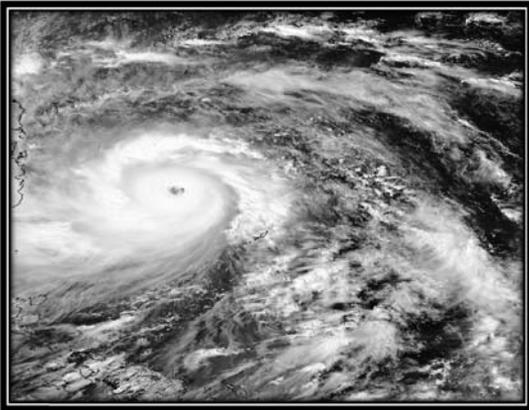


2013 MONSTER TYPHOON: HAIYAN



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Super Typhoon Haiyan approaching the Philippines
(Image courtesy of NASA Goddard MODIS)

Super Typhoon Haiyan which is known as Super Typhoon Yolanda in the Philippines, the 24TH tropical cyclone to hit the country in 2013, is the world's 'most devastating typhoon to make a landfall.' It struck the middle region of the

Philippines killing 6,033 people, with 27,468 left injured and 1,779 missing. (All the data presented in this article are as of 14 December 2013, 6:00 a.m.).

1. Philippines' Exposure to Typhoon

In the Philippines, typhoons or "bagyo" in Tagalog (the native language in the Philippines) are common from June to November. The average number of typhoons which enter the Philippine Area of Responsibility (PAR) ranges from 8 to 10, in addition to an average of 4 tropical depressions and 5 to 6 tropical storms accounting for 19 to 20 tropical cyclones annually, making the country the 'most storm-exposed country on earth' according to Time Magazine (<http://world.time.com/2013/11/11/the->

philippines-is-the-most-storm-exposed-country-on-earth/)

The deadliest typhoon recorded in the Philippines was Thelma (local name is Uring) with deaths of 5,080. On the other hand, the strongest recorded typhoon before Haiyan is typhoon Durian (local name is Reming) which hit the country last 2006. However, Haiyan is now the worst typhoon to ever hit the country. It is also feared to gain the title the 'deadliest.'

Composed of 7,107 islands, the Philippines, in addition to colonialism, political corruption and poverty, has been tested by several natural disasters. Haiyan (Yolanda), which followed Bopha (also known as Pablo in 2012) and Washi (also known as Sendong in 2011), smashed the Visayas region in a horizontal direction. This super typhoon made about 6 landfalls before going outside the Philippine boundary and left the country with so many bodies to bury, houses to build and lives to start anew.



Haiyan's path in Southeast Asia. Image courtesy of Washington Post (<http://www.washingtonpost.com>)

1.1 Chronology of Events for the Super Typhoon Haiyan

The following data were extracted from the Philippines' National Disaster Risk Reduction and Management Council (NDRMMC) Report ? Situational Report No. 62, Effects of Typhoon "YOLANDA" (HAIYAN):

6 November 2013

- Super Typhoon Haiyan entered the Philippine Area of Responsibility (PAR) through the East of Mindanao and was given its local name "Yolanda."

7 November 2013

- Typhoon Yolanda move West Northwest and continuously strengthens as it approaches the Eastern Visayas Region. In the afternoon, the typhoon slightly accelerated as it maintains its strength and its path.

8 November 2013

- Typhoon Yolanda made its 1st landfall in Guian, Eastern Samar at 4:40 a.m.
- At 7:00 a.m., it moved to Tolosa, Leyte and made its 2nd landfall.
- At 9:40 a.m., it made its 3rd landfall over Daanbantayan, Cebu.
- Typhoon Yolanda made its 4th landfall in Bantayan Island, Cebu at 10:40 a.m, and by 12:00 n.n., it was in Concepcion, Iloilo for its 5th landfall.
- The typhoon maintained its strength and continued to move to the Calamian Group of

Islands. At 8:00 p.m., however, it struck Busuanga, Palawan completing its 6th and final landfall. It slightly weakened and moved to the West Philippine Sea.

9 November 2013

- Super Typhoon Yolanda weakened as it continues to traverse the West Philippine Sea. It was reported to be outside the Philippine Area of Responsibility (PAR) at exactly 3:30 p.m.

According to the NDRRMC Report, 3,423,501 families were affected. This accounts for a total of 16,074,392 individuals in 12,139 barangays in 44 provinces of Regions IV-A, IV-B, V, VI, VII, VIII, X, XI and CARAGA. From this, 836,876 families or 3,921,577 individuals were displaced and accommodated in evacuation centers.

Damaged houses numbered to 1,139,797 and PHP 35,547,986,330.67 (804 million USD) worth of total damages, PHP 18,226,835,334.29 (413 million USD) of which is for the infrastructures and PHP 17,321,150,996.38 (400 million USD) for the agriculture sector of Regions IV-A, IV-B, V, VI, VII, VIII and CARAGA.

Thousands of hectares of rice, corn and other high-value crops were affected accounting for a total of PHP 7,277,150,764.29 (165 million USD) worth of losses and damages to agriculture.

There is a total of PHP 2,216,056,243.20 (50 million USD) and PHP 5,964,381,458.89 (135 million USD) worth of damages to livestock and fisheries respectively while for irrigation and other agricultural infrastructures a total of PHP

212,700,000.00 (5 million USD) and PHP 1,650,862,530.00 (38 million USD), respectively.

Several provinces and municipalities from Region IV-B, V, VI, VII and VIII experienced power outage as well as insufficient water supply. Telecommunication networks were also damaged and were restored a few days after the storm.

Due to the massive destruction caused by Yolanda (Haiyan), the President of the Republic of the Philippines declared a State of National Calamity on November 11, 2013. Section 3 of Republic Act 10121 or the Philippine Disaster Risk Reduction and Management Act of 2010 defines a state of calamity as “a condition involving mass casualty and/or major damages to property, disruption of means of livelihoods, roads and normal way of life of people in the affected areas as a result of the occurrence of natural or human-induced hazard.”

With the estimated number of deaths, what was seen to be the common causes of death of the victims are as follows:

- Drowning
- Struck by lightning
- Infections
- Hit by falling branches/uprooted trees/falling debris
- Toppled by blocks/roofs
- Lacerations, fractures
- Frostbite
- Cardiac arrest
- Hypothermia
- Electrocutation

2. TYPHOONS, CYCLONES and HURRICANES

Basically, these three terms are just the same, thus they all actually pertain to the same weather disturbance. If you are from the Atlantic and North Pacific you will call it 'hurricanes,' in Indian Ocean and South Pacific, they call it 'cyclones' while people in the Northwest Pacific use the term 'typhoons.'

Typhoons

Typhoons like Haiyan are formed due to warm seawater evaporating and rising and then forming into clouds and rain when it meets cooler air. The tropical oceans, being heated directly by the sun and making the air above it warm and humid, which causes the air to inflate and attract cooler air is the reason for forming what we call the tropical depression.

This weather disturbance has an eye which can be described as an area where it is actually calm, on the other hand, the eye wall brings the strongest winds and heaviest rains.

Haiyan is a 'super typhoon' (as what the name implies, 'super typhoon' accounts for something beyond the usual). The term 'super typhoon' is used for a very strong tropical cyclone and is best compared to a major hurricane of a Category 4 or 5 on the Saffir-Simpson Scale. It has a maximum sustained wind of 150 mph or more.

3. KATRINA AND HAIYAN

When hurricane Katrina struck the United States

devastating the US Gulf Coast in 2005 and killed 1,833 individuals, gaining the title 'the deadliest and most destructive Atlantic tropical cyclone of the 2005 Atlantic Hurricane Season,' the entire international community had its eyes on US and even offered monetary donations and assistance. The estimated total property damage was said to be \$81 billion USD.

Eight years after the said horrifying incident, another catastrophe took away thousands of souls in the name of Haiyan, a super typhoon which hit an archipelagic, third world country, the Philippines.

Katrina was just 125 mph while Haiyan is 195 mph with gusts to 235 mph. United States failed to prevent Katrina from causing so much damage. Katrina is weaker than Haiyan. Now, how can Philippines prevent the damage caused by such an enormous typhoon? US is a developed country, Philippines is not. Can you imagine the destruction caused by Haiyan?

3.1. BEFORE AND AFTER THE TYPHOON

(<http://www.bbc.co.uk/news/world-24899001>)





Devastated Tacloban Photo courtesy of BBC News-Asia.
(<http://www.bbc.co.uk>)

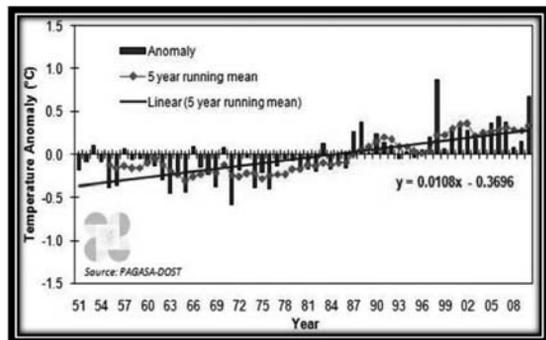
4. HAIYAN AND CLIMATE CHANGE

Climate change is the change in the mean climate system measured over a span of years. Since a longer period is being considered and since a single event cannot just change what is recorded for decades, it would be somehow difficult for scientists to provide direct linkage between climate and the occurrence of a particular weather event.

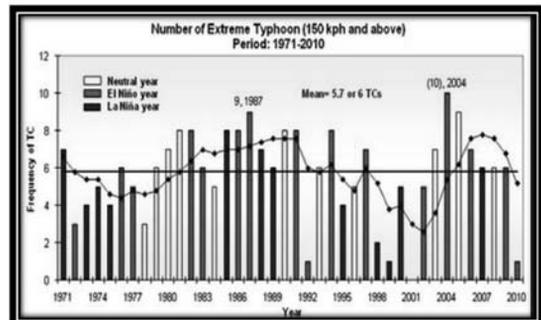
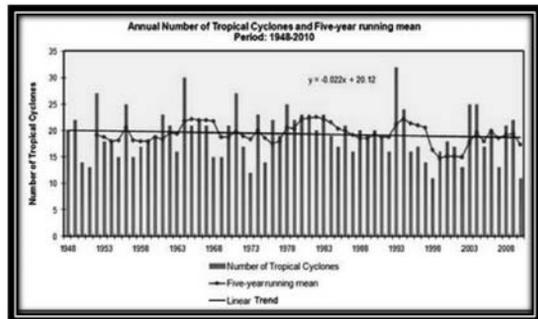
Having 2005 and 2010 tied on the earth's warmest year spot, it was also noticed that both years consist of disastrous and costly weather events: Hurricane Katrina which hit the United States on August 2005, and 2010 events like Russian heat wave, Pakistan's biggest flood and Southwest Australia's driest year.

With such events incidental to the warmest years recorded, it would be understandable to ask whether such extreme events are direct effects of what we call the "global warming."

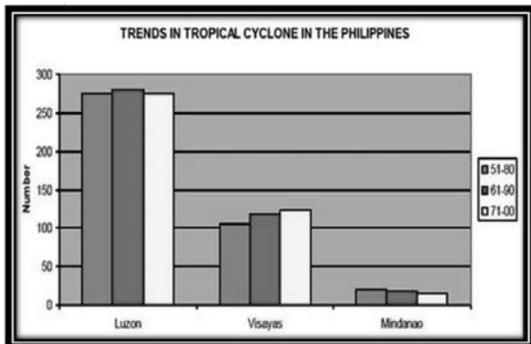
And now, we have HAIYAN, the world's most devastating typhoon. And according to the World



It was observed that the Philippines have an increase of 0.648 degrees Celsius or 0.0108 degrees Celsius per year (1951–2010).



An average of 20 tropical cyclones are recorded from 1948–2010. The trend is still the same except for the increase in the number of tropical cyclones with maximum sustained winds of greater than 150 kph.



It was noticeable that from 1971–2000, there is a slight increase in the number of tropical cyclones that hit the Visayas Region (the same region smashed by typhoon Haiyan) compared to the preceding events.

Meteorological Organization (WMO), this year 2013 is the 7th warmest year on record since 1850. Does this sound logical? It is for us to find out.

The following data and figures are taken from the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) (<http://www.pagasa.dost.gov.ph/>)

During the 19th United Nations Framework Convention on Climate Change last November 11, Super Typhoon Haiyan was linked to climate change. A Filipino delegate named Naderev Sa?o said:

“What my country is going through as a result of this extreme climate event is madness. The climate crisis is madness. We can stop this madness... We can take drastic action now to ensure that we prevent a future where super typhoons are a way of life. Because we refuse, as a nation, to accept a future where super typhoons like Haiyan become a fact of life. We refuse to accept that running away from storms, evacuating our families, suffering the

devastation and misery, having to count our dead, become a way of life. We simply refuse to. ... Typhoons such as Haiyan and its impacts represent a sobering reminder to the international community that we cannot afford to delay climate action.”

There is no concrete proof that links climate change to the formation of very strong weather events like Katrina, Sandy and the century’s most devastating super typhoon Haiyan. This does not just apply to Philippines or to United States. All over the world, such changes like increasing heat waves, heavy precipitation, droughts and wildfires are observed.

These typhoons or cyclones or hurricanes as they call it, ‘have already happened before, are happening, and will continue to happen’. The only thing that was certain not just to the perspective of the experts but even to normal citizens is that, the weather events that occurred during 1800’s and 1900’s are not the same weather events that are happening in the 20th century. This tackles not the damage which is proportional to international development, but on the degree or intensity of the weather event.

Even at the moment, there is no concrete explanation on how these extreme weather events are associated to what the Earth’s climate is going through, we should bear in mind that there is no harm in taking precautions. A lot of theories are popping out as to the reason of formation of the ‘destructive Haiyan,’ but as humans, who are lesser than the power of nature, we should not be just waiting on the results of debates and researches,

actions must be done not tomorrow, but today.

Haiyan (Yolanda) is Mother Earth's messenger to mankind. The disasters are affecting us both in the short and long run. It is becoming imminent. We should not be ignorant of the fact that the environment is already changing. Prevention is better than cure, as they say. So what are we waiting for? This is a wake-up call, a call to impose more strict policies for better environment, restrictions for emission of greenhouse gases, laws that were not plainly written in the paper, but STRICTLY and WISELY APPLIED.

Countries that are main contributors for global warming must faithfully cooperate. Mandatory carbon emission cuts should be imposed. Let us bear in mind that WE are paying the price. The victims are the less developed countries with much lesser contribution to the greenhouse gas pollution. Those who are main contributors are more or less slightly affected.

Climate is changing. The earth is getting warmer. These are facts and are not based on opinion. This is reality.

Decades ago, scientists have warned us of the observed rise in sea levels, the arctic ice is melting fast, indicating that the Earth is getting warmer. The ozone layer which is supposedly the humans' shield against harmful ultraviolet rays from the sun is already depleting.

The depletion of ozone layer is attributed to pollution, to industrialized countries which are the main contributors of harmful chemicals such as chlorofluorocarbons (CFC's) and the use of fossil fuels. Now, the warming of the earth, though not

exactly linked by the scientists are suspected to be the cause of the extreme events worldwide. Sandy, Katrina and now Haiyan. What's next? What another extreme event will then again take thousands of lives?

We are what we are now because of what we do. Yes, this is man-made. We pollute the earth. We take advantage of nature. We don't give importance to things the nature offers. Because of man's selfishness and greediness, we are destroying not just a planet, but a HOME.

THIS IS THE TIME TO TAKE ACTION. The solution is already known even decades ago. But we do not do anything. The disaster brought by HAIYAN is a wake-up call for humans. We don't want our grandchildren to suffer. We should not wait for the coming of typhoons as monstrous as 'Haiyan.' TODAY is the day to make a CHANGE.

4.1. Author's Final Note:

The Philippines with about 107 million residents, a labor force participation rate of 64.1 and an unemployment rate of 7.1%, will certainly be having a major setback due to the huge damage caused by Haiyan. Thousands of hectares of sugarcane, rice and corn crops were destroyed in addition to the affected fishing industry in the devastated areas.

Thousands of Filipinos died because of the disaster. Thousands are homeless, jobless and most especially, lost a beloved. Another Filipino once said from a social media that '6,033' is not just a number. It accounts for a family member, a friend and a neighbor that they will never see again for their entire life. Heart-breaking but true.

For the countries who have showed their sincerest sympathy for my country and for my fellow Filipinos, I, in behalf of millions of Filipinos, give you a heart-warming 'THANK YOU'. You showed how it was to be a part of an international community which does not think of racial differences. 'MARAMING SALAMAT PO' for showing us that we are one.

The economy of the Philippines is still a work in progress and the fear of making a downward motion in the economic ladder is present most especially because of the impacts of Haiyan. Today's reconstruction and rehabilitation is the focus of the Philippine government. Nevertheless, we are strong in spirit and are still positive in nature. The aftermath, the most difficult part, can still be faced by one of the world's happiest people on earth, the FILIPINOS.