An overview of depositional environment between the mountains of southern java and the fold mountain of north java

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Abstract. This study aims to analyze the landform of South Java mountainous and folded mountains in northern Java based on the depositional environment context. The method used in this study is a survey. The research locations for the mountains of southern Java include Kebumen, Gunungkidul, and Wonosari regions. The research location in the northern mountains of Java includes the regions of Sragen and Grobogan. The results showed a difference in depositional environment between the two landforms. The southern Java mountains are formed in continental depositional environments, while the northern Java mountains are formed in the transition depositional environment and shallow marine depositional environment.

1. Introduction
The Deposition environment is one of the most important aspects to determine the potential of the region based on geomorphological aspects. Each landform has a geomorphological process, one of which is influenced by the depositional environment. The depositional environment is basically closely related to the geological conditions of an area. However, the shape of the land that is visible on the surface of the earth is one of the identities that determine the characteristics of the region. The rock formation located in Yogyakarta that alluvium (Qa) consisting of gravel, sand, silt and clay. Meanwhile, states that the terrain is located on the south coast of Central Java included in the plains of Purworejo, deposited so as to form the so-called sludge Alluvium [1]. Under the beach sand deposits ranging from a depth of 64 m down the sandy clay sediments that are rich in mollusc and characterize the shallow sea sediment until swamp, Plio-Pleistocene age. Alluvium formed because of the surface sediment old quarter. Old surface sediment quarter indicate that in this area there are volcanoes that are still active. Characteristics of surface sediment indicate that the sand here contain no water and sand has a rough texture. However, the sand is very suitable as material that is used to glue the cement. Silt is soil that has fine granules. In contrast to clay, clay has a high porosity making it difficult to absorb the water. The past research have result that zone with highest vulnerability have similiar characteristics, it is clay texture [2]. However, silt and clay have the same benefits as a material for handicrafts and road construction materials. Salatiga, Central Java is flanked by rows and rows Kendeng zenith. Salatiga geological formations in the composition consisting of surface sediment and sedimentary rocks and volcanic rocks are very diverse. The following analysis of the composition of geological formations Salatiga on the geological map, Salatiga area when viewed from the dominant type of rock formation green color (TMK).

The light green color, including the type of rock formation hoist. In this case, formation hoist more types of sedimentary rocks for the bottom of the sedimentary rocks including Flysch, and very well padded. Characteristics of rock at the top of the rock formations that have an insert marl are hoist with tuffaceous-calcareous sandstone, tuffaceous silt stone and gravelly sandstone and containing volcanic material very much. From the above characteristics can see types of sedimentary rocks. The rock is a
rock formation sediment accumulation of rock debris results that already exist, or the results of the activity of organisms and chemicals, which then undergoes due to sediment layer by layer on the surface of the earth [3]. Although there are a lot of ingredients by a volcanic eruption that produced the volcanic ash, small pebbles, large, sand etc, and finally the impact of the eruption on the entire continent is around the volcano, then at the time of the sedimentation process takes place against a lot of the eruption as many materials and materials left behind at the time of the eruption. The Karangsambung region is hilly regions with different lithology and topography. Stratigraphy of each complex is composed of rock types have different variations. For Kebumen zone it self has a complex rock types from the type of metamorphic, sedimentary and igneous rocks. Kebumen Zone transform itself is quite unique because as we can see in LIPI Karangsambung or can be called a mini Indonesian geology. Kebumen is an ancient story that is now emerging as a result of removal of the plates which is rich in fossils and natural rocks. Outcrops are one term in the geological meaning visible part of the opening bedrock or superficial deposits early in the earth's surface. Each outcrop keep a long story about the process of formation of rocks. Starting from the mechanism of formation, age and type of rock and minerals stored therein.

2. Methods
The research was conducted in the province of Central Java and Yogyakarta more precisely in LIPI Karangsambung, Gunung Api Purba Nglanggeran, Bledug Kuwu, Parangtritis sand dunes, as well as Kendeng Mountains. This study uses observation method is to collect data or information that must be executed by the efforts of observation directly to where they will be investigated and the method of documentation is the information derived from vital records either of institutions or organizations and from individuals as well as interviews are used as collection techniques the data if the researcher will carry out a preliminary study to find problems that must be investigated, and researchers want to know the things of the respondents more in-depth and the number of respondents bit / small. Data analysis technique used is descriptive analysis techniques. Descriptive Analysis aims to provide a description of the subject of research based on data from variables obtained from subjects examined.

Table 1. Physical conditions of Karangsambung

| Coordinate | 08° 50’ 831”S and 113° 42’ 909”E |
| Elevation | 78 m above sea level |
| Slope | - |
| Water pH | - |
| Availability of groundwater | - |
| TDS | - |
| Soil color | - |
| Soil texture | Somewhat rude (sandy clay fine) |
| Consistency | Sticking bit, not plastic |
| Organic ingredients | Froth very much (bo high) |
| Soil profile | Having a soil profile that varies with complete soil’s horizon |
| Landuse | - |
| Livelihood | Farmers, miners stone |

3. Results and Discussion
3.1 LIPI Karangsambung
The soil in the area Karangsambung has a slightly rough texture (fine sandy loam) and has a somewhat tacky consistency but not plastic. In addition the region also have a diverse soil profile with a complete soil horizon and has a high organic matter content with tested using H2O2 produce froth very much. the community Karangsambung area are farmers and miners also stone. Karangsambung region's natural conditions generally in the form of lower mainland so that the hills with height 520m. The area has many rocks rock types ranging from gravel to boulder. In the area Karangsambung types of rocks as very comprehensive. In addition to a lot of rock outcrops, there are also rivers draining the area Karangsambung namely Ulo.Sungai lok Lokulo river flows from north to south which crosses two districts of the district of Kebumen and Wonosobo. Karangsambung region often referred to as the world's most complete geological field by experts. Because here are the hallmark of Geology very
unique and has a complex rock form of metamorphic rocks, sedimentary and igneous a wide variety of species and is not found elsewhere in the world. Morphology Karangsambung that the frequent movement Karangsambung area of land on the slope more than 20° with lithology have experienced weathering with a thickness of more than 1 meter, especially on lithological formation constituent Waturondo, Karangsambung, Totogan and Melange Complex [4].

This morphology in a landscape formed by the interaction caused by the endogenous energy (energy from inside the earth) which then produced an uplifting, faulting and folding and process exogenous (external power earth) so that later will affect the natural formation today. Karangsambung anticline formation indicates that subducting axis towards the east. Karangsambung region dominated by an oval or elliptical morphology and incompressible tip-end. The morphology of these hills is basically in the form of the old rock Pre-tertiary, while on the morphology of the Mountainers compiled by Tertiary sediment around 65.5 million years is quite thick. In the southern part of Kebumen mostly composed by lowland and karst, it has the potential of groundwater resources with high productivity-being. In Karangsambung region is dominated by the shallow groundwater conditions. The pattern of shallow groundwater flow is from the south and the north [5]. Karangsambung regional communities are subsistence farmers. However, despite that, the rice plant cannot grow throughout the year in this case because the rice plants require very much water. Community activities was also not far from the agricultural sector. Land in the District Karangsambung utilized for paddy fields located along river banks and in low-lying. In the dry season, people around the switch livelihood rock mining. Geological conditions in the region. Not only the rock mine alone, however, Karangsambung area is rich in mineral and metal. Metallic mineral Karangsambung that there are areas among others iron ore, iron ore, gold, and manga. In addition to mineral and metal on Karangsambung area there is also a coal mine. However, in addition to having a positive impact as an addition to income communities, regions that serve as the old old mining area will be damaged. Disasters caused by their mining unconditioned in landslides.

3.2 Gunung Api Purba Nglanggeran
Nglanggeran is a village that is administratively located in the District Patuk, Kabupaten Gunungkidul, Yogyakarta. The area here is an area that is rock-rock is made up of older volcanic material. For those people they call the geologic formation that is used as a location Nglanggeran types in a very distinctive rock units, which is a volcanic breccia arranged on andesite material. The rock unit is the result of volcanic activity that occurred in the past in South Mountain area of Yogyakarta-Central Java. Types of rocks found in Mount Nglanggeran include andesite breccias, tuffs and pillow lavas because most of the volcano in Indonesia is composed of agglomerates not volcanic breccia which porous for groundwater flow [7]. Outcrops of volcanic clastic rocks that can be found in Mount Nglanggeran ideal appearance for this if it is seen and so lithologies found on Mount into the location and the type Geologic Formations Nglanggeran named. From some previous research evidence that there was activity vulkaniss with many volcanic clastic sedimentary rocks such as andesite breccias, tuffs and andesite lava flow of Mount Nglanggeran this. The shape of the crater of an ancient volcano, this Nglanggeran can be found on the summit of Mount Nglanggeran. Most geomorphology in the village Nglanggeran indeed form karst region. Karst itself is a state or form fields that have the characteristics of hydrology and land forms that can be caused due to mixing of easily weathered rocks and dissolved, and has a porosity that can develop well. In addition to the potential for its ancient volcanoes, in Ancient Volcano Region Nglanggeran can be found such rare fauna and flora Tremas plants (medicinal plants that can live ecotourism Ancient Volcano region), as well as the long-tailed monkeys around Ancient Volcano. Ancient Volcano, located in the village of Gunungkidul Nglanggeran has two major topics in the division of hydrology like surface hydrology and subsurface hydrology. On the surface hydrology is a potential of river and lake water there. During the dry season, the water can be found in a number of basins the mountain.

The basin is around an ancient volcano called a reservoir that can store rain water for a long time. So far, farmers in Gunungkidul mostly utilize Oyo river basin which they use to irrigate crops of maize during the dry season. In the district of Gunungkidul is indeed known as the area of barren, always experiencing a shortage of the water. It is indeed because there region is characterized by limestone hills known as karst areas. One of the tourist village inordinate attract domestic and foreign tourists enthusiasts are Nglanggeran Tourism Village located in Gunungkidul. Nglanggeran and
Tourism Village does offer the beauty of Ancient Volcano ecotourism and Embung of Nglanggeran. In addition, other tours are offered such as camp activities, evening activities familiarity, outbound, cultural tours dance, and musical arts. Nglanggeran village is growing rapidly with their management agency official is or Pokdarwis Travel Awareness Group in 2013. In that year is the initial formation and management of tourism village Nglanggeran optimally and professionally.

Table 2. Physical conditions of Nglanggeran

| Coordinate | 07° 50' 28.73" S and 110° 32' 19.20 " |
|------------|------------------------------------------|
| Elevation  | -                                        |
| Slope      | 4                                        |
| Water pH   | 7.2                                      |
| Availability of groundwater | 1                                      |
| Tds        | 950                                      |
| Soil color | Smooth (liat dusty)                     |
| Soil texture | Sticky, plastic                   |
| Consistency | Froth many (bo high)                |
| Organic ingredients | Solum has a thin soils due to leaching that occurs repeatedly |
| Landuse    | 3                                        |
| Livelihood | Majority as traders and farmers         |

The manager of the Tourism Village Nglanggeran make efforts so that the benefits can be felt in the village optimally by the local community [8]. Effort and development pace of development there as Physical Development ecotourism Ancient Volcano, Embung of Nglanggeran and dragon fruit orchard Nglanggeran as the main attraction in the village. Most of the community's economy in the village Nglanggeran are subsistence farmers who are managed individually. Other than that, there are also other sectors of business ranging from individual or groups such as farmers (beef, lamb, chicken), the craft industry for example craft mask, and food processing industries such as banana chips, fruit chips dragon. With the conclusion that their premises in the Village Ecotourism this Nglanggeran to augur well for the people there. From an economic point of their impact can improve their economic outcomes through breeding, sales, and so forth.

3.3 Mountains Kendeng

North Kendeng district in Pati regency characterized by karst mountain range. From the observations, North Kendeng karst areas also showed evidence of opinions, which explains that the karst region has the function and importance as: (a) the object of scientific study of the unique and rare; (B) a region highly sensitive to the presence of water and social culture; (C) the habitat that supports the diversity of flora and fauna that is specific; and (d) has a function in the absorption of CO$_2$ and atmospheric carbon dioxide, one of the natural processes that can prevent or reduce the occurrence of global warming because of carbon dioxide (CO$_2$) is one of the causes of global warming [9]. Because Kendeng mountainous region itself is mountainous karst / limestone, then there is enough water reserves well as accommodated in a basin. This condition is similar with South Jember in East Java, a karst zone that is very vulnerable to losing the ability to store a ground water. As with other Kendeng Region This area is a mountainous region with calcareous soil with alluvial soil layer that varies in thickness. This land has long been an area for the cultivation of teak. Plants in locations that are now monopolized by Jati at the site is the result of re-planting is done around the late 2000s, after the area suffered looting in the early reform period.

In this region is quite low socioeconomic conditions. This can be evidenced by the shape of the existing houses. In fact, no less than they get help in the form of houses or buildings. According to our informant interviews, he said that the public about the main job was not there. Most of them work in the informal sector / odd. For their own education level in this area most in junior and senior high school. This happens for reasons of insufficient economic factors. Most residents work as farmers in paddy and non-paddy fields. Conditions of agricultural land surrounding population Kendeng Mountains form of rainfed and upland. Conditions quite fertile rice fields. Most residents work as farmers in paddy and non-paddy fields. Conditions of agricultural land surrounding population Kendeng Mountains form of rainfed and upland. Conditions quite fertile rice fields. Most residents
work as farmers in paddy and non-paddy fields. Conditions of agricultural land surrounding population Kendeng Mountains form of rainfed and upland. Conditions quite fertile rice fields.

**Table 3. Physical conditions of Kendeng**

| **Coordinate** | 07° 18’ 46.83” and 110° 52’ 05.38” |
|----------------|-----------------------------------|
| **elevation**  | 78 m above sea level               |
| **Slope**      | 4                                 |
| **Water pH**   | pH = 6.9 to 7                     |
| **Availability of groundwater** | -                             |
| **TDS**        | TDS = 430                         |
| **ground color** | Light brown                     |
| **Soil texture** | Coarse (sand argillaceous)       |
| **Consistency** | Not Sticky, not Plastis           |
| **BO (H₂O: 50%)** | Froth many (BO high)             |
| **Soil profile** | Solum soil has a thin, because the roots of the host rock |
| **Landuse**    | 3                                 |
| **Livelihood** | The majority of the casual laborers |

3.4  **Sand Dunes Parangtritis**

Parangtritis located in the coastal area located at Parangtritis Subdistrict, Kretak, Bantul, Yogyakarta. Viewed astronomically Parangtritis located in the coordinates E 110° 19’ 14.09” and S 08° 01’ 07.36”. Parangtritis have Aeolian landform that occurs due to the influence of wind speed as the main factor of its formation. Landforms found in coastal areas highly affected by the presence Sewu Mountains, one of which can be seen from Parangtritis. Sand Dunnes is a landform landforms colin result of a process that has a crescent shape and produce landforms barchan the formation of both affected by wind movement. In Parangtritis is also a useful vegetation to resist wind erosion. There are rock formations in the area Parangtritis is land landscape forming factors, namely young volcanos sediment, sediment alluvial, Wonosari formation, and the formation Nglanggeran. The composition and the diverse landforms is the result of the diversity of rock formations in the area of Parangtritis. Existing alluvial deposits produce a precipitate which is generally located around the river and the waters are composed of sand, gravel, clay, and silt [10].

**Table 4. Physical condition of Parangtritis sand dunes**

| **Coordinate** | 08° 01’ 07.36” S and 110° 19’ 14.09” E |
|----------------|----------------------------------------|
| **Elevation**  | 22 m above sea level                    |
| **Slope**      | 1                                      |
| **Water pH**   | pH = 7.6 to 8                          |
| **Availability of groundwater** | -                             |
| **TDS**        | T.1 = 297                              |
|                | T.2 = 335                              |
| **Soil color** | -                                      |
| **Soil texture** | Coarse (sandy)                     |
| **Consistency** | Not Sticky, not Plastis               |
| **Organic ingredients** | No reaction (BO no)       |
| **Soil profile** | Solum has a thin soil. Soil horizon is not visible |
| **Landuse**    | -                                      |
| **Livelihood** | Majority as traders                   |

In unit landforms Parangtritis region included into mountainous zone south of Java, namely in the form of a plateau with a plateau-shaped limestone rock formations of the cliff. Parangtritis region in general has the potential hydrological same can be said with other areas, such as surface water, ground water, and there is a spring. There are safer ground water of sediment material. Ground systems in the area Parangtritis is the effect of soil water that came from Mount Merapi as well as ground water shoals of beach in the area that has sand hills. But the groundwater contained in these sand hills to be found because the life of the layer below which shoals of old beach that has the ability to bind water. Judging from the economic angle Parangtritis people in the village can be said is still quite good if we look from the side of the economic development potential of the surrounding communities. Villagers
Parangtritis livelihood include fishing sector, agriculture, industry, farming, trade, tourism, services, and transportation. Tourism potential contained in the Parangtritis village to build the economy of surrounding communities.

3.5 Bledug Kuwu
The state of the regional geology indicates that the start of Semarang eastward to the area Kuwu an alluvial deposits which include Randulutung zone. This area has a flat morphological appearance. In the north there is a weak and moderate undulating hills. While in the south by the land portion Kendeng zone [11]. In the east there are fault lines trending east-west, which is a normal fault. In the south there are fault lines trending east-west which is a reverse fault, the fault perpendicularly are normal faults. Anomalies Bledug Kuwu area comes from rocks that experienced a fault that extends from south-west towards the northeast. Fault that occurs will result in the release of the gas flow to the surface through a simple rock path. Rocks that passes should be easy to pass a source of pressure. Effect of tectonic movement, also in the sediments were deposited. Horizontal fault active region is a fertile land mud volcano. Many geological or geophysical conditions Bledug sort Kuwu in Purwodadi, among which are in the region of the Jordan. But the difference with Bledug Kuwu in Purwodadi is in Jordan output of the geological conditions are methane, whereas in the Purwodadi is the sludge material. Mud volcano can be formed under the sea (sea bed). But the difference with Bledug Kuwu in Purwodadi is in Jordan output of the geological conditions are methane, whereas in the Purwodadi is the sludge material. Mud volcano can be formed under the sea (sea bed). But the difference with Bledug Kuwu in Purwodadi is in Jordan output of the geological conditions are methane, whereas in the Purwodadi is the sludge material. Mud volcano can be formed under the sea (sea bed).

| Coordinate | 08° 01' 01.98" S and 110° 19' 09.38" E |
|------------|----------------------------------------|
| elevation  | 150 masl                                |
| Slope      | 1                                      |
| Water pH   | -                                      |
| Availability of groundwater | -                             |
| TDS        | -                                      |
| Soil color | Pink reddish brown                     |
| Soil texture | Smooth                             |
| Consistency | Very Sticky, very plastis          |
| Organic ingredients | Froth bit (BO bit)            |
| Soil profile | The cross-section from top to bottom in the form of mud. |
| Landuse    | -                                      |
| Livelihood | The majority of people around Bledug Kuwu salt subsistence farmers and managers Bledug Kuwu tourist center as well as sellers of food and drink |

Bledug Kuwu contained in Grobogan showing geological appearance in the form of diapers. Appearance in Bledug Kuwu a kind or similar is happening with in Lapindo because of the rock formations that exist in both locations are the same. The difference is only the pressure in it. Grobogan which has a relief area of limestone mountains and hills and plains in the middle, as the topography is divided into 3 regions of the lowlands, hills and highlands. Low-lying areas are at heights up to 50 meters above sea level with a slope of 0o-80 includes six sub-districts Gubug, Tegowanu, Godong, Purwodadi, Grobogan south and Wirosari south. Hilly area at an altitude of between 50-100 meters above sea level with a slope of 80-150 includes 4 sub-districts Klambu, Brati, Grobogan north and Wirosari north. Highland areas located at an altitude of 100-500 meters above sea level with a slope of more than 150, covers the districts in the south of the region Grobogan. Grobogan located between two mountains Kendeng have material resources mining and quarrying are quite reliable. The water is all the water that are on, above, or below ground level, is included in this definition of surface water, ground water, rain water and sea water, which is in the land. While water power is the potential contained in the water or on water sources that may provide benefits or even loss of human life and the environment. The availability of water could turn into a problem if it arises imbalance between availability and usage needs. As a result of conflict utilization of water resources between districts /
cities more obvious example of the use of springs and water management of the river. Management of water resources need to be directed to realize synergies and a harmonious integration between regions, sectors, and between generations.

The management of an effort to plan, implement, monitor and evaluate conservation activities. There is some different in East Java Jember, river in Jember town is region with the highest pollution index because there are many compact neighborhoods located around the river so now the river is damage by the people around there [12]. Bledug Kuwu is a phenomenon of volcanic mud (mud volcano) located in the village of Kuwu, Kradenan, Grobogan, Central Java, can be taken approximately 28 km to the east of Purwodadi. Bledug Kuwu is one of the flagship attraction in this area. Attractions that presents the natural wonders of this breadth of ± 45 hectares. Tourist area, which is geographically located in the lowlands temperature 28-36 C presents the bubble burst giant issued a splash mud and salt water. The ripples occur at any time and move where the white smoke followed. With the few attractions that have emerged, automatically citizens or the surrounding communities will take advantage of the moment to earn a fortune for the sake of their survival. Anyone selling food ranging from heavy to snacks such as candy, many also become a vehicle keeper tourists or lovers of the natural charm. Direct their activities can increase their earnings and the economy may initially be less, after undergoing a new profession in the tourist attraction can be a factor increasing their economy.

4. Conclusions
Based on the results of research conducted in the physical landscape of Central Java and Yogyakarta, largely affected by the volcanic and tectonic processes. This process occurs continuously since the past until now. LIPI Karangsambung Kebumen included in the formation of Lok Ulo and Karangsambung with Eocene-Oligocene age Ancient Volcano Nglanggeran included into the formation Nglanggeran with early-middle Miocene age that are members of the Southern Mountains Zone Parangtritis sand dunes into the mountainous zone of the south. Alas Kendeng mountain folds zone Kobong included into the formation hoist Middle-Late Miocene age. Bledug kuwu included in Randublatung zone aged Late Miocene-early Pleistocene. The phenomenon can not be separated from the physical geography spatial pattern. This spatial pattern is closely related to the dimension of time. The shape of the landscape will continue to change over time and the influence of other natural phenomena such as rain, landslides, earthquakes and others.

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