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The 2001-2010 Decade in the Americas Marked by Disasters: A look in retrospective

Department of Sustainable Development

Acknowledgments

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It is their hope that this document will contribute to the continuing development of institutional policy on matters of disaster risk management and sustainable development, which are carried out by the General Secretariat of the Organization of American States, through its various offices, secretariats and departments, its Member States Permanent Missions and pertinent national agencies, OAS Permanent Observers, and partners.

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Introduction

The following is a brief overview of the 2001-2010 decade in terms of disasters in the Americas. The main source of this document is the Emergency Events Database EM-DAT of the Centre for Research of the Epidemiology of Disasters, CRED, Université Catholique de Louvain in Belgium and World Health Organization Collaborative Centre. As absolute numbers regarding disasters may vary depending on the source and the methodology applied in collecting the data, a single source was used throughout the document so as to minimize distortions. Thus, the reader is asked to regard these figures as relative and not absolute. Also, for the purpose of this document, only the most destructive events of the 10-year period are highlighted.

The 2001-2010 decade in the Western Hemisphere was marked by devastating disasters that amounted to over 260 thousand deaths and 440 billion USD in damages. One country, the United States of America, accounted for over two-thirds of all losses in damages with one event, Hurricane Katrina, costing 125 billion USD. This reveals that Risk is not only a function of the hazard that an event represents and the vulnerability of the communities affected, but also of the value of the assets exposed to such a hazard.

Therefore, given that the value of infrastructure and other assets tend to be higher in the United States than in other countries in the Americas, we may see that events of similar magnitude incur greater financial damages in the USA compared to in developing countries in the region. Likewise, disasters such as floods and droughts may not only impact several countries simultaneously but also exert indirect economic costs on nations not directly affected by an event, either through trade or tourism.

In terms of deaths, the number of deceased in Haiti due to one event, its 2010 earthquake, numbered over 220 thousand, representing over 85% of all deaths due to disasters in that decade.

Table 1 displays the deadliest disasters of the 2001-2010 period, while Table 2 displays the same figures with the exclusion of Haiti's 2010 earthquake.

Table 1 – Total deaths by disaster type (2001 to 2010)		
		# Deaths
1	Earthquakes	225,172
2	Storms	10,227
3	Floods	8,556
4	Extreme Temperatures	1,765
5	Mass Movement	1,113

Table 2 – Total deaths by disaster type, (2001 to 2010) [2010 Haiti Earthquake excluded]		
		# Deaths
1	Storms	10,227
2	Floods	8,556
3	Earthquakes	2,602
4	Extreme Temperatures	1,765
5	Mass Movement	1,113

As Table 1 and Table 2 illustrate, earthquakes rank first in total number of deaths solely due to the extraordinary number of such cases resulting from Haiti's 2010 earthquake. Therefore, Table 1 may present a misleading picture of the *typical* burden of deaths caused by disasters in the Americas.

Moreover, although intensive geophysical events such as earthquakes and volcano eruptions tend to attract the most attention in the public eye, we commonly see, with a few exceptions, that meteorological and hydrological events (i.e., storms and floods) have a tendency to cause the most human and financial harm. Tables 3 and 4 accurately exhibit this point.

Although the tragic earthquake in Haiti clearly represents a much larger number of casualties, it is certainly an outlier and does not characterize the current trend in disasters for the Americas, where meteorological and hydrological events tend to exert a greater damage and more deaths, as well as greater economic losses and affected people.

Table 3 – Deadliest Disasters during 2001-2010					
	Date	Location	Type	ID	# Deaths
1	Dec 2010	Haiti	Earthquake		222,570
2	Sep 2004	Haiti	Storm	Jeanne	2,754
3	May-Jun 2004	Haiti	Flood		2,665
4	Aug-Sep 2005	USA	Storm	Katrina	1,833
5	Oct 2005	Guatemala	Storm	Stan	1,513

Table 4 – Most Damaging Disasters during 2001-2010					Damage (in million USD)
	Date	Location	Type	ID	
1	Aug-Sep 2005	USA	Storm	Katrina	125,000
2	Sep 2008	Bahamas, Cuba, Haiti, Turks & Caicos Islands, USA	Storm	Ike	32,000
3	Feb 2010	Chile	Earthquake	Bio Bio Province	30,000
4	Aug-Sep 2004	Caribbean ¹ , Venezuela, USA,	Storm	Ivan	23,128
5	Oct 2005	Bahamas, Cuba, Haiti, Jamaica, Mexico, USA	Storm	Wilma	20,004

¹ Caribbean= Bahamas, Barbados, Cayman Islands, Cuba, Dominican Republic, Grenada, Haiti, Jamaica, St. Lucia, St. Vincent & the Grenadine, Trinidad & Tobago.

In terms of frequency of disasters, storms and floods once more take center stage. The following charts (Charts 1 and 2) present the incidence of disasters by year and type as well as the total amount of damages incurred per type of disaster. As can be seen, floods and storms account for more than 30% – each – of disasters, while storms were responsible for 81% of all the damages in that time period.

Chart 1 – Incidence of Disasters during 2001-2010.

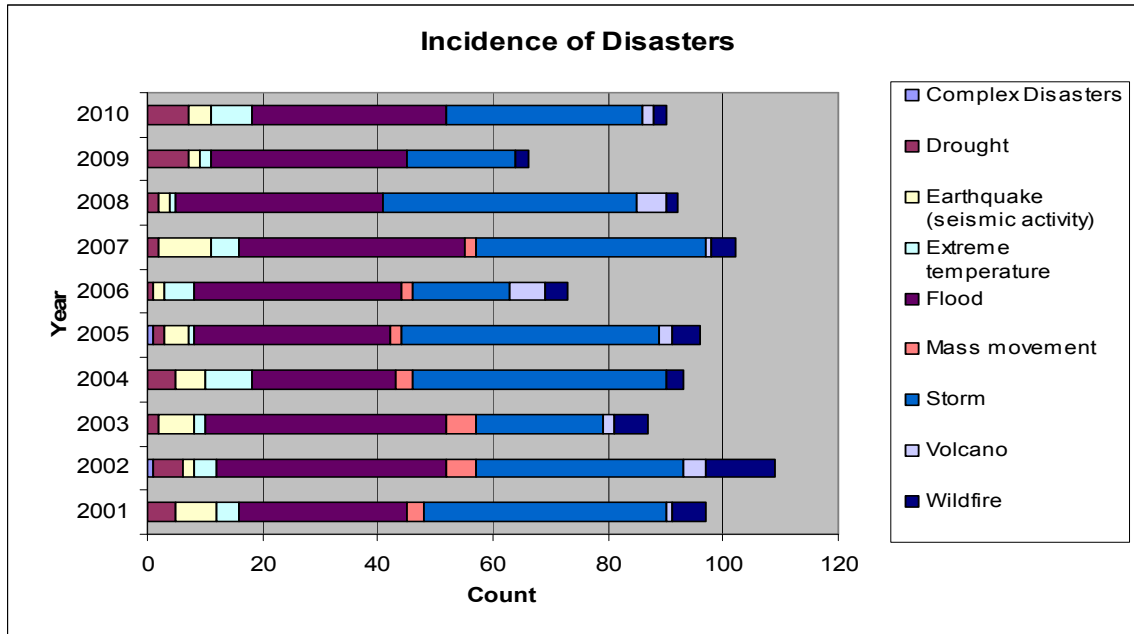
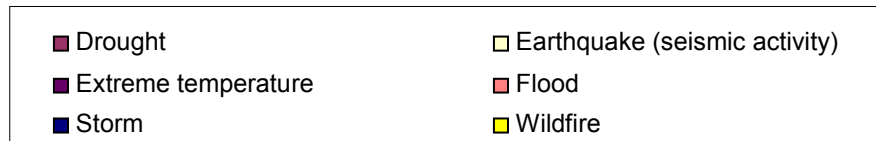
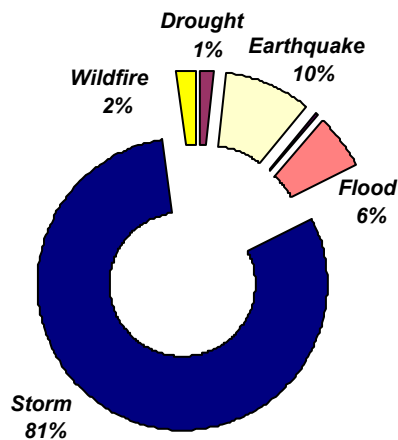


Chart 2 depicts the difference in monetary damage between disaster types. Although two strong earthquakes hit the region in this decade, taking over 200 thousand lives, storms still represent the bulk of the financial burden, accounting for over four-fifths of all damages. A closer look at the top 5 storms in this period may partly explain why this is the case.

Chart 2 – Total Damages (%) per disaster type during 2001-2010.



Droughts

The Americas saw 38 reported incidents of droughts from 2001 to 2010, only one more than the total for the previous 10 years. However, these events affected more than 6 million people hemisphere-wide. Moreover, the five most prominent droughts of the past ten years generated more than 6.5 billion USD in damages. The most affected countries in this regard include the two most important economic and agricultural engines of the Western Hemisphere, the United States and Brazil.

In addition to the five droughts shown in the table below, in 2009 Guatemala experienced its worst drought in over three decades. The United Nations reported² that 2.5 million people were affected and hundreds of thousands faced severe hunger as a result. The drought was believed to have been exacerbated by the El Niño weather pattern.

Table 5- Top 5 Droughts during 2001-2010			
	Year	Location	Damage (million USD)
1	2002	USA	3,300
2	2004-2005	Brazil	1,650
3	2000-2002	USA	1,100
4	2007-2009	USA	300
5	2002	Mexico	210

Furthermore, severe droughts also affected populations in poorer regions where, although the financial impact was not as great in terms of the actual figures, these droughts had extended and deeper effects on families due to the considerable level of dependence on the soil for subsistence. The World Food Programme reported in 2004, that prolonged droughts severely affected the poorest families in Bolivia, Guatemala and Honduras. Families were reported to having cut their food intake drastically, even in areas already plagued with high malnutrition rates. In addition, clean water supplies were greatly affected as well, due to the lack of drinking water provision mechanisms in rural areas; leading in some cases to families resorting to drinking the same water as their livestock.³

² UN News Centre, *Worst drought in Guatemala in decades affecting 2.5 million people, UN reports*. Retrieved on March 16th 2011 from <http://www.un.org/apps/news/story.asp?NewsID=32109>

³ WFP 2004, *Drought threatens thousands of families in Bolivia, Guatemala and Honduras*. Retrieved on April 5th 2011 from <http://www.wfp.org/news/news-release/drought-threatens-thousands-families-bolivia-guatemala-and-honduras>

Earthquakes

The 7.0 Richter scale magnitude earthquake that shook Haiti in January 2010 attracted worldwide attention as well as thousands of organizations offering help. Such was the devastation of this event that over a year after it hit Port-au-Prince and surrounding areas, international assistance is still present and much needed. Moreover, barely a month past this incident Chile was impacted by a potent 8.8 magnitude earthquake that cost the country 30 billion USD in damages.

		Date	# Deaths	Damage (million USD)	# Affected
1	Haiti	Jan 2010	222,570	8,000	3,700,000
2	El Salvador	Jan 2001	844	1,500	1,334,529
3	Peru	Aug 2007	593	600	658,331
4	Chile	Feb 2010	562	30,000	2,671,506
5	El Salvador	Feb 2001	315	349	256,021

The two earthquakes that shook El Salvador in 2001 affected 1.5 million people and killed over 1,800, while Peru's Pisco earthquake in 2007 killed almost 600 people and caused 600 million USD in damages.

		Date	# Deaths	Damage (million USD)	# Affected
1	Chile	Feb 2010	562	30,000	2,671,506
2	Haiti	Jan 2010	222,570	8,000	3,700,000
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4	Peru	Aug 2007	593	600	658,331
5	El Salvador	Feb 2001	315	349	256,021

As a general rule of thumb we see that earthquakes impacting poor and lesser developed areas – such as Haiti and El Salvador – tend to result in a higher number of deaths, while those impacting areas with a higher degree of development and greater-valued assets – such as Chile –result in larger economic losses or damages, but lesser number of deaths. Moreover, it is important to note that the Richter scale alone may not accurately describe the intensity being felt by the populations impacted. Additional variables, such as the depth of the hypocenter (or earthquake's focus), the distance of the epicenter to the population centers impacted, the types of plate boundaries and the soils, may considerably affect an earthquake's felt intensity. The following table lists the most notable Earthquakes in the Americas during the 2001-2010 period. As this table illustrates, the Mercalli scale, which measures felt intensity and

damages, is not directly proportional to the Richter scale due precisely to the previously mentioned variables.

For the purpose of this analysis, Table 7 (see below) includes two earthquakes registered early in 2011, while this document was being prepared. Earthquake #24 in Araucania, Chile, provides a good example for the theory described above. Although the earthquake registered at a high 7.1 in the Richter scale and had a shallow hypocenter at only 25 kilometers in depth, no deaths or injuries were reported. The fact that the seismic activity occurred approximately 70 kilometers from the nearest population center, of just 600,000 residents, contributed to the non-existent loss of lives or injuries. If the same earthquake had struck 10 kilometers from Santiago de Chile, the result might have been different.

Similarly, earthquakes #19 (Haiti 2010) and #20 (Chile 2010), although both devastating, cannot be used lightly in comparisons regarding infrastructure vulnerability. Although Haiti's infrastructure is widely accepted to have been more vulnerable than that of Chile's at the time of the earthquake, it would be imprudent to compare the results of these two on a par-to-par basis due to the fact that Haiti's hypocenter was at a shallow 10 kilometers compared to Chile's 35 and its epicenter was just 25 kilometers from Port-au-prince, a city of over 3 million residents, while the nearest population center in Bio Bio, Chile was over 100 kilometers away and consisted of a population of approximately 300,000, or 10% that of Port-au-prince. This later analysis is by no means in detriment of building and other infrastructure, structural design and construction considerations.

Table 7 - Most Important Earthquakes in the Western Hemisphere (January 2001-March 2011)⁴

ID	Date			Magnitude		Depth	Deaths	Injured	Location	Dist. to Nearest Population Center (Km)	# of Inhabitants in Nearest Population Center
	Year	Month	Day	Richter ⁵	Mercalli ⁶	Km					
1	2001	01	13	7.7	n/a	60	852	4723	El Salvador - Guatemala	120	2,300,000
2	2001	02	13	6.6	n/a	10	315	3,399	El Salvador	30	2,300,000
3	2001	02	28	6.8	VIII	52	0	400	Seattle, WA, USA	30	3,410,000
4	2001	06	23	8.4	V-VIII	33	138	2,689	Southern Coast Peru	175	15,000
5	2003	01	22	7.6	VI-VIII	24	29	300	Colima, Mexico	55	650,000
6	2003	12	22	6.6	IV-VII	8	2	40	C. California, USA	11	250,000
7	2004	11	20	6.4	V-VII	16	8	454	Costa Rica	40	1,715,000
8	2005	6	13	7.8	VII	120	11	200	Northern Chile	125	240,000
9	2005	9	26	7.5	VI~IV	100	5	60	Northern Peru	75	50,000
10	2006	9	10	5.8		10	0	0	Gulf of Mexico	415	370,000
11	2007	8	15	8	VIII	30	519	1,366	Ica, Peru	110	710,000
12	2007	11	14	7.7	VIII	60	2		Northern Chile	35	490,000
13	2007	11	29	7.4	VI	143.1	1	0	Windward Islands	40	100,000
14	2008	2	21	6	VI	6.7	0	3	N.E. Nevada, USA	10	50,000
15	2009	1	8	6.1	VII~VI	4.5	23	100	Costa Rica	30	1,715,000
16	2009	5	28	7.3	VI~IV	10	7	40	Honduras	125	174,000
17	2009	8	3	6.9	V	10	0	0	Gulf California, Mexico	190	2,660,000
18	2010	1	10	6.5	V	21.7	0	30	N. California, USA	45	125,000
19	2010	1	12	7	X	10	222,570	300,000	Haiti	25	3,100,000
20	2010	2	27	8.8	VII	35	521	12,000	Bio Bio, Chile	105	300,000
21	2010	4	4	7.2	VII~VI	10	2	233	Baja, Mexico	50	1,000,000
22	2010	8	12	7.1	n/a	190	0	0	Ecuador	150	475,000
23	2011	1	1	7	III	584	0	0	Santiago del Estero, Argentina	160	245,000
24	2011	1	2	7.1	VI	25	0	0	Araucania, Chile	70	600,000

⁴ USGS- United States Geological Service, retrieved March 01 2011, <http://earthquake.usgs.gov/earthquakes/eqinthenews/>

Extreme Temperatures

Extreme temperatures constantly affected one country in particular during the past 10 years, Peru. Such incidents in 2003, 2004, 2007, 2009 and 2010, were responsible for the deaths of more than 1,100 people and affected almost 5 million. Moreover, within the Latin American and Caribbean region, extreme cold temperatures typically have a greater impact in the Southern Cone of South America.

	Date	Location	# Deaths	# Affected
1	2004	Argentina, Peru, Uruguay	95	2,139,467
2	2003	Peru	339	1,839,888
3	2007	Argentina, Chile, Peru	83	884,572
4	2010	Argentina, Bolivia, Brazil, Chile, Paraguay, Peru, Uruguay	409	n/a
5	2009	Peru (Amazon)	274	24,262

In 2010, several South American countries experienced extreme cold temperatures. Fatalities due to cold weather were recorded throughout the region, while widespread loss of livestock in Chile, Paraguay and Peru were also reported. By the end of the decade, in July 2010, extreme cold temperatures took the lives of 42 people in Argentina.⁷⁻⁸

⁵ Intensity scale which describes the magnitude of an earthquake determined by a seismograph. Refer to: <http://earthquake.usgs.gov/learn/topics/richter.php>

⁶ Intensity scale which measures the ground shaking from earthquakes, based on how people perceive earthquake shaking and/or the damage caused by an earthquake. Measured on a scale of 1 to 12. For a complete description of the Mercalli Scale refer to <http://earthquake.usgs.gov/learn/topics/mercalli.php>

⁷ CNN, July 2010. *Cold Temperatures Cause Deaths, Damage in South America*. Retrieved on April 5th 2011 from http://articles.cnn.com/2010-07-19/world/latin.america.weather_1_amazon-region-cold-front-coldest-weather?_s=PM:WORLD

⁸ MercoPress, July 2010. *Extreme cold kills hundreds of cattle; thousands at risk in Paraguay and Chile*. Retrieved on April 5th 2011 from <http://en.mercopress.com/2010/07/23/extreme-cold-kills-hundreds-of-cattle-thousands-at-risk-in-paraguay-and-chile>

Floods

At 349 incidents, there were more floods during the 2001-2010 period than any other disaster in the Western Hemisphere. Moreover, these 349 flood events eclipse the 220 events reported in the previous 10-year period. Also, the total number of affected people due to floods in the most recent period is almost four times greater than that in the earlier decade, at approximately 32.4 millions compared with 8.4 millions during the 1991-2000 decade. Although this simple comparison does not present sufficient data for a thorough, categorical analysis, it does strongly suggest that with time, a greater number of people are now exposed to the damaging effects of floods than in previous decades. This is in no detriment of changes that might have occurred in frequency and intensity of hydro meteorological events.

In addition, floods represented the third most damaging natural event after storms and earthquakes, costing the Americas over 27 billion USD. The five most notorious floods of the decade are described in Table 9.

Colombia was one of the hardest hit nations by floods. In 2010, the country experienced an 8-month long flood event that left 363 dead and one billion USD in damages.

		Date	# Deaths	Damage (million USD)	# Affected
1	USA (Midwest)	Jun 2008	24	10,000	11,000,148
2	Colombia (Guaranda)	May-Dec 2010	363	1,000	2,217,518
3	Mexico (Chiapas)	Oct-Nov 2007	22	3,000	1,600,000
4	Brazil (Blumenau)	Nov 2008	151	750	1,500,015
5	Brazil (Maranhao)	Apr 2009	56	550	1,150,900

In addition to these top 5 flood events, the region constantly endures deadly and damaging floods, as is the case of Bolivia where deadly floods occur yearly; which between 2001 and 2010 took more than 350 lives. Moreover, the Global Facility for Disaster Reduction and Recovery (GFDRR) of the World Bank estimates the total damage and losses of the 2007-2008 floods in this country at 511 million USD, or 3.4% of GDP.⁹

⁹ GFDRR 2011, *Bolivia -2007/2008- La Niña phenomenon causes severe losses in agriculture*. Retrieved on April 5th 2011 from <http://www.gfdr.org/gfdr/node/311>

Storms

All of the five most devastating storms of this past decade occurred in the United States of America, where infrastructure and other assets tend to be more valuable. This is evidenced by the costs associated to these storms [see Table 10]. While storms and floods were commonplace, the country did not experience any significant earthquake; hence, the financial burden of storms in the Americas proved to be much higher than that of earthquakes, which affected countries with lower-valued assets.

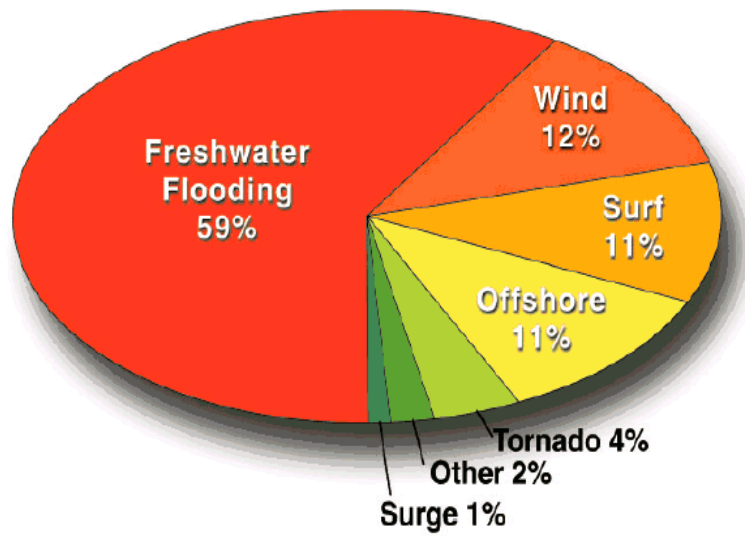
Table 10 – Top 5 storms during 2001-2010								
	Location	Name	Date	# Deaths	Rainfall (inch) ¹⁰	Cat	Damage (USD millions)	# Affected
1	USA	Katrina	Aug-Sep 2005	1,833	10-14	3-4	125,000	500,000
2	Bahamas, Cuba, Haiti, Turks and Caicos Islands, USA	Ike	Sep 2008	163	6-14	2-3	32,000	328,800
3	Caribbean ¹¹ , USA, Venezuela	Ivan	Aug- Sep 2004	123	7-15	3-4	23,128	423,919
4	Bahamas, Cuba, Haiti, Jamaica, Mexico, USA	Wilma	Oct 2005	29	3-7	2-4	20,004	1,131,600
5	Cayman Islands, Cuba, Jamaica, USA	Charley	Aug 2004	15	4-8	2-4	17,305	274,131

Moreover, higher rainfall rates seem to be positively correlated with higher damages, revealing that floods resulting from these storms tend to have a greater impact than these storms' wind intensity. Most of the storm's damage comes from flooding and a much smaller proportion of damages and deaths are caused by a hurricane's winds. The following chart reveals the aforementioned using deaths as an example. It is therefore understood that a hurricane's category (based on its wind speed) is not always directly proportional to its impact on a community. Generally, the slower a storm moves over a certain location, the heavier the rainfall and, hence, the greater the flooding.

¹⁰ NOAA- National Oceanic and Atmospheric Administration, <http://www.nhc.noaa.gov/HAW2/english/history.shtml#katrina>, retrieved March 1st 2011.

¹¹ Caribbean= Bahamas, Barbados, Cayman Islands, Cuba, Dominican Republic, Grenada, Haiti, Jamaica, St. Lucia, St. Vicent & the Grenadine, Trinidad & Tobago.

Leading Causes of Tropical Cyclone Deaths in the U.S 1970-1999



Source: Edward Rappaport—Chief, Technical Support Branch, Tropical Prediction Center

Overall, storms caused approximately 300 billion USD in damages and were responsible for over 10,000 deaths throughout the hemisphere.

Tsunami

The Emergency Events Database EM-DAT of the CRED does not offer specific figures regarding tsunami; however, the region has been impacted by this hazard as recently as February 2010, when the coast of Chile was hit by a tsunami produced by the Bio Bio earthquake. In fact, most of the 562 deaths registered under the February 27, 2010 earthquake are attributed to the tsunami.

In the Pacific Coast of the Americas, two types of tsunami can make land. The first is the long-range tsunami, which are triggered by earthquakes in the western Pacific Ocean and, therefore, originated thousands of miles away from the Americas, moving across the Pacific Ocean before impacting the region. Thus, allowing authorities and the population several hours to prepare before tsunami make contact. Preparedness for this type of event requires sound communication and coordination among nations across the Pacific Ocean, education of the population at risk, and the design and demarcation of evacuation routes, identification of meeting points, and the execution of drills to ensure that the communities know how to act in such events. Prevention requires the integration of probable scenarios of waves impacting the coastal zone in land zoning and building codes.

Conversely, short-range tsunami are those that are triggered by earthquakes whose hypocenter or focus is located under the ocean waters close to the coast line. The tsunami produced by the earthquake of February 27, 2010 in Chile is an example of these. And in the Americas, not only the countries lying on the Pacific coast on the Pacific subduction zone are susceptible to this type of tsunami. The Caribbean region is also exposed to this hazard as it lies on the convergence area of several tectonic plates and faults.

Preparedness and prevention measures in the case of short-range tsunami is even more critical as early warnings may be of few minutes. Thus, knowing what to do, where to go, and avoiding the construction of housing and vital infrastructure in tsunami areas becomes a matter of life or death.

Volcanic Events

The Tungurahua volcano in Ecuador proved to be the most active of the 2001-2010 period, erupting several times and creating over 160 million USD in damages, while taking 5 lives. Colombia also witnessed several eruptions from the ‘Mount Galeras’ and the ‘Nevado del Huila’, of which the latter killed 16 people in November of 2008.

The eruption of the Chaiten Volcano in Chile, in May of 2008, is also notable in the past decade, affecting approximately 8,000 people living in the vicinity of the volcano, within the Chilean national territory. But perhaps what makes this event most notable for is that ashes from the eruption migrated south-east, crossing the international border with Argentina and even reaching the Atlantic Ocean. Moreover, the Chaiten incident forced several Chileans to seek refuge in neighboring Argentina’s Chubut province.¹² Hence, this incident served as a reminder that impacts of disasters may both, figuratively and literally, cross borders, and consequently require proficient cooperation and assistance across nations.

Table 11 – Top 5 Volcanic Eruptions during 2001-2010			
	Date	Name	# Affected
1	August 2006	Tungurahua, Ecuador	300,013
2	November 2002	Reventador, Ecuador	128,150
3	June-July 2003	Tungurahua, Ecuador	25,000
4	August 2001	Tungurahua, Ecuador	22,770
5	October 2002	Tungurahua, Ecuador	21,500

¹² Diario de Navarra, May 7th 2008. Retrieved March 31st 2011 from <http://historico.diariodenavarra.es/20080507/culturaysociedad/los-chilenos-huyen-hacia-argentina-volcan-chaiten.html?not=2008050702005743&idnot=2008050702005743&dia=20080507&seccion=culturaysociedad&seccion2=culturaysociedad&chnl=40>

Wildfires

Wildfires tend to take fewer lives than other disasters; however, the financial damages resulting from these events are, nevertheless, substantial.

In terms of both, damage costs and lives lost, the United States was the most affected country by wildfires in the past ten (10) years. Moreover, among the 5 most destructive wildfires, 4 took place in the State of California, causing more than 8 billion USD in damages and taking the lives of a dozen people. The October 2003 wildfire in San Diego, California, was the second largest and the most destructive wildfire in the history of the State of California; it destroyed 2,232 homes and burned 280,000 acres.¹³

In terms of damage, we see that wildfires in North America tend to result in higher damages than in other regions, presumably because we find higher valued-assets in the United States and Canada.

The San Pedro and Concepcion region in Paraguay was also the victim of intense fires in September of 2007, which cost 8 lives, 30 million USD, and affected 125 thousand people.

Table 12- Top 5 Wildfires during 2001-2010					
	Date	Location	# Deaths	Damage (million USD)	# Affected
1	October 2003	California, USA	14	3,500	n/a
2	October 2007	California, USA	8	2,500	640,064
3	November 2008	California, USA	n/a	2,000	55,020
4	August-September 2003	British Columbia, Canada	1	545	n/a
5	November 2007	California, USA	n/a	315	10,159

¹³ Jeff Bowman, June 2004. City of San Diego Fire-rescue Department: Cedar fire 2003 after action report. Retrieved on April 6, 2011 from <http://www.sandiego.gov/fireandems/pdf/afteraction03.pdf>



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Summary

The 2001-2010 decade saw several damaging disasters, however, a few outstanding events made their mark in history due to their impact and devastation. The most prominent disaster was clearly that of Haiti's in 2010, where almost a quarter of a million people lost their lives. This earthquake was shortly followed by another in Chile that hit its south-central region with an 8.8 Richter scale magnitude, resulting in 30 billion USD in damages.

The 2001-2010 decade will also be remembered by 2005's Hurricane Katrina, which impacted the Gulf of Mexico coast of the United States of America. This hurricane cost 125 billion USD, as well as the lives of over 1,800 people.

Overall, more than 900 disasters hit the Western Hemisphere from 2001 to 2010, creating more than 440 billion USD in damages and taking the lives of over 260 thousand people.

The Risk Management and Adaptation to Climate Change section (RISK-MACC) of the Department of Sustainable Development at the General Secretariat of the Organization of American States has sponsored and helped develop tools such as the Inter-American Network for Disaster Mitigation (INDM) in order to help reduce disaster risk and build capacity at the national and local levels to better manage their existing risk.