

International Charter Space & Major Disasters



Executive Secretariat

Annual report

Period May-December 2002

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1 Introduction

1.1 Purpose and scope

This document constitutes the 2nd annual report on the operations of the International Charter "Space & Major Disasters" prepared by the Executive Secretariat as laid down in [AD1]. It covers the period May 1st, 2002 to December 31, 2002, that is 8 months. Further annual reports shall cover calendar years. The report is based upon the following input :

- Project manager reports for each activation,
- Minutes of Executive Secretariat meetings,
- UN OCHA Reliefweb site.

The report is structured in the following way.

Chapter 1 is the present introduction.

Chapter 2 describes the activities performed with organisations external to the Charter : other space agencies, cooperating bodies etc.

Chapter 3 describes internal activities : procedure updates, integration of new members, internal rules.

Chapter 4 summarises and analyses the activations that occurred during the reference period.

Chapter 5 summarizes the Communications activities.

Chapter 6 gathers conclusions.

Eventually chapter 7 describes some lessons learnt for Partner Agencies. This chapter is not included in the public issue of the report.

1.2 Applicable documents

[AD1] Charter "Space and Major Disasters", 20 June 2000.

[AD2] Charter implementation plan, RSCSA-PL0098

[AD3] Project manager procedure, RSCSA-PR0419 rev. B

[AD4] Operational Qualification requirements and Procedures, RSCSA-SP0047

1.3 Reference documents

- [RD1] Northern Italy landslide Final Report, Issue 1.4, F. Ranera, 12 June 2002.
- [RD2] British Columbia Preliminary Report, G. Burger, 20 June 2002.
- [RD3] Manitoba floods Final Report, R. Saint-Jean, 4 April 2002.
- [RD4] Caucasus flood Preliminary Report, G.I. Pollock, 23 August 2002
- [RD5] Northern Ossetia Avalanche Final report, S. Galitsky, 30 October 2002.
- [RD6] Isidore hurricane Preliminary Report, G.I. Pollock, 6 January 2003
- [RD7] Limburg Tanker accident, Preliminary Report, G.I. Pollock, 9 January 2003
- [RD8] Czech Republic flood Final Report, U. Frei, 30 November 2002
- [RD9] Elbe floods Final report, R. Muller and S. Voigt, 9 November 2002
- [RD10] Danube floods Final Report, R. Muller and S. Voigt, 9 November 2002
- [RD11] Morocco floods, Preliminary Report, F. Sarti, 9 January 2003.
- [RD12] Gard flood, Final Report, J. Inglada, December 2002.
- [RD13] Prestige wreck Final Report, J. Inglada, 9 March 2003
- [RD14] UN-OCHA web site, www.reliefweb.org

1.4 List of acronyms

AU	Authorised User
CONAE	Comission Nacional de Actividades Espaciales
CSA	Canadian Space Agency
CNES	Centre National d'Etudes Spatiales
DDSC	Direction de la Défense et de la Sécurité Civiles (French AU)
ECO	Emergency on Call Officer
ESA	European Space Agency
DMC	Disaster Management Constellation
ISRO	Indian Space Research Organisation
NOAA	National Oceanographic and Atmospheric Administration
NASDA	National Space Development Agency

ODO	On Duty Operator
PA	Partner Agency
PM	Project Manager
VAR	Value adding reseller
UN-OCHA	United Nations' Office of Coordination of Humanitarian Affairs
UN-OOSA	United Nations' Office of Outer Space Affairs

2 External relations

2.1 New members

Upon receipt of their application and following instruction of the Board, exchange of information and preliminary discussions were conducted with CONAE. As of December 31st these discussions were still ongoing.

Other contacts and exchange of information took place with NASDA (Japan), Rosaviakosmos (Russia) and some stakeholders of the DMC.

2.2 Cooperating bodies

Extensive discussions took place with UN OOSA in order to set up a framework agreement enabling cooperation with specialised organisations of the UN system that are involved in emergency management and rescue.

The headlines of this agreement were worked out and it should be implemented during the course of 2003. Cooperation already took place through participation to their seminars (see also sec. 5.3) The Board, in its 8th meeting in November 2002, accepted UN OOSA as a co-operating body to the Charter and recommended to evaluate the co-operation after one year. The Executive Secretariat was tasked to implementing the *modus operandi* jointly with the OOSA.

Discussions were held with Council of Europe's EUR-Open Partial Agreement.

2.3 Authorised Users

A few requests for updates were received from Authorised Users. They mainly concerned admittance of new AU's with specific remit.

A number of inquiries from various bodies to become authorised users were received. Most were declined as emanating from organisations not directly responsible of emergency and rescue organisations but rather with a scientific or research and development mission.

3 Internal business

3.1 Procedure revision

The Executive Secretariat issued a new release of the Operational Qualification Requirements and Procedures, ODO, ECO and PM procedures. Reasons for the update were :

- admittance of new members, namely ISRO and NOAA
- improvement of the procedures
- update of forms (User Request Form)

The Board also approved a new release of the Charter Implementation Plan and of the AU list procedure prepared by the Executive Secretariat.

3.2 Acceptance Criteria

The text of the Charter clearly sets the scope of the Charter in broad terms. However the Charter has been invoked in a number of situations at the edge, where some go/no-go decision had to be taken, the most dramatic one being the call about the *Magdalena Oldendorf* scientific ship stuck in the ice of Antarctica. As another example, a request had been received during the Afghanistan war, which was rejected, while another request after an earthquake in the same area was processed.

A comprehensive discussion took place between Partner Agencies in order to define acceptance criteria, allowing Emergency on Call Officers to take a simple decision, whenever possible. Furthermore a clear decision process was established in especially difficult cases. The following working instruction was sent to ECOs.

“For serving the objectives of the Charter, ECOs are encouraged to assess positively incoming calls, but if the on-duty ECO believes that the request falls outside of the Charter scope, he/she will contact the Executive Secretariat and in case of disagreement the decision will be taken by the Board.

However in the following cases the activation should not be accepted.

1. **Non emergency situations :**
 - Oil spill monitoring operations
 - Ice monitoring operations except for specific event
2. **Emergencies falling out of Charter scope :**
 - War or armed conflicts
 - Humanitarian actions not linked to a specific disaster
 - Search and rescue support not linked to a specific disaster

3. Emergencies with doubtful/no benefit from space assets

- Droughts
- Routine epidemiological outbreaks

4. Calls beyond emergency period

- As a rule of thumb, a Charter activation occurring more than 10 days after the actual crisis start should be rejected.

In addition the duration of a Charter call should be limited to a maximum of 15 days after activation and the request should be rejected if the size of the disaster is not compatible with the resolution of the available satellites.”

3.3 Integration of new members

For the first time since its inception, two new partner Agencies, ISRO and NOAA had to be integrated into the operations. This process, described in [AD4] is a mix of mutual training and procedure checks, concluded by an integration test similar to the one conducted by the 3 founding members.

A series of training sessions took place at ISRO and NOAA headquarters, respectively on 26-30 August 2002 and 7-11 October 2002.

After a successful integration test, ISRO was declared fully integrated in October 2002 and took up the ECO role for the 1st time on November 4th, 2002. A similar test took place late in December with NOAA, which should result in the integration of this Partner Agency early in 2003.

4 Operations

The following sections summarise the activations during the reference period.

The *Call_ID* is the unique number assigned by the ODO to any User Request Form received. This number is also logged in an operations book and noted on the URF.

The number of activations actually recognised as such and processed by the ECO are listed in sec. 4.1 Their reference number differs from the *Call_ID* since some calls are not processed. Such calls are listed in sec. 4.2

Eventually some general remarks, statistics and analysis are provided in sec. 4.3

4.1 Charter activations

The following tables summarises the activations along with satellite data used in each case. The table shows the data acquired, delivered and processed. In the case of SPOT an additional column gives the number of total imaging attempts (including the unsuccessful ones due to e.g. cloud coverage).

Call ID	Name	Date	ERS	SPOT	RADARSAT	IRS	OTHERS
18	15 Italy, Lago Maggiore Landslide	May 6	10	3 7	2	-	2 Quickbird
19	16 Canada, Southern Manitoba Flood	June 13	0	4 9	5	-	0
20	17 Canada, British Columbia Flood	June 18	4	2 9	6	-	0
22A 22B	18 Russia, Caucasus Flood	June 28	0	0 7	2	-	0

Call ID	Name	Date	ERS	SPOT		RADARSAT	IRS	OTHERS
24	19 Czech Republic, Znojmo Flood	August 17	6	3	4	1	-	0
25 25B	20 Austria, Danube river Flood	August 20	14	0	0	5	-	2 LANDSAT 1 MODIS
26 26B	21 Germany, Elbe river Flood	August 22	61	14	14	5	7	1 ENVISAT 10 LANDSAT 19 MODIS 1 ASTER 2 BIRD 1 MOMS-2P
27	22 France, Gard river Flood	September 9	0	7	12	3	0	0
28	23 Russia, North Ossetia Landslide	September 27	2	0	8	1	0	3 METEOR
29	24 Mexico, Yucatan Ocean storm	October 6	0	0	14	0	0	0
30	25 Yemen, gulf of Aden oil spill	October 8	0	1	2	1	0	0
31	26 Spain, Prestige oil spill	November 14	11	0	4	2	0	1 ENVISAT
33	27 Morocco floods	November 28	3	3	7	0	0	0

Call ID	Name	Date	ERS	SPOT	RADARSAT	IRS	OTHERS
	Total		111	37 97	33	7	42

One must note that the activation 26 was subject to 2 distinct calls from 2 distinct AUs: the EC Civil Protection Unit and the French Civil Protection.



Location of charter calls May-December 2002

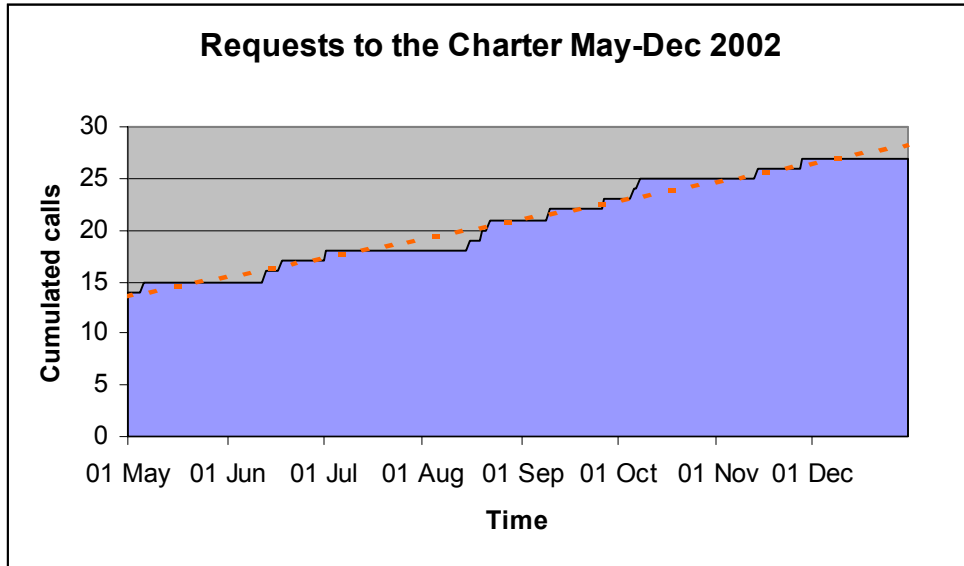
4.2 Unprocessed requests

Call_ID	Location	Date	Status	Comments
21	Antarctica, <i>Magdalena Oldendorff</i> ship	June 27	Cancelled	NOAA, on behalf of the U.S. National Ice Centre, submitted this request after a German scientific ship was stuck in the Antarctica ice shelf. Most Executive Secretariat members felt that this case was more of routine ice monitoring with no matter of emergency, while others pleaded the exceptional nature of the case. Extensive discussion on acceptance criteria and decision process took place after this request.
23	Venezuela, Flood	August 12	Rejected	This request submitted by the Canadian AU on behalf of the Venezuelan authorities was rejected as falling well beyond the emergency period. The flood actually occurred on July 21.
32	Spain, <i>Prestige</i> oil spill	November 17	Merged with 31	This requested was submitted by the French Civil Protection Agency on the same event than the call # 31 from the EC Civil Protection Unit. The second caller got a copy of the results obtained for the 1 st one
33	Spain, <i>Prestige</i> oil spill	December	Rejected	This new request submitted by the EC Civil Protection Unit was rejected as falling beyond the emergency period. The requested action was judged more of a monitoring nature than an emergency

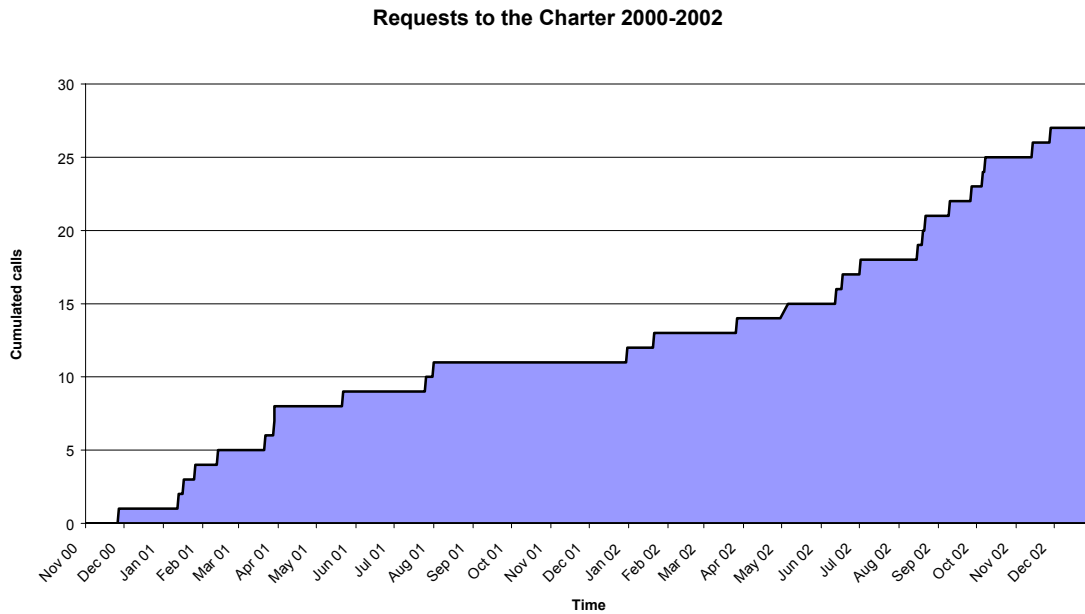
4.3 Analysis

4.3.1 Overall analysis

The following figure summarises the calls processed during the reference period, which shows a rather steady call rate of 1.6 per month.

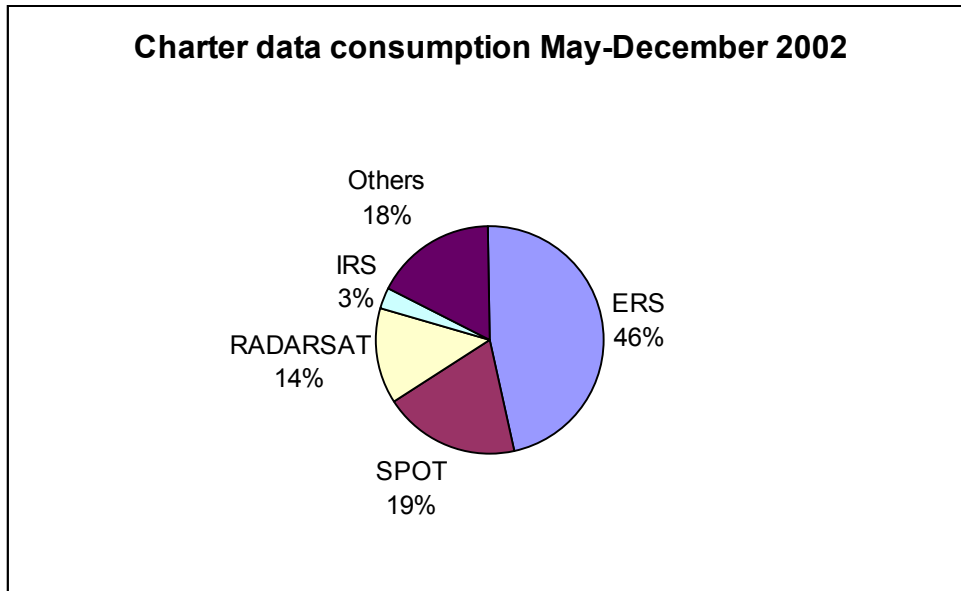


The next figure summarizes the calls since November 1st, 2000. It shows clearly a trend towards an increasing number of calls during the reference period, especially with respect to the first year.



The next figure shows the consumption of satellite data resources, based upon **delivered data**. The number of archived ERS scenes used during the Central Europe floods is responsible of the outstanding number of ERS scenes with respect to other sensors. Note for the first time usage of IRS data, although not formally available at the time, and the relatively high percentage of data from other sources. Apart from the 2 ENVISAT scenes, this accounts for LANDSAT ones, especially during the Central Europe floods, and a few high-resolution optical images. Also for SPOT and optical satellites in general, the actual

satellite resource consumption is higher due to unsuccessful (cloudy) programming attempts.



The average numbers of data products per call and per resource are summarised below. For IRS the average is computed only since Call_ID 26.

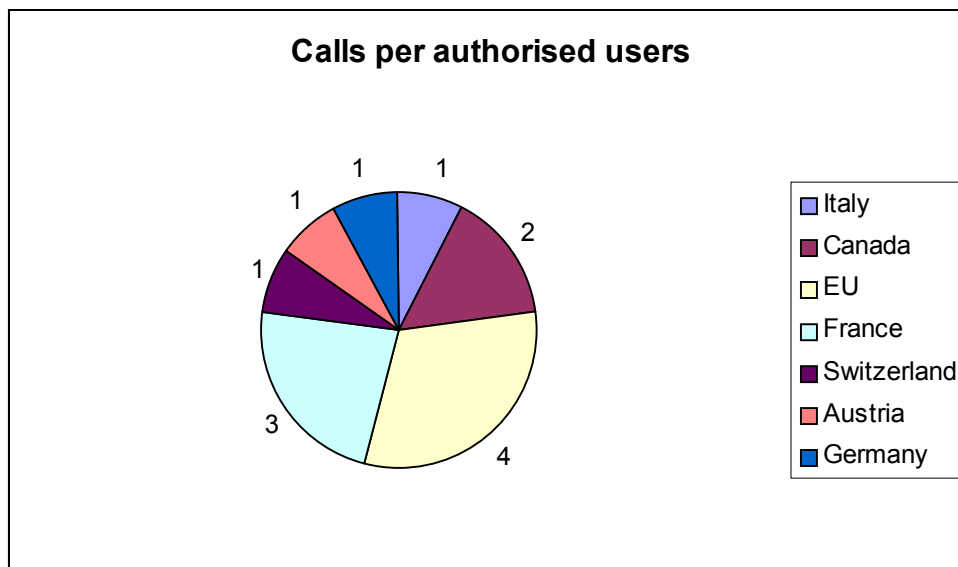
Sensor	ERS	SPOT	RADARSAT	IRS
Minimum	0	0	0	0
Average	8.3	4.1	2.2	1
Maximum	61	11	6	7

4.3.2 Service analysis

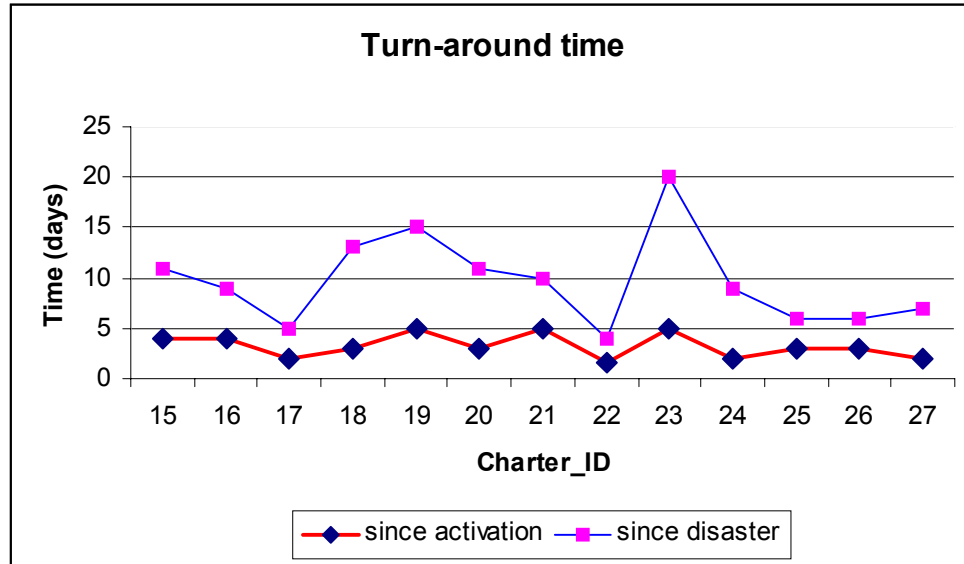
The table besides shows the repartition of PM's and ECO's per agency. While the first one is driven by chance, the second is mostly driven by the location of disaster, the AU, expertise and staff availability.

	ESA	CNES	CSA	ISRO
ECO	5	5	2	0
PM	8	2	2	0

The following table shows the calls per authorised users. One notes the high number of calls from France and from the European Commission, sometimes (especially EC) acting on behalf of another country. These two users account for more than half of the calls.



The main performance indicator is the overall turnaround time. The following table gives the current figures : the red line indicates the response time (elapsed time between activation and provision of the first product), while the blue line indicates the absolute time (elapsed time between occurrence of disaster and provision of the first product to the user). For long lasting disasters, such as floods, the occurrence of the disaster was set on the first day of the event.

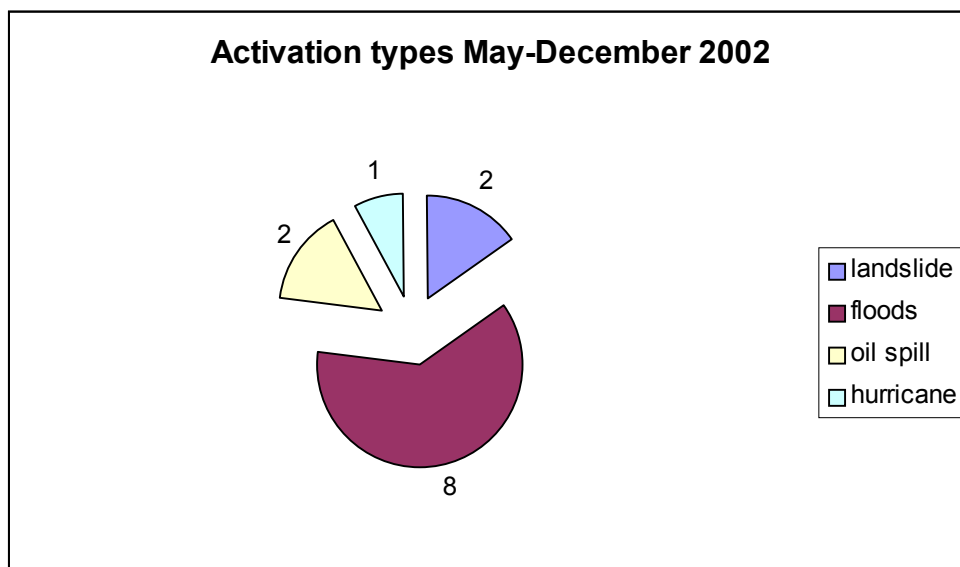


The response time is always better than 5 days with an absolute record of 38 hours for the Gard floods and an average around 2.5 days. However the striking figure is the long time between occurrence of the disaster and Charter activation. This call for a few remarks :

- The size of the event is not always understood at first, such as in the case of the Central European floods ;
- In most cases the Charter is not yet integrated in operational procedures of the civil protections ; in several occasions the existence of the Charter was even hardly known ; in other cases the potential benefit of the Charter is vaguely understood ;
- Access to Charter for countries not represented by the space agencies signatory to the Charter is still a lengthy process ;
- It appears that the more experience an Authorised User has with the Charter, the faster is the activation and the better response time ;
- Conversely, very late activations usually result in poor overall response time ;
- The trend is towards improvement.

4.3.3 Product analysis

As the table below shows, the activations were dominated again by flood events. No earthquake gave rise to activation during this period.



Value-added products produced after flood events such as Manitoba floods or Gard floods matched very much users' expectations. The overall chain seems to be well mastered by the companies that carried out the analysis.

As far as oil spills are concerned, some discussion took place with experts associated by Authorised Users on the quality of products produced elsewhere by some companies. These experts prefer to perform analysis on their own.

In order to assess the impact of the Charter world wide, the list of disasters logged by UN-OCHA¹ was screened with the help of the aforementioned criteria. Out of the 68 events listed in the period, 21 events were retained as potential Charter activations, out of which 6 were actually covered by a call. The table below summarises those events.

<i>Location</i>	<i>Type</i>	<i>Date</i>	<i>Comments</i>
Chile	Floods	May-02	
Kenya	Floods	May-02	Over 70 death
China	Floods	Jun-02	worst since 1998 in Hunan
Honduras	Rains	Jun-02	Area hit by Mitch in 1998
Iran	Earthquake	Jun-02	226 casualties

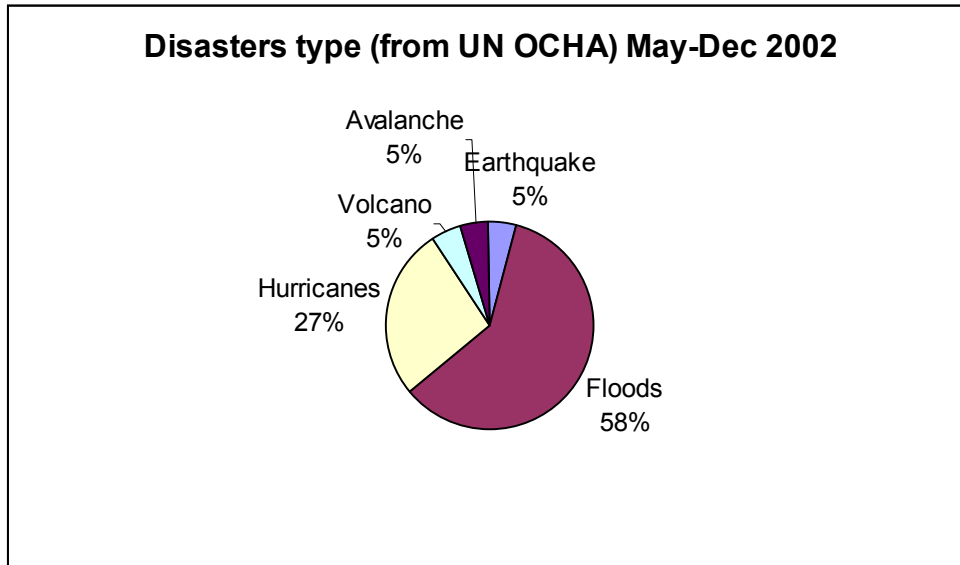
¹ This source does not account well for events occurring in some developed countries such as France, USA or Germany.

Russian Federation	Floods	Jun-02	Charter call
Bangladesh	Floods	Jul-02	Subject of charter exercise
India	Floods	Jul-02	
Czech Republic	Floods	Aug-02	Charter call
Russian Federation	Floods	Aug-02	Related to above call
Viet Nam	Floods	Aug-02	
Albania	Floods	Sep-02	
Caribbean	Tropical Storm Lili	Sep-02	
Caribbean	Tropical Storm Isidore	Sep-02	Charter call
DPR Korea	Typhoon Rusa	Sep-02	
Rep. of Korea	Typhoon Rusa	Sep-02	
Russian Federation	Avalanche	Sep-02	Charter call
Mexico	Hurricane Kenna	Oct-02	
Thailand	Floods	Oct-02	66 death
Ecuador	Volcanic Eruption	Nov-02	ash/gas emissions
Morocco	Floods	Nov-02	Charter call
Solomon Islands	Cyclone Zoe	Dec-02	

A series of remarks may be drawn from this table :

- The contribution from the Charter is significant ;
- The potential numeric growth of Charter calls remains within the same order of magnitude ;
- The growth potential lies within countries not represented by Partner agencies.

Moreover the chart below shows that the repartition by disaster type is very similar to the one of actual charter calls, the main discrepancies being in the number of hurricanes and the oil spills, not addressed by UN-OCHA.



5 Communications

5.1 Web site

The web site was further developed by CSA and continuously updated with new information.

5.2 Videos

As a complement to the Charter video produced by CNES, production of some specific videos was contemplated after events such as Niriyagongo eruption, Gard or Central Europe floods.

5.3 Conferences & presentations

The Charter was presented in a number of conferences, seminars etc. The following table summarizes these activities.

Date	Place	Venue
30 May	Lausanne, Switzerland	International Relations Committee and presentation to the Swiss public, ESA
31 May	Matsue, Japan	International Space and Technology Symposium
1-5 July	Addis Ababa, Ethiopia	UN regional workshop on Space Technology for Disaster management
26 July-4 September	Johannesburg, South Africa	World Summit on Sustainable Development
26-27 September	Tunis, Tunisia	CRTEAN / ECSL workshop
9-19 October	Houston, USA	COSPAR / International Astronautical Congress
23-24 October	Brussels, Belgium	GMES / EUFOREO workshop "Satellites in the service of humanitarian relief"

11-15 November	Bangkok, Thailand	UN regional workshop on Space Technology for Disaster management
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6 Conclusions

The last 8 months of 2002 were devoted to consolidation of the Charter system, through refinement of its internal procedures, and enlargement of its coverage through negotiation with UN organisations.

The Charter has been activated in a significant number of disasters worldwide, plus a number of events of regional importance.

The main area of growth and improvement resides in awareness of the Charter within emergency and rescue organisations.

An important effort has been put in communication strategy in general and in presentations of the Charter in particular. This effort must be continued.