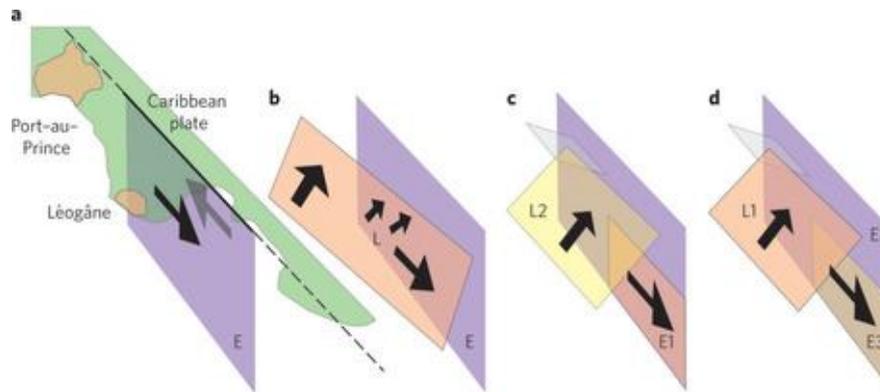


The earthquakes in Chile and Haiti took place in 2010. Both could be prevented if the authorities rested upon the previous negative experiences. But the lack of necessary reaction did not change the reality, which was crucial towards innocent citizens of both areas. The reason for those earthquakes to happen is that Chile and Haiti are located in hazardous seismic zones. However, the difference between the earthquakes and their consequences are rather substantial. And this can be explained by the relatively different attitudes towards protection and safety from the side of authorities and communities in both countries.

Haitian earthquake happened on the twelfth of January in the boundary region between the Caribbean Plate and North America Plate. The respective boundary is dominated by compression and left-lateral strike-slip motion with the slip of twenty mm/y. The Haiti's earthquake struck thirteen kilometers to the surface. The eastward direction of the earthquakes indicates that it could have moved to North America plate. Many people were affected by this earthquake: 360.000 killed, 300.000 injured and 1.3 million displaced. The epicenter of the earthquake was Port-au-Prince, which was affected by not only strike-slip fault, but also by unmapped fault line parallel to the Enriquillo. The reason for this awful number of sacrifices is that the earthquake happened in densely populated area. This way, the motion was partitioned between strike-slip fault and east-west trending systems: Enriquillo-Plantain Garden in Southern Region and Septentrional fault system in the North. Generally, Haiti is located in the Western part of Hispaniola Island. Most of the observers state that the earthquake happened as the combination of reverse and left-lateral strike slip, faulting on Enriquillo-Plantain Garden fault system. The Haiti had fifty-nine aftershocks, lasting nearly a month and a half. Some aftershocks reached the magnitude of 6.0, which is also greatly felt in comparison with the 7.0 mainshock. Some geologists studied the earthquake data over the last ten month and noticed the Enriquillo-Plantain Garden fault zone to be the area prone to earthquakes. Other observers of Haiti earthquake used their satellite-radar images, which showed that the earthquake mostly exhibited the vertical motion. And this can be understood by the Enriquillo that is the strike-slip fault. Some scientists think that the combination of faults (strike-slip and a thrust fault) can explain this vertical direction and other unpredictable events. Approximately

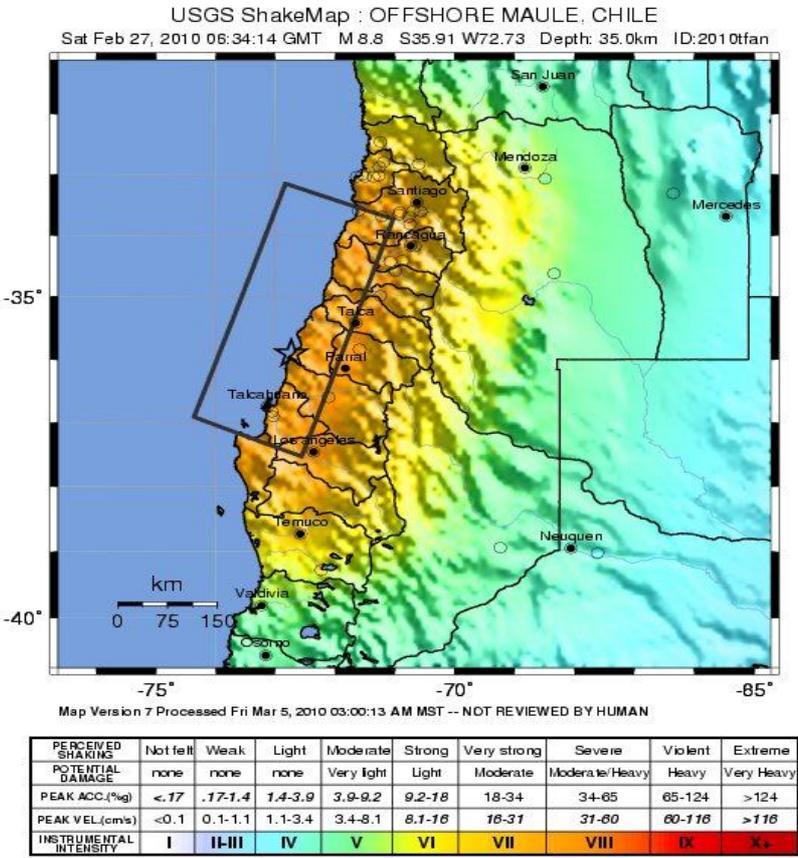
85% of the overall energy was produced by this respective combination. This is hazardous for future earthquakes, which can be induced by Enriquillo that practically lost no energy. Apart from that, people should not forget that Haiti is located in seismic zone and is exposed to danger, so the necessary measures need to be taken immediately when the emergency situations arise. The Haiti area is extremely dangerous as it is believed to be a ‘major Caribbean quake hazard’ since 1980.



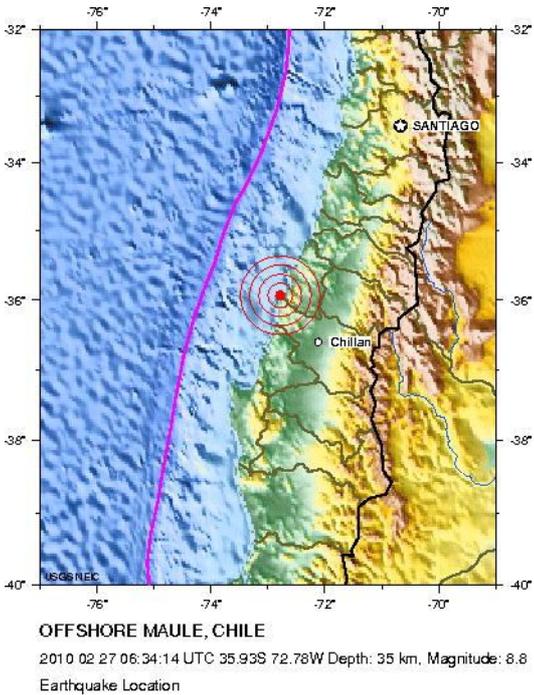
Pic. 1 The Model for Subsurface Slip in Haiti Earthquake

The earthquake in Chile, in offshore Bio-Bio, killed five hundred and twenty-one people. Apart from that, almost 12.000 people were injured and many houses, boats, schools and hospitals were damaged, because of the huge concentration of high buildings over the area. But the area is considered to be remote from major population concentration. The earthquake is noticed to happen on the twenty-seventh of February. Many buildings were noticed to collapse in Santiago. People were killed or injured inside their houses and cars. The earthquake in Chile was centered a bit offshore and happened in rather unpopulated area, thirty-four kilometers beneath the ground. The epicenter of the earthquake was also offshore, southwest of the capital of Santiago. The powerful tsunami significantly destroyed numerous roads, water supplies, telecommunications and electricity. This earthquake was generated at the sloping fault, conveying the Nazca plate downward and westward beneath the South American plate. The rupture of fault exceeded one hundred kilometers in width and almost five hundred kilometers to the coast. The rupture began beneath the coast and soon spread Western, Southern and Northern directions. The fault slip generated the shaking of the earthquake and the ocean floor was also warped. The plate-boundary earthquakes between Valparaíso and Concepción always historically induced huge streams of tsunami, which forced

many people to be displaced to other regions. This time, the fault rupture was nearly 1.000 kilometers long. Apart from rupture, aftershocks were noticed. Basically, there were three hundred and four aftershocks with magnitude, ranging between 5.0 and 6.0.



Pic. 2 The Overall Image of Earthquake Location



Pic. 3 The Magnitude of Earth Chile Earthquake

In terms of energy release, the Chilean earthquake was five hundred times stronger. This can be explained by the degree of magnitude, which equaled 8.8, comparing to 7.0 in Haiti. The number of sacrifices differs greatly and has the direct linkage to the population density. Apart from negatively affecting people, earthquakes did a lot of damage to various medical and educational establishments as well as destroyed thousands of houses. Taking into account the experience and survived reality, we should not forget that there are some regions, where seismic activity is very frequent. If to carefully analyze the current situation, it tends to be highly necessary to protect Carrefour in Haiti, which is expected to be the epicenter of the next earthquake. The Chile's epicenter was found to be offshore on the Southwest of the capital of Santiago, though the Western area of Chile is also considered to be a zone of risk for the nearest future. The major difference in the number of sacrifices depended upon the number of buildings as well. Chile had fewer sacrifices, because the local government got used to regular earthquakes and implemented the strong building standards. And this was the contrast to Haitian government, which was corrupt and, which did not care about the safety of citizens. The problem of earthquakes remains to be the economic problem worldwide: at times when richer countries strengthen their power and policies towards safety, poorer countries are seen to be corrupt and indifferent.

A lot of damage has been done to both areas. In order to prevent such earthquake damage, both people and authorities should be ready to accept and adequately react to the possible dangers. The profound preparation is necessary in this case. It is advisable to secure personal belongings. People should know that the main danger of earthquakes in terms of injuries can be after falling of various objects. The furniture and other fragile objects should be fastened in every house. It tends to be advisable to fasten different appliances as well. Every family should be provided with the Civil Defense Kit, which needs to be provided by the local authorities. Fire extinguishers should be kept in every home so that every individual is protected in case of fire after the earthquake. It is necessary to consider all broadcasts for directions through all possible mass media. If people are anyway affected by the earthquake, they should move outside of buildings and assemble in open

spaces to prepare themselves to aftershocks. The authorities should also adequately react to emergencies. They should develop extensive earthquake response plans, including the informational and directional provisions.

Works cited

Bilham Roger. *Structural geology: Invisible faults under shaky ground*. Nature Geoscience 3, 743–745 (2010) doi:10.1038/ngeo1000. Published online 29 October 2010.

<http://www.nature.com/ngeo/journal/v3/n11/full/ngeo1000.html>

Padgett Tim. *Underneath Haiti, Another Big Quake Waiting to Occur*. 2010.

http://www.time.com/time/world/article/0,8599,2031863,00.html#1_undefined,0

USGS. *Science for Changing World. Magnitude 7.0 - HAITI REGION*. 2010 January 12 21:53:10 UTC.

<http://earthquake.usgs.gov/earthquakes/recenteqsww/Quakes/us2010rja6.php#summary>

USGS. *Science for Changing World. Magnitude 8.8 - OFFSHORE BIO-BIO, CHILE*. 2010 February 27 06:34:14 UTC.

<http://earthquake.usgs.gov/earthquakes/eqinthenews/2010/us2010tfan/#summary>

Walsh Bryan. *Disasters: One Year After the Haiti Quake, The Struggle to Rebuild Stronger*. 2011.

http://ecocentric.blogs.time.com/2011/01/12/disasters-one-year-after-the-haiti-quake-the-struggle-to-rebuild-stronger/#1_undefined,0