**INTRODUCTION**

Precipitation is any form of humidity that falls from clouds in the air to the exterior of the Earth. Since precipitation refers to liquid quantity and how much of it is isolated on the Earth within a given time, it is measured in volumes and concentration of precipitation on specific areas where the study is focused on.

Rain is a group of droplets that tends to fall towards the land of the Earth. The cloud cannot already include the amount of cloud droplets present within it that is why the cloud needs to release these droplets and when they are released these droplets are already called as rain.

Rain is the only type of liquid precipitation, as opposed to non-liquid types of precipitation which are sleet, snow, and hail. A presence of a thick layer of our atmosphere is needed by rain to maintain temperatures above the melting point of water on the surface of the Earth. When ice crystals within a specific cloud is collided against, precipitation is formed. Ice crystals have different shapes. There are oblate crystals, round-shaped crystals, and crystals that look like a small sphere. The major cause of rain production is moisture contrasts that are commonly called as weather fronts and some moisture moving along zones of temperature.

Rainfall refers to the intensity rate and the quantitative amount of precipitation present in a particular area or region.

There are also several types of products of precipitation. These products from precipitation are rain, drizzle, snow, fallstreaks, flurries, sleet, freezing drizzle, and hail. On the Philippines, we only experienced rain, drizzle, and hail among the other types of precipitation. We only experience these three types of precipitation because our country is located near the equator where we have a warmer temperature that does not allow snow to occur in our region. Drizzle is a type of precipitation that is a lot smaller in diameter compared to rain. Drizzle is something that we can’t almost recognize because its liquid drop only has a diameter that is less than 0.5mm. After the release of small drops of liquid from clouds, it will keep on falling until it reach the surface of the Earth, but some liquid drops during a drizzle doesn’t reach the surface of the Earth. These liquid drops that precipitate while falling to the ground are called *virga.* On the other hand, hail is a frozen liquid drop that is stored in a cloud for a long time. Hail occurs more during the summer season in our country.

For better volume estimation, studies on how much water an individual rainfall holds are made. Raindrops have diameters between 0.5mm and 5mm. Due to varying raindrop sizes, the density or concentrations of the number of raindrops in an area also differs. A good example to show this comparison in raindrop size and density or concentration of raindrops is the occurrence of fog and rainstorms. A fog is composed of extremely small droplets of water with an extremely high concentration or density which can cause visibility to drop down to zero, while rainstorms are composed of raindrops of the largest kind with a dramatically reduced density.

Since the precipitation is measured in average volumes of water in a specific area, the best way to measure how much water that falls on an area is to collect the water/liquid that falls on an area is to collect the structure with waterproof walls and bases to see just how high the water could get from ground level. An instrument used in this process with a similar mechanism is the rain gauge. The rain gauge is the most widely used weather instrument in measuring precipitation. The rain gauge is composed of a funnel and a cylindrical container where the water accumulates and is collected. However, a rain gauge is the most effective when used in a perfectly flat area with its surroundings of the same level. When used in mountainous regions or areas with uneven ground levels, either the measurements would be inaccurate or multiple rain gauges must be used for each ground level. Rainfall varies in amounts depending on altitude. The measurements on a rain gauge is only applicable on a fairly small radius or area around it, any further and the data would be inaccurate

The most common rain detector used in electronic weather stations is the "tipping bucket" type of rain sensor. This fascinating technology uses two small "buckets" mounted on a fulcrum. The tiny buckets are manufactured with tight tolerances to guarantee that they hold an exact quantity of precipitation. The tipping bucket assembly is to be found underneath the rain collector, which funnels the precipitation to the buckets. As rainfall fills the tiny bucket, it becomes overbalanced and tips down, emptying itself as the other bucket pivots into place for the next reading. The action of each tipping episode triggers a small control that activates the electronic circuitry to transmit the count to the indoor console. On a wireless rain gauge, records are transmitted through a radio signal.

These methods are some methods that PAGASA Weather Station is using to gather records of rainfall during the entire day where they collect data every after three hours starting at two in the morning until eleven in the evening.

The PAGASA Weather Station, also recognized as Philippine Atmospheric, Geophysical and Astronomical Services Administration, is a nationwide institution of the Philippines that provide warnings about flood and typhoon. They also provide a lot more services like providing public advisories and forecasts concerning the up to date weather report of the country. PAGASA furthermore provides meteorological, astronomical, and climatological information for the security of life and property of the Filipino people. This government agency started operating on the 8th of December year 1972.

This agency has a mandate that states that they need to provide protection against natural calamities to insure the safety of the Filipino citizens, well-being and economic security of all the people, and for promotion of national progress.

Due to the geographical location of the Philippines on the Earth, all regions of the Philippines experience a climate that is known as the “Tropical Rainforest Climate.” The Tropical Rainforest Climate or also known as the Tropical Climate refers to the temperature of countries located in a range of latitudes in between 5/10° to 35°. The Tropical Climate consists of only two seasons which are called the wet and dry seasons.

Residents in the Philippines would expect to have a huge amount of rainfall every month of the year. The rainy season starts on the end of May and ends on late November or early December.

In Batanes, northeastern Luzon, western part of Camarines Norte, Camarines Sur, Albay, Bondoc Peninsula, eastern Mindoro, Marinduque, western Leyte, northeastern Cebu, Bohol, and most of the Central and Southern Mindanao experiences rainfall that is more or less evenly distributed all throughout the entire year.

In the region located on the western parts of Luzon, the region have two pronounced seasons where November to April is dry and the rest of the year is wet.

In line with this climate types, one could simply tell that climate types of certain regions are similar with climate types of the Cordillera region and regions located near that.

Upon observing the rainfall pattern in Baguio City, the proponents also observed some factors that could massively affect the rainfall in our city. One factor that would affect the rainfall pattern of Baguio City is the season. According to some references, high precipitation occurs during the humid season of the year while low precipitation occurs during the dry season of the year. Since the city is located at a high altitude, the elevation could also affect the pattern of rainfall that will occur. Mountains affect the amount of rain fall. Rains fall more often on the slopes facing the wind than on the slope away from the wind. The reason is that a wind hitting the side of the mountain tends to rise along the slope reaching heights of low temperature. There, the moisture in the wind condenses to form rain. By the time it reaches the other side of the mountain there is not enough amount of moisture to further condense. The eastern coastal areas generally receive more rainfall than the western parts. The eastern areas have high rainfall from October to March when monsoon blows over the country. For the Philippines as a whole, June to December is the rainy months while January to May is the dry months.

**REFERENCES**

* Ramsey W L, Sager R J, Phillips C R, Watenpugh F M. Modern Earth Science. Harcourt Brace Company; 1998.
* Earth Science: The Philippines in focus. Quezon City (PH): Institute for Science and Mathematics Education Development; 1983.
* the Philippines [homepage on the Internet]. Manila (PH): The Utrecht Faculty of Education; n.d. [cited 2012 June 25]. Available from:[http://www.philippines.hvu.nl/climate1.htm](http://www.philippines.hvu.nl/climate1.htm" \t "_blank).
* WW2010 [homepage on the Internet]. Chicago (IL): Department of Atmospheric Sciences; 2003 Dec. 3. [cited 2012 June 26]. Available from: <http://ww2010.atmos.uiuc.edu/(Gh)/wwhlpr/about_ww2010.rxml?hret=/guides/mtr/cld/prcp/home.rxml>
* Digital Atlas [homepage on the Internet]. 2002 Apr. 25. [cited 2012 June 27]. Available from:[http://imnh.isu.edu/digitalatlas/clima/patterns/ppfr.htm](http://imnh.isu.edu/digitalatlas/clima/patterns/ppfr.htm" \t "_blank).
* Reegle [homepage on the Internet]. Vienna (AU): 2010 May 17. [cited 2012 June 27]. Available from:[http://www.reegle.info/glossary/1316](http://www.reegle.info/glossary/1316" \t "_blank).
* McCracken M. Teach Me Finance [homepage on the Internet]. 2012 Mar. 25. [cited 2012 June 27]. Available from: <http://www.teachmefinance.com/Scientific_Terms/Rainfall.html>
* Meteorology Climate [homepage on the Internet]. 2012 Apr. 16. [cited 2012 June 25]. Available from:[http://www.meteorologyclimate.com/Tropical-climate.htm](http://www.meteorologyclimate.com/Tropical-climate.htm" \t "_blank).
* Jamal H. About Civil [homepage on the Internet]. Soft Technologies; 2010 Aug. 18. [cited 2012 June 25]. Available from: <http://www.aboutcivil.com/precipitation-in-engineering-hydrology.html\>
* Mandate and Functions. [Internet]. [cited October 3 2012].Available from: <http://www.pagasa.dost.gov.ph/mandate_functions.shtml>
* Worboys J. 2007. How Does a Tipping Bucket Rain Gauge Work?. [Internet]. [, cited September 9 2012] Available from: <http://weather.about.com/od/weatherfaqs/a/RainGauges.html>

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