé à environ 20 km de la base d'Alert; 18 personnes étaient à bord; les sauveteurs dans l'air et au sol ont été retenus par des vents de 57 km à l'heure; la poudrerie empêchait les sauveteurs au sol de voir à plus d'un mètre devant eux et les parachutistes n'ont pu sauter avant 23h en raison de la visibilité nulle; 10 heures plus tard, des hélicoptères militaires ont emporté les survivants, mettant fin à un cauchemar de 2 jours dans la toundra gelée près du sommet du monde; 5 militaires ont péri dans l'accident. L'écrasement fut par la suite attribué à une erreur de pilotage.