



**POLITÉCNICA**

"Engineering the future"

INTERNATIONAL  
CAMPUS OF  
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**REAL UPM PROJECTS**

**2**

February 2013



# Haiti Earthquake Project

**IN THE CARIBBEAN**

**SEISMIC ENGINEERING GROUP**

School of Topographical, Geodesic and Cartographic Engineering  
(Escuela Técnica Superior de Ingenieros en Topografía, Geodesia y Cartografía)

THE BALL STARTED ROLLING WHEN, IN THE WAKE OF THE DEVASTATING EARTHQUAKE THAT HIT HAITI ON 12 JANUARY 2010, I ACCOMPANIED BELÉN BENITO, UPM LECTURER AND SEISMOLOGIST, WHO WAS ATTENDING A SEISMIC RISK CONGRESS AT CUERNAVACA, MEXICO.



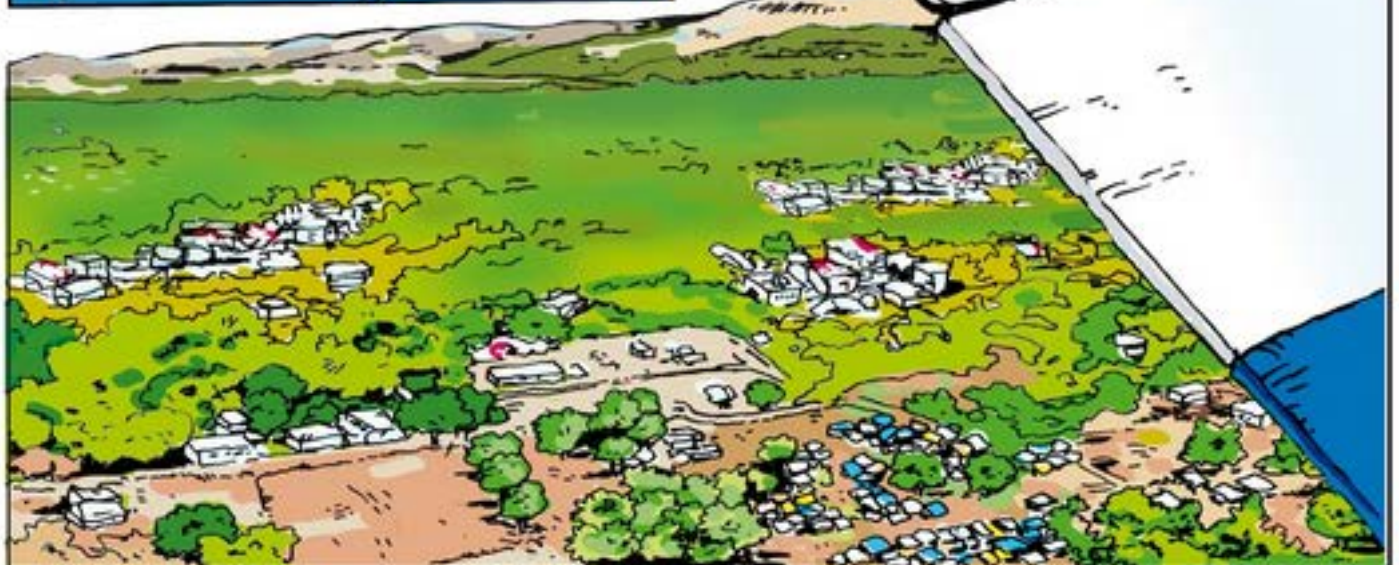
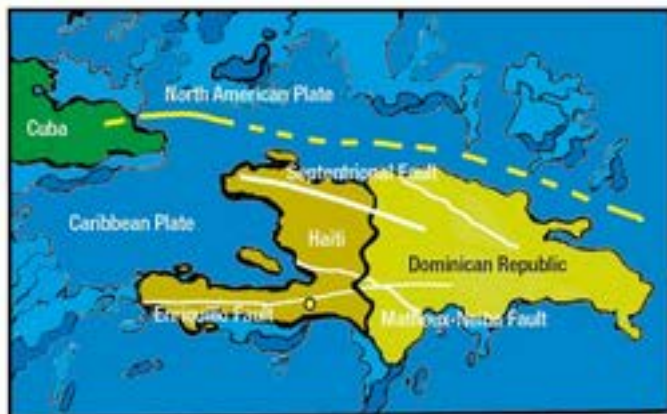
IT WAS THERE THAT WE MET DWINELL BELIZEIRE, DIRECTOR OF HAITI'S ENVIRONMENT AND VULNERABILITY OBSERVATORY, WHO WAS SEEKING HELP FOR HIS COUNTRY IN THE AFTERMATH OF THE EARTHQUAKE. HE HAD HIMSELF MANAGED TO ESCAPE THE ORDEAL UNSCATHED, BUT 300 OF HIS STUDENTS HAD NOT BEEN SO LUCKY AND PERISHED.



WE NEED THE INTERNATIONAL COMMUNITY TO MAKE COMMITMENTS TO COOPERATIVE PROJECTS TO REBUILD HAITI.

HAITI IS LOCATED IN A REGION OF INTENSE SEISMIC ACTIVITY BETWEEN THE NORTH AMERICA AND CARIBBEAN TECTONIC PLATES AND IS DESTINED TO RELIVE QUAKES ON THE SCALE OF THE 2010 TREMOR.

UNLESS WE BUILD EARTHQUAKE-RESISTANT BUILDINGS, TRAGEDY WILL STRIKE AGAIN. REMEMBER THAT WHILE EARTHQUAKES ARE NATURAL PHENOMENA, DISASTER IS NOT A MATTER OF COURSE... ON THIS GROUND, BELÉN BENITO AND THE UPM'S THEN DIRECTOR OF COOPERATION, JAIME CERVERA, INVITED BELIZEIRE TO VISIT THE UPM. THIS WAS THE SEED OF THE HAITI EARTHQUAKE PROJECT, WHICH SET OUT TO RESEARCH THE SEISMIC THREAT TO THE COUNTRY AND PLOT MAPS THAT COULD BE USED TO DESIGN EARTHQUAKE-RESISTANT BUILDINGS.



BELÉN, YOLANDA TORRES, A UPM SCHOLARSHIP HOLDER WHO HAD STARTED HER PHD RESEARCH ON THE SEISMIC THREAT IN HAITI, AND I ARRIVED AT PUERTO PRÍNCIPE FOR THE FIRST TIME ON 2 NOVEMBER 2010.

BUT THE MISSION WAS NOT GOING TO BE A CINCH. ON THE VERY SAME DAY THAT OUR PLANE LANDED IN THE HAITIAN CAPITAL, THE ARRIVAL OF HURRICANE TOMAS WAS ANNOUNCED AND THE COUNTRY WAS IN THE GRIPS OF A CHOLERA OUTBREAK.

YOLANDA HAD NEVER ONCE IMAGINED THAT, AS A TOPOGRAPHICAL ENGINEER, SHE WOULD EARN HER PHD RESEARCHING SUCH A THRILLING TOPIC OF MAJOR SCIENTIFIC AND ESPECIALLY SOCIAL INTEREST.

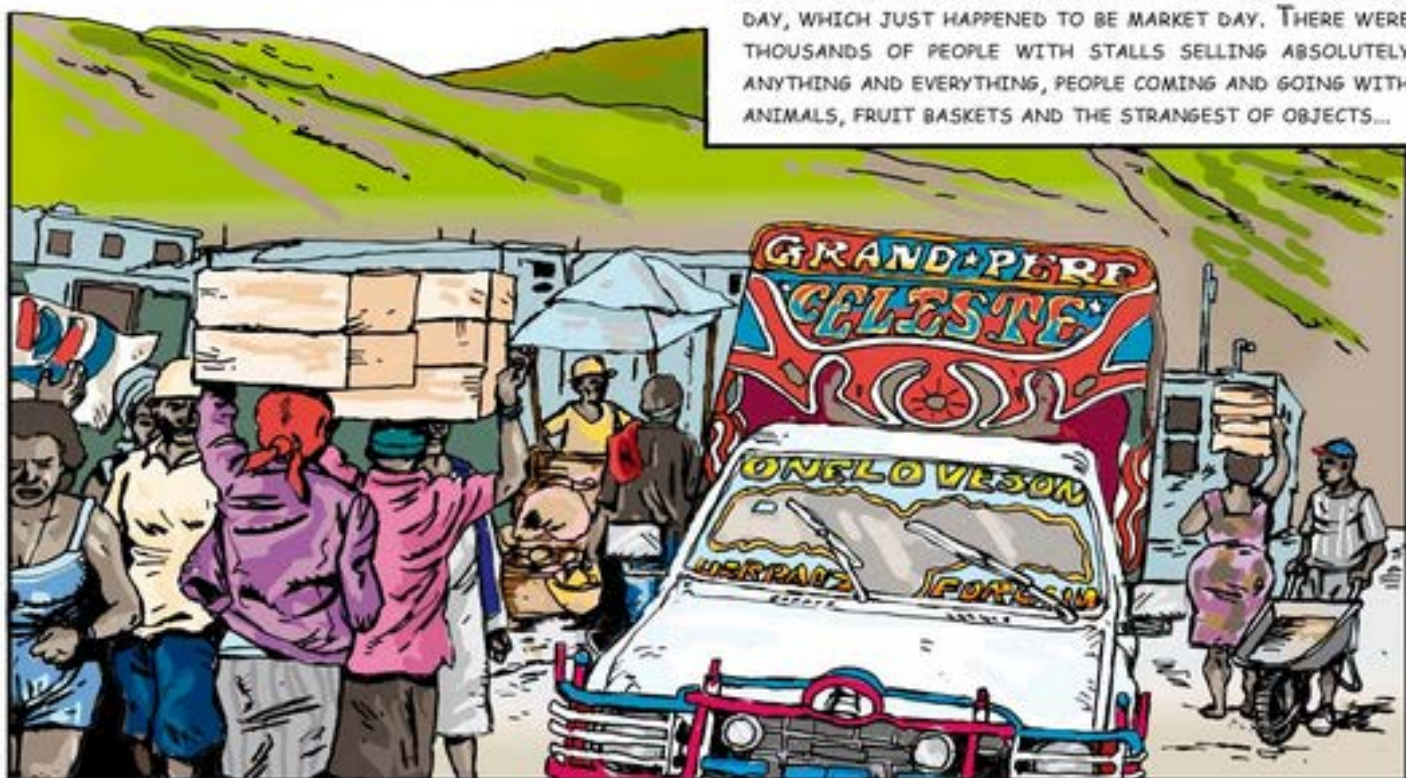
IT WAS A HECTIC WEEK, SPENT COLLECTING DATA ON THE FAULTS TO THE NORTH AND SOUTH OF THE COUNTRY AND THE ACCUMULATING FORCES WHICH ARE WHAT CAN SET FURTHER EARTHQUAKES IN MOTION ...



...INCIDENTALLY, THOSE FORCES ARE MEASURED BY INSTALLING GPS STATIONS ALONG THE FAULT, ANOTHER CONNECTION BETWEEN TOPOGRAPHY AND SEISMOLOGY.

BACK IN SPAIN, THEY SET TO WORK ON ASSESSING HAITI'S EARTHQUAKE THREAT AND RISK. THEY FIRST HAD TO CLASSIFY AND ANALYSE ALL THE DATA THAT THEY HAD COLLECTED. TO DO THIS, THEY BUILT A GEOGRAPHIC INFORMATION SYSTEM (GIS), A TOOL WITH WHICH TOPOGRAPHERS ARE VERY FAMILIAR AND WHICH WAS TO PROVE EXTREMELY USEFUL FOR THIS PROJECT.

IN JULY 2011, WE RETURNED TO HAITI TOGETHER WITH EXPERTS FROM OTHER SPANISH AND OVERSEAS UNIVERSITIES AND SOME EXCELLENT EQUIPMENT, INCLUDING SEISMOGRAPHS AND SENSORS. THIS TIME WE ENTERED THE COUNTRY FROM THE DOMINICAN REPUBLIC, ARRIVING AT THE BORDER ON MONDAY, WHICH JUST HAPPENED TO BE MARKET DAY. THERE WERE THOUSANDS OF PEOPLE WITH STALLS SELLING ABSOLUTELY ANYTHING AND EVERYTHING, PEOPLE COMING AND GOING WITH ANIMALS, FRUIT BASKETS AND THE STRANGEST OF OBJECTS...





IN THE MIDDLE OF ALL THAT CHAOS, WE WERE SENT FROM ONE FRONTIER POST TO ANOTHER PASSPORT IN HAND, DODGING THE CROWDS. AFTER FOUR LONG HOURS, WHEN WE WERE GETTING TIRED OF ALL THE COMMOTION, A SPANISH POLICEMAN SUDDENLY CAME ON THE SCENE. HE WAS ON A MISSION WITH THE CUSTOMS AUTHORITIES. LIKE A "GUARDIAN ANGEL", HE KINDLY HELPED US OUT WITH ALL THE PAPERWORK AND GOT US OUT OF THERE, SEEING US SAFELY ALL THE WAY TO PUERTO PRÍNCIPE.

DURING OUR STAY IN THE HAITIAN CAPITAL, THE RESEARCH GROUP SET UP MEASURING INSTRUMENTS AT POINTS ALL OVER THE CITY. DESPITE ALL THE OBSTACLES, WE ALWAYS HAD ALLIES, LIKE THE SPANISH AMBASSADOR IN HAITI. WE HAVE BEEN JOINED ALONG

THE WAY BY TOPOGRAPHY STUDENTS WHO HAVE CHOSEN THIS TOPIC FOR THEIR FINAL-YEAR PROJECTS, AND TWO HAITIAN STUDENTS WHO, THANKS TO UNIVERSITY FUNDED GRANTS, HAVE COMPLETED THEIR MASTER STUDIES AT THE UPM.



WE VISITED AND ENGAGED SEVERAL GOVERNMENT AGENCIES IN OUR STUDY, BECAUSE COOPERATION IS ABOUT "TEACHING A MAN TO FISH, NOT GIVING A MAN A FISH"...



A COMPREHENSIVE NETWORK HAS BEEN SET UP: A NETWORK THAT IS READY TO WORK TO ASSURE THAT THE NEXT EARTHQUAKE IN HAITI WILL NOT SPELL DISASTER, A NETWORK FOUNDED ON SCIENTIFIC RIGOUR BUT DOMINATED BY INSTINCTIVE SOLIDARITY!

WE VISITED HAITI FOR THE LAST TIME IN NOVEMBER 2012. BELÉN AND HER TEAM TAUGHT A SEISMIC ENGINEERING COURSE TO SOME 40 HAITIAN ENGINEERS IN NEED OF TRAINING TO CONTEND WITH THEIR COUNTRY'S EARTHQUAKES.



SCIENTISTS HAVE TO REPORT THEIR RESEARCH TO POLITICIANS, BECAUSE THEY ARE THE POLICY MAKERS. THIS WAS WHAT THIS TRIP WAS ALL ABOUT, AND IT CAPPED THE PROJECT: MISSION ACCOMPLISHED. THIS MISSION AT LEAST... BUT THERE ARE STILL A LOT MORE THINGS OUT THERE THAT NEED DOING.



Script and illustrations:  
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