**Chapter 2**

*Review of Related Literature*

**What is the average weather of Baguio City?**

Baguio City is located at about 1,500 meters above the sea-level, found at the province of Benguet , and is a part of the Cordillera Administrative Region in the Cordillera mountain ranges. Consisting of a cold temperature at an average of 15 degrees Celsius going up to 23 degrees Celsius, Baguio City’s altitude plays a huge role on its weather changes and rain patterns. Baguio City averages at least 4,500 mm of rain annually, which is one of the highest rainfall measurements recorded in the Philippines. Baguio experiences 6 months of rainy and cloudy days during the southwest monsoon.

**What are the factors affecting the rainfall patterns?**

|  |
| --- |
| **Humidity** - is the main factor affecting rainfall. Humidity is the amount of water vapour in the air which means it determines the amount of precipitation that will occur in the area. More water vapour creates more precipitation whether it be rain, snow, hail, sleet, or fog.  **Latitude** – the countries located near the equator known as tropical countries, receive more amounts of rain than the other countries found in the polar and temperate regions of the globe.  **Altitude** – Areas located higher above the sea-level receive more rainfall than the areas found near the sea-level. Since the temperature in the higher areas are cooler it allows for a quicker condensation period for the water vapours gathered and for more precipitation to occur compared to the low-lying areas but, the ocean and the seas are great sources of humidity giving the coastal areas more rainfall as well.  **Rain Distribution** – The distribution of rain affects the positioning of multiple rain gauges and it also affects the rain water collected from one area to another.  **What is rain intensity?**  The amount of rain which falls over time is called the intensity of rainfall. It is measured by the amount of the (mm) collected by the rain gauge over the time which elapsed. A millimeter of water equals a liter of water on a square meter. The intensity of rainfall is compared to the average rainfall received by the area to verify if there are any weather changes occurring in that area.  **How to record the amount of rainfall?**  With the use of a rain gauge, the rainfall can be collected in a funnel which runs to the cylinder – where the amount of rainfall can be recorded. Most rain gauges consist of a funnel and a cylinder usually about 50 cm tall, it is usually placed on the ground just high enough to avoid unnecessary splashes which may change the gathered data. |

### The Southwest Monsoon

The joined areas of the Northern and Central Indian Regions are heated due to the warm summer season causing a low pressure area over the northern and central Indian regions. This allows moisture-filled winds from the Indian Ocean to traverse to the Central Asian regions. These winds travel to the [Himalayas](http://en.wikipedia.org/wiki/Himalaya), creating winds blowing storm clouds towards the region. The Himalayas blocks the wind from entering the Central Asian regions, creating upward movement from the wind. With the gain in altitude of the clouds, the [temperature](http://en.wikipedia.org/wiki/Temperature) drops and precipitation occurs. Some areas of the Southeast Asian regions affected by this monsoon receive up to 10,000 mm (390 in) of rain annually. The southwest monsoon begins on June and ends on September.

**The Northeast Monsoon**

In the late parts of September, when the sun is going south, the Northern Indian region

cools down hastily. This allows the air pressure to begin to build over Northern India, the Indian Ocean and the atmosphere. The cold wind goes downward from the Himalayas to the Deccan peninsula. This is called as the Northeast Monsoon or the Retreating Monsoon.

**Bootstrapping**

Bootstrapping method was developed on 1979 by B. Efron. It is a computer-based method for assigning accurate sample estimates. This method allows estimation of the sample distribution of almost any statistic using only very simple methods (Varian 2005).

**Time-series analysis**

A time-series analysis is a method used to obtain an understanding of the forces, which produced the data. The time series analysis is a set of data used and collected sequentially at fixed intervals of time. The amount of rainfall, the data being studied, is a time series data, which is measured and recorded at successive time intervals.

**T-distribution**

A t-distribution table contains values dependent on the degrees of freedom.

**Precipitation in Baguio Related to the monsoons**

Rainfall patterns in Baguio are related to the dry- and wet season. From the end of October to the beginning of May the chances of rain are low, while in the rest of the year there will be almost daily rainfall. The southwest monsoon is more prevalent in Baguio city due to heavy rains in August.

**References:**

* The Global Monsoon System: Research and Forecast [Internet].International Committee of the Third Workshop on Monsoons; [2008 March 16, cited 2012 Nov 25]. Available from: The Global Monsoon System: Research and Forecast.
* Eric W. Weisstein EW. Bootsrap Methods [Internet]. MathWorld. [cited 2012 Nov 30] . Available from: <http://mathworld.wolfram.com/BootstrapMethods.html>
* William MK. The T-test [Internet]; Web Center for Social Research Methods; [2006 Oct 20, cited 2012 Dec 12]. Available from: <http://www.socialresearchmethods.net/kb/stat_t.php>
* Weather History for Baguio City. [discussion list on the Internet]. n.d.; [cited 2012 June 26].[http://www.meoweather.com/history/philippines/na/16.4163889/120.5930556/Baguio%20City.html?units=c#](http://www.meoweather.com/history/philippines/na/16.4163889/120.5930556/Baguio%20City.html?units=c)
* Intensity of rainfall. In: Floodsite Project [discussion list on the Internet]. 2008; [cited 2012 June 26].<http://www.floodsite.net/juniorfloodsite/html/en/student/thingstoknow/hydrology/rainfallintensity.html>
* Climates of the Philippines. [discussion list on the Internet]. n.d.; [cited 2012 June 26]. <http://www.silent-gardens.com/climate.php>