

Haiti – The Disaster

The January 12 Earthquake

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Special Thanks

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August 24th 2010



Haiti on the World Map

August 24th 2010



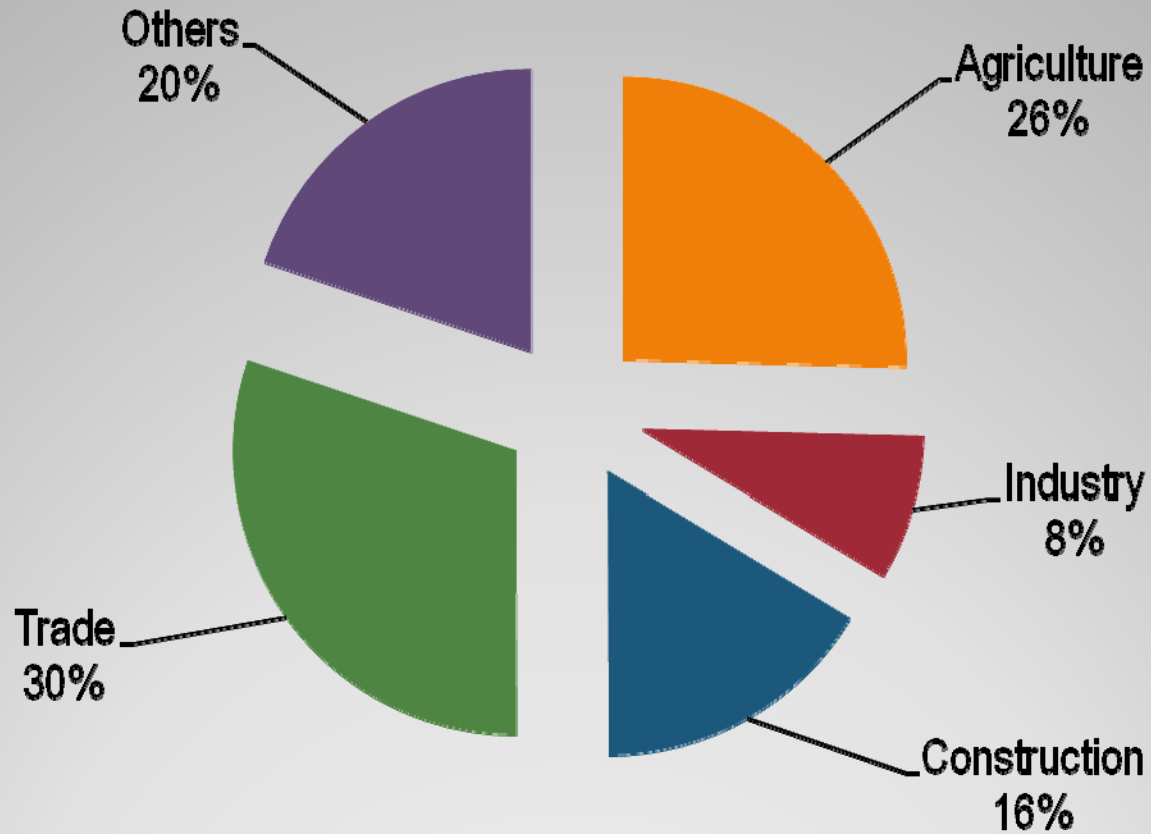
Haiti in the Caribbean

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Haiti – Overview -

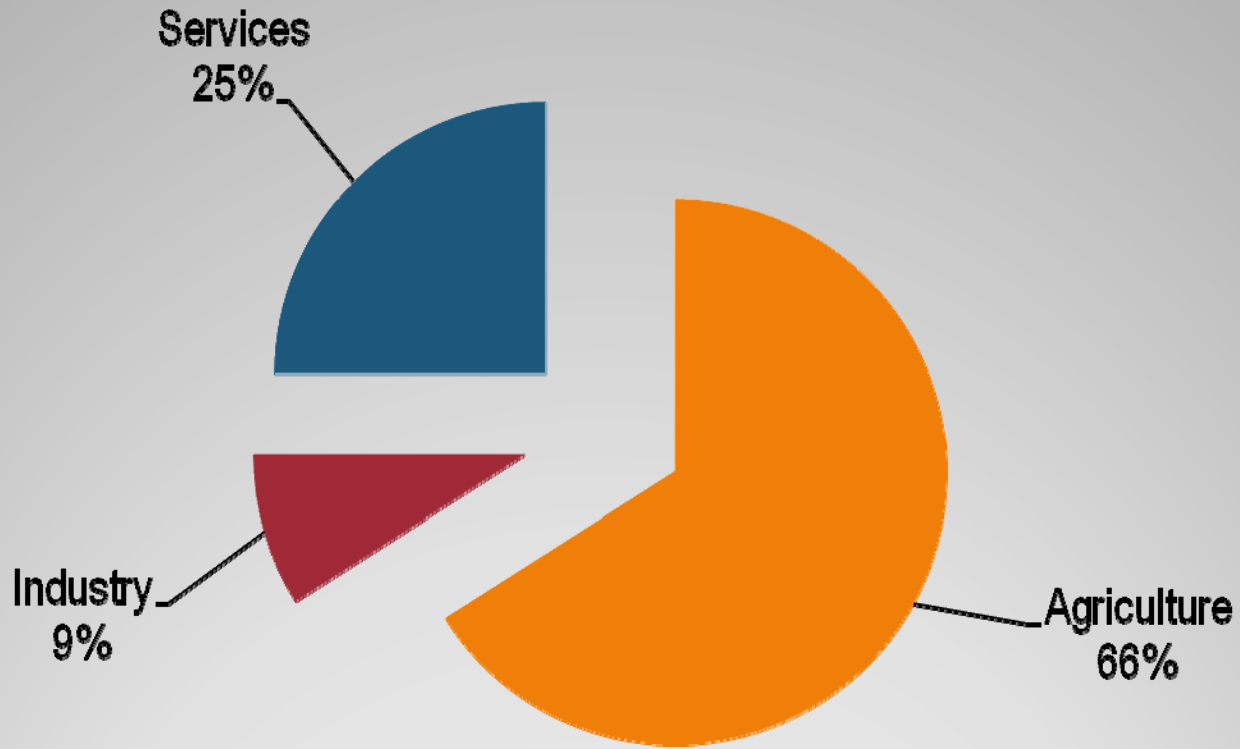
- **Area : 28,000 km²**
- **GDP : 7.9 billion USD**
- **GDP per capita : 790 USD**
- **80 % of population in poverty**
- **Population : 10 million**
- **Unemployment : 46 %**
- **Rural Illiteracy : 51 %**
- **Urban Illiteracy : 18 %**
- **Human Development Index 149/182**

GDP by Sector



Gross Domestic Product (GDP)

Labor Force by Sector



Labor Force

The Earthquake

January 12th 2010

August 24th 2010

- Time : 4:53 p.m.
- Magnitude : **7.0**
- Duration : **35 sec.**
- Hypocenter :
10km deep
- Epicenter : 17 km
SW of P-au-P

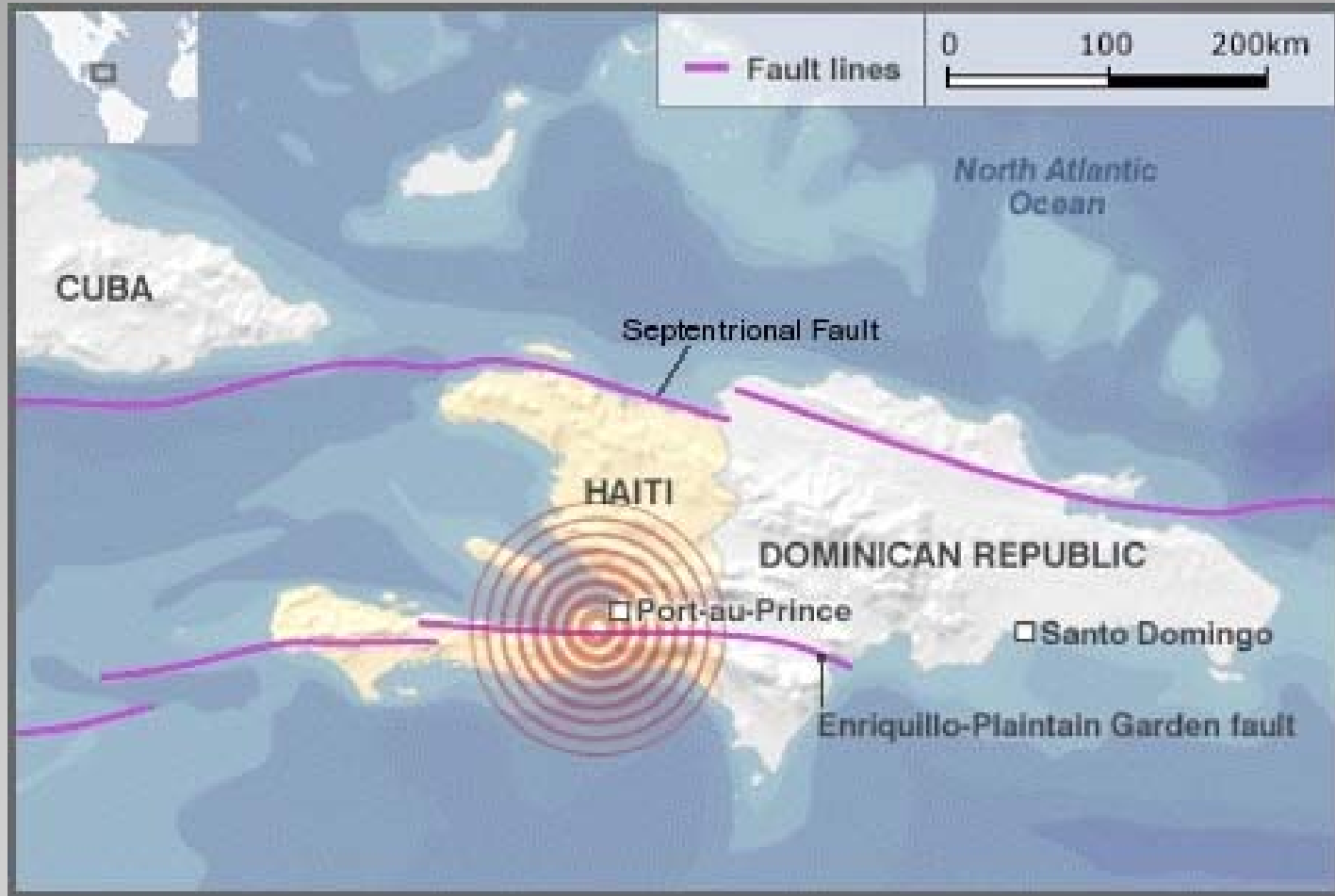


The January 12th Earthquake



Affected Places

Port-au-Prince, Léogâne, Petit-Goâne, Miragoâne, Jacmel

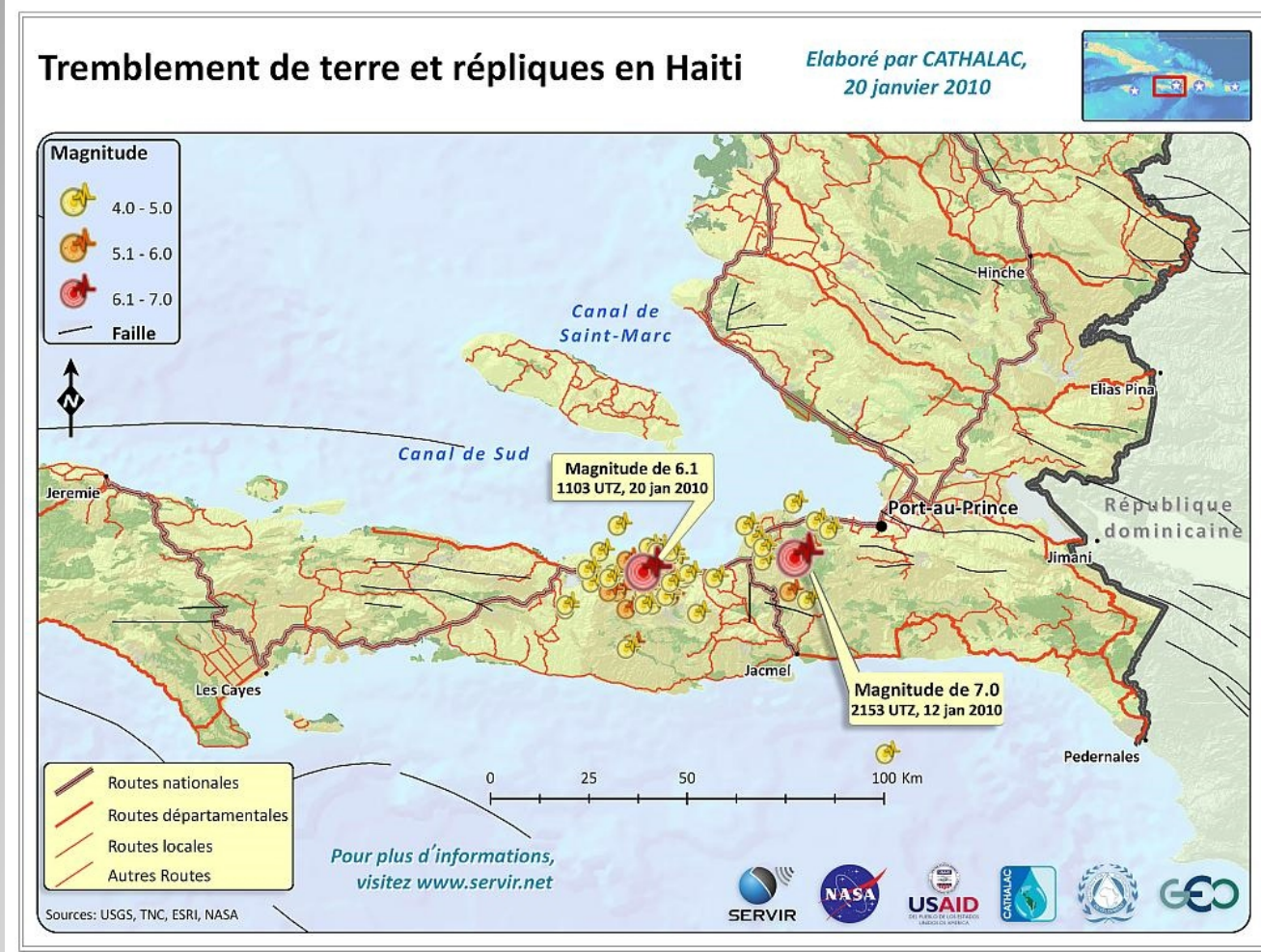


Fault Lines

August 24th 2010



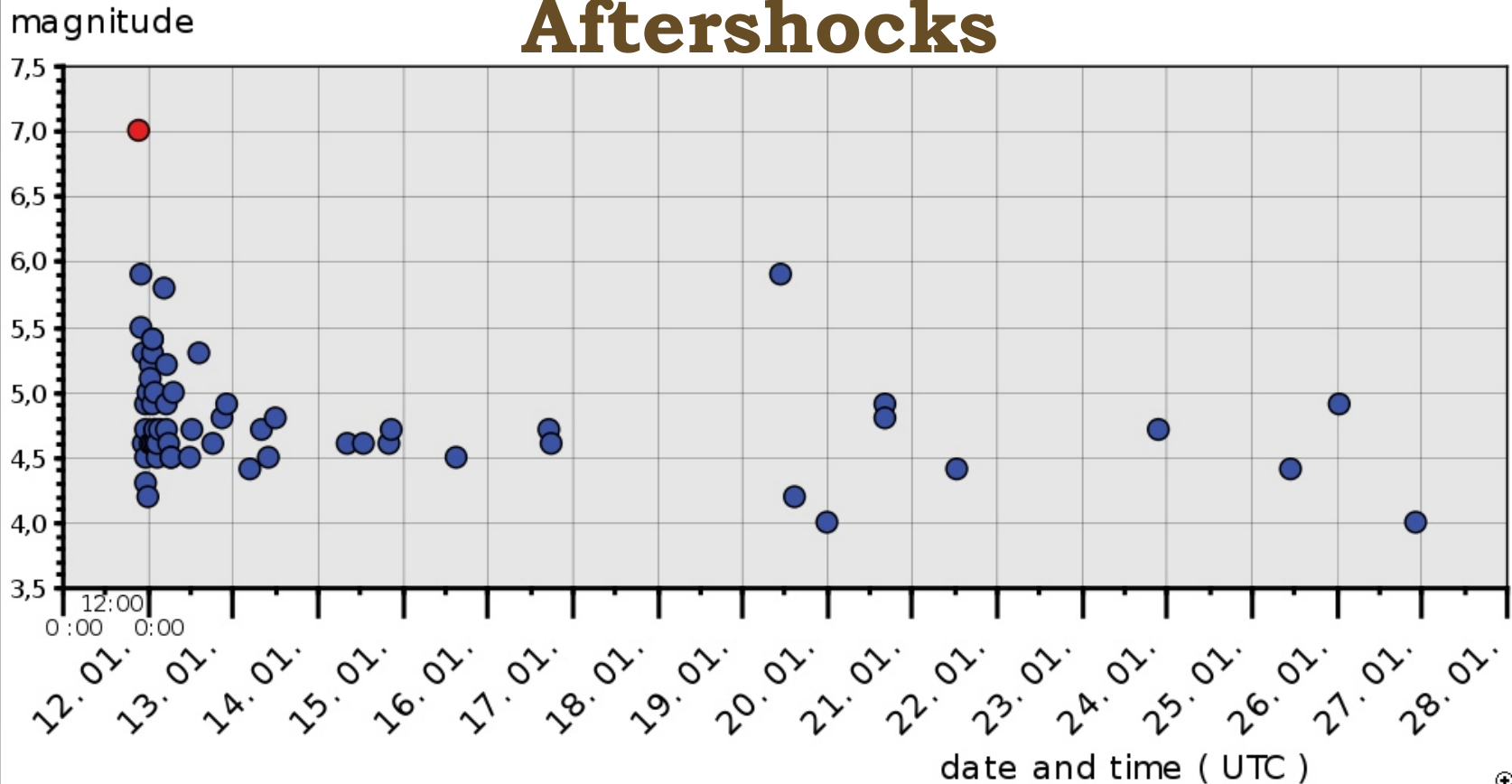
Plates and Fault Lines



Major Earthquakes in Jan. 2010

August 24th 2010

Aftershocks



Date / Time Offset	Number	Magnitude	Remarks
2 hrs	8	4.3 < M < 5.9	
9hrs	32	4.2 < M	12 with M > 5.0
Jan. 24	52	4.5 < M	5.9 on Jan. 20

Major Earthquakes In the past

- **1751 (P-au-P)**
- **1770 (P-au-P)**
- **1842 (Cap-Haitien)**
- **1946 (Samana, DR)**

Major Earthquakes



Date : Oct. 18th 1751

Port-au-Prince destroyed

Major Earthquakes



Date : June 3rd 1770 / Magnitude : 7.5

Death toll : 200 – Port-au-Prince destroyed - Tsunami

Major Earthquakes

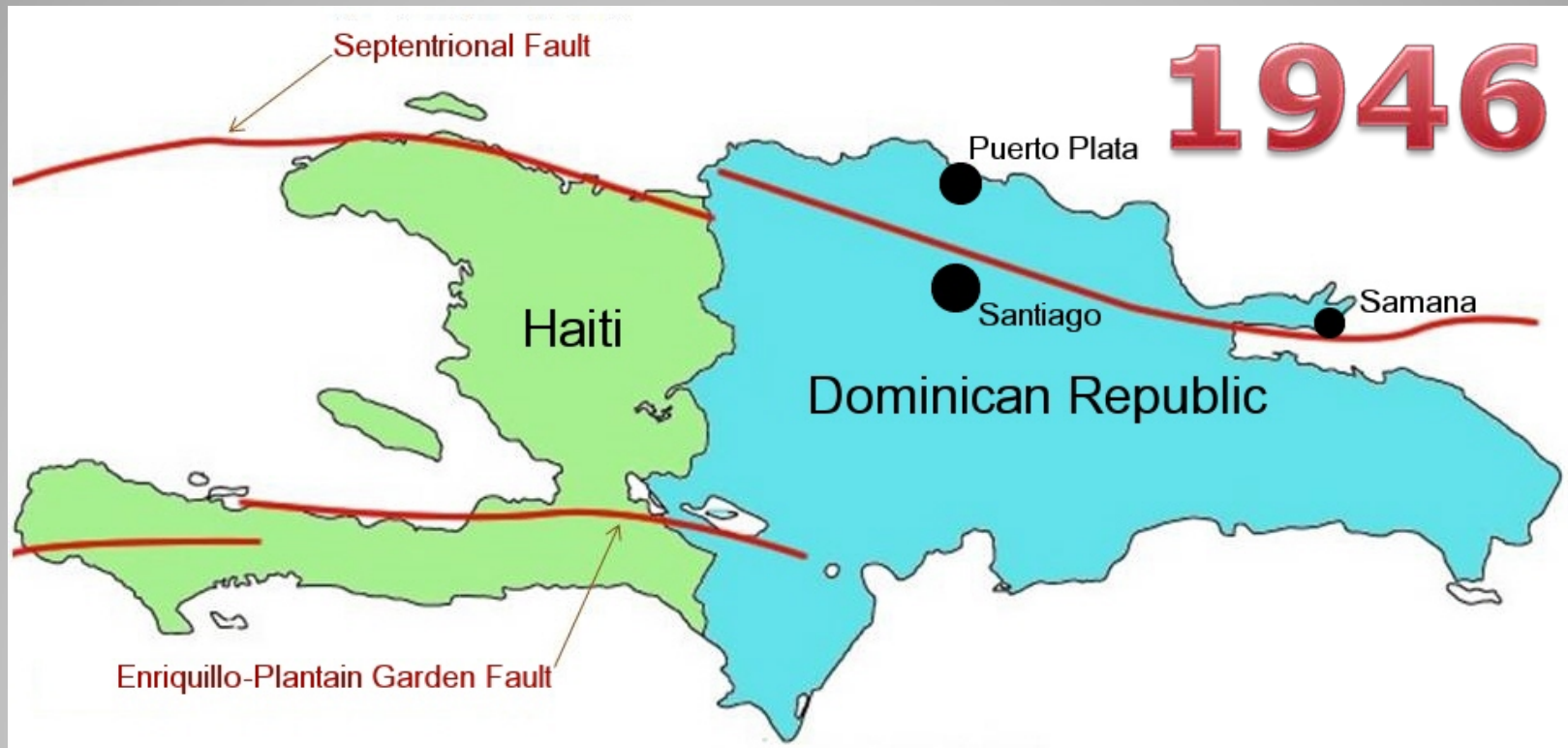


Date : May 7th 1842

Death toll : 10,000 – Tsunami – Cap-Haitien, Port-de-Paix destroyed

August 24th 2010

Major Earthquakes



Date : August 4th 1946 / Magnitude : 8.0

Death toll : 100 + 1,690 – Tsunami

Breaking News

August 11th, 2010 - **Haiti**
quake reveals previously unknown fault - The devastating quake that slammed Haiti on January 12 occurred on a previously **unrecognized fault zone**. The newly discovered fault hasn't been officially named yet but is informally known as the **Léogane fault**, after one of the Haitian cities that sits directly atop it.



Eric Calais, Professor of Geophysics at Purdue University

Jan. 12th 2010

All Essential Services Shutdown

- **No Electricity**
- **No Phone services**
- **Most roads and streets blocked**
- **Gasoline distributors not working**
- **No Radio / TV signals**
- **Shortage of food and water**
- **Healthcare system paralyzed**

In 35 seconds



300,000 lives

August 24th 2010

In 35 seconds



300,000 injured

August 24th 2010

In 35 seconds



1,500,000 homeless

August 24th 2010

In 35 seconds



30,000 commercial buildings

August 24th 2010

In 35 seconds



250,000 residences destroyed

August 24th 2010

In 35 seconds



Almost all hospitals and medical facilities destroyed or damaged

August 24th 2010

In 35 seconds



**Nearly all national schools
severely damaged**

August 24th 2010

In 35 seconds



The city of Leogane in rubbles

August 24th 2010

In 35 seconds

Economic loss

120%

of the country GDP



Presidential Palace - Before

August 24th 2010



Presidential Palace - After

August 24th 2010



Presidential Palace – During

August 24th 2010



**Palais de Justice – Before
Supreme Court**

August 24th 2010



**Palais de Justice – After
Supreme Court**

August 24th 2010



Parliament – Before

August 24th 2010



Parliament – After

August 24th 2010



Casernes Dessalines – Before
Former Military Barracks

August 24th 2010



Casernes Dessalines – After
Former Military Barracks

August 24th 2010



**Direction Générale des Impôts – Before
Income Tax Main Office**

August 24th 2010



**Direction Générale des Impôts – After
Income Tax Main Office**

August 24th 2010



P-a-P Cathedral – Before

August 24th 2010



P-a-P Cathedral – After

August 24th 2010



Mayor's Office – Before

August 24th 2010



Mayor's Office – After

August 24th 2010



Postal Service - Main Office – Before

August 24th 2010



Postal Service - Main Office – After

August 24th 2010



Caribbean Supermarket – Before

August 24th 2010



Caribbean Supermarket – After

August 24th 2010

Early Response – International Solidarity

- **United States**
- **Dominican Republic**
- **Canada**
- **France, European Countries**
- **Brazil, Venezuela, Cuba**
- **Latin America**
- **Caribbean Community**

Early Response – International Solidarity

- **Search and rescue of survivors**
- **Food and water distribution**
- **Emergency healthcare services**
- **Distribution of survival kits**
- **Setting up provisional shelters**
- **Debris removal**
- **Cleaning the streets**



Extracting Survivors

August 24th 2010



Extracting Survivors

August 24th 2010



USNS Comfort – Hospital Ship

August 24th 2010

**Child treated
aboard
a Hospital Ship**



August 24th 2010



Airdrop of supplies

August 24th 2010



Moving supplies from rescue fleet

August 24th 2010



Ferrying water from rescue fleet

August 24th 2010



Assistance camp

August 24th 2010

Provisional Shelters



August 24th 2010

My Personal Experience



August 24th 2010

**Why
so much
damage ?**

Comparing Earthquake Impacts

Date	Place close to epicenter	Magnitude	Death Toll
1766	Santiago, Cuba	7.6	120
1946	<u>Samana</u> , Dominican Republic	8.0	100 + 1690
1989	Loma Prieta, California, USA	6.9	63
2010	Port-au-Prince, Haiti	7.0	300,000

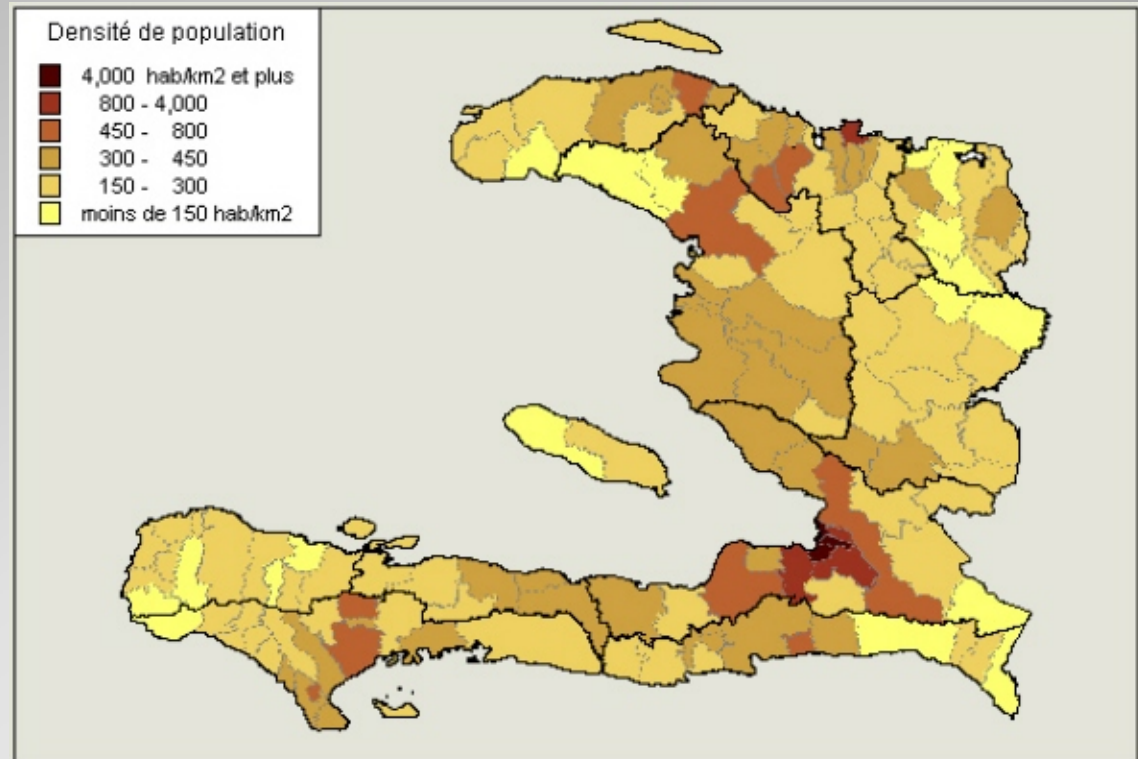
The reasons

1. Epicenter close to a crowded city (25 km SW of Port-au-Prince)
2. Hypocenter shallow (13 km below surface)
3. High density of population
4. Poorly constructed houses and buildings

Why so much damage ?

National
Average : 250
p/km²

P-a-P Area :
 $800 < D < 4000$
p/km²



Population Density - IHSI – 2003

Why so much damage ?

Buildings Design Lifetime not considered

- Presidential Palace (+90 years)
- Office des Postes (+70 years)
- Mayor's Office (+70 years)
- Direction Générale des Impôts (+35)

Lack of buildings maintenance

N.B. Rarely Buildings have been deconstructed in Haiti because of their age

The situation now

Important relief and rescue efforts

But

Lack of coordination

The Interim Haiti Recovery Commission (IHRC)

- Created : April 2010
- Mission : to conduct strategic planning and coordination for the reconstruction of Haiti
- Co-chaired by former Pdt. Bill Clinton and Prime Minister Jean-Max Bellerive

The situation now



**Less than 10% of the 10 billion USD
pledge engaged**

August 24th 2010

The situation now

- 20 million m³ of debris to be removed in Port-au-Prince
- So far less than 5 % of the removal work has been done



The situation now



Still more than 1 million homeless

August 24th 2010

The situation now

Haiti is the poorest country of the western hemisphere, facing now the worst catastrophe of its entire history.

Indicators

- Human Development Index 149th / 182
- Life Expectancy : 61 years
- More than 80% of Haitians live with less than 2 USD / day

Immediate Actions - 1

- a) Treat the injured people and provide basic healthcare
- b) Remove rubbles and debris in affected areas
- c) Distribute food and water
- d) Provide decent housing to the homeless

Immediate Actions - 2

- e) Repair and rebuild the infrastructures
- f) Clean and repair the streets
- g) Restore essential services
- h) Create jobs
- i) Assist the private sector to recover
- j) Restore public services

**A
Building Code
is
mandatory**

Building Code - Focus

Stressing :

- Urban planning
- Construction Design
- Buildings Lifetime
- Earthquake, fire, flood, hurricane protection
- Construction materials specifications
- Construction processes
- Infrastructures (water, electricity, telecom, etc...)

Building Code Responsibilities

- Architects and Engineers
- Contractors and subcontractors
- Material and equipment importers, vendors and manufacturers
- Regulatory Services : TPTC, LNBTP, City Mayor, EDH, DINEPA
- Workers
- Construction owner

Building Code Accountability

- Design, create and implement a system of accountability
- Define clearly stated responsibilities

Hammurabi's rule : an eye for an eye

The reconstruction

- The reconstruction phase is very slow, due to the reluctance of the donors to fulfill their pledges.
- To circumvent the impact of the disaster and to offer a brighter future to the children of Haiti, the following measures must be considered on the short and medium terms :

Necessary measures

1. Enhance central and local governance;
2. Create conditions for the effective implementation of decentralization;
3. Strengthen public and private institutions;
4. Rebuild and develop essential infrastructures
5. Enforce law and security;

Necessary measures

6. Set up a positive environment for foreign and local investments;
7. Promote Public Private Partnership;
8. Promote job creation;
9. Develop education at all levels, focusing professional schools.
10. Protect the environment and manage properly the natural resources

Thank you!

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