

1. The relationship between temperature Patterns and Urban Morfometri in the Jakarta city, Indonesia

Plagiarism Scan Report	
Summary	
Report Generated Date	07 Feb, 2018
Plagiarism Status	100% Unique
Total Words	869
Total Characters	5199
Any Ignore Url Used	

Content Checked For Plagiarism:

Climate change is a change in the weather parameters are directly affected or indirectly by human activities (Trembeth et al., 1995). Climate change is a phenomenon. which requires serious attention, as it can have an impact on population discomort. One element that is very significant climate change impacts. For li on the surface of the earth is the change in temperature, as estimated by the IPCC (2007) that the rise in average surface temperatures reach 2-3°C per year. The IPCC is an institution set up by the World Meteorological Organization (WMO) and the United Nations Environments Programme (UNEP) in 1988. Analysis of climate change in the city of Jakarta has been reviewed by Hidayati (1990); Avia (2010); and Maru et al. (2011). Secondary data used by Hidayati year 1916-1987, the 1901-2002 data used by Avia, and data from 2008-2010 used by Rosmini et al.. All three studies showed an increase in temperature of Jakarta City from time to time. According to Avia that the most significant change that is the period of 1991-2002, the temperature increased an average of 0.124°C per year. Even achieve an improvement of 0.6°C in the last 10 years (Maru et al., 2011).

The temperature change due to urban surface conditions and human activities referred to UHI. UHI is the temperature rise of the city as the impact of surface geometry, surface thermal properties, surface conditions (Khuzaini, 2008), anthropogenic heat, greenhouse gases, and adveksi (Ahmad et al., 2008; Ahmad and Hashim, 2006; Ahmad et al., 2006; Voogt, 2002; Ahmad, 1994; Oke, 1982). Urban geometry is marked by many vertical building walls and the resulting high waves sun comes suffered repeated reflection to earnings and stored in a relatively long time. Retained heat during the day is released at night so that the effect of increasing the maximum and minimum ambient temperature (Ahmad, 2012; Karyono, 2001; Soedomo, 2001).

Further, surface geometry and atmospheric conditions the heat released by urban use in buildings that have an impact on the limitation of view of the sky by buildings, trees, etc. are commonly referred to as sky view factor (SVF), all have an impact on increasing the formation of UHI in a city.

Among studies that examine the relationship between the temperature of the city with urban morphology is the study by Kusaka and Kimura (2004); Unger (2004); Giridaran et al. (2004); Giridaran et al. (2005); and Yang et al. (2010). The results showed the relationship between temperature and morphology city especially SVF. While some of the results showed relationship is not significant but all describe the correlation the smaller the value of SVF then the temperature of the area is relatively high compared to the value larger SVF. Significant correlation between temperature and SVF, generally associated with a large increase in temperature ($^{\circ}\text{T}$) per year with the SVF. For example, the average intensity of the urban heat island (IPHB) ($^{\circ}\text{T}$) period of one year (April 2002 to March 2003) and SVF using linear regression showed a significant influence on the value of $r^2 = 0.4746$ (Unger, 2004). Determination of the SVF been done by various methods including: a) the method of photographic image (Chen et al., 2012; Hammerle et al., 2011; Yang et al., 2010; Gal et al., 2007; Grimmond et al., 2001), b) method of measurement of building height (H) and road width (W) with the formula H/W (Unger 2004), and c) methods of Geographic Information System (GIS) (Gal et al., 2007), and the method of LI-COR LAI-2000 Plant Canopy Analyzer (Welles and Norman, 1991).

Since the occurrence of rapid urbanization in 1991, now in the Jakarta City around the various buildings to retreat, office and industry. Rapid urbanization impacts of land use change from forest area to be built-up area (Ahmad et al., 2010b; Teng and Weng, 2004). As a result, ensured that the SVF in Jakarta City impact on the heat retained by buildings and other objects, and reduce radiative heat emission, especially at night. Also, can result in a sheltering effect of reducing heat loss from the surface konveksi and the air near the surface. Until there is an increase UHI effect in the City of Jakarta.

The results showed that Jakarta has the SVF between 0.2 to 0.78 so this paper tries review and analyze the relationship between SVF and UHI development in Jakarta City. This study attempts to look at the temperature distribution during the day 06.00 am to 18.00 pm

at six locations have different SVF, outside or even in the city center. This paper consists of the area and the study method, the study and discussion include the SVF, temperature changes daily on weekdays, regular holidays and national holidays. Next are the implications of the study and conclusions.

2. STUDY AREA AND METHODS

Selected study area is the City of Jakarta, Indonesia and surrounding areas. Jakarta is the Capital City of Indonesia with an area of around 66,152 km² and is located at an altitude of about eight meters from sea level. It is located on the north side of the island of Java bounded by the City of Bogor on the south and east is West Java and Banten province to the west. Map location shown in Fig. 1.

Plagiarism Scan Report

Summary

Report Generated Date	07 Feb, 2018
Plagiarism Status	100% Unique
Total Words	842
Total Characters	5004
Any Ignore Url Used	

Content Checked For Plagiarism:

SVF measurements performed by the method of photographic image. The instrument used was a Nikon D90 digital camera with a Nikon Fisheye Nikkor 10.5 mm 1 : 2.8 G ED (Fig. 2). The SVF can be analyzed through the picture produced by the camera having a field of view (FOV) of 148° to 180°. Initial activities in the calculation of SVF was taking pictures and measurements of several study sites, as follows: 1) Tambun, this area is located outside the city that has characterized as an open area. The location was chosen to give the impression that the open area has a large SVF. SVF great value expected to release heat into the atmosphere more quickly; 2) JLITC Apartment Cempaka Mas, this area is a shopping center that has a wide street that is about 8 to 10 meters. This area is visited by people who come to sell and buy goods in this area; 3) JSITS Apartment Cempaka Mas, the area is also a business center which is bordered by JLITC, however, the area has a more narrow streets compared with the previous quarter to around 4 meters. Therefore, the SVF is certainly smaller; 4) Utan Kayu (UK), this area is a dense residential area with concrete buildings. Therefore, this area has always traveled by many vehicles; 5) in the front of Department Journalists Indonesia (DKWI), which is an area that has a department with its high buildings and paved. In addition, a wide street and many traveled by the vehicle; and 6) in the front of Kolese Kanisius (DKK), the area is bordered by DKWI, but it has different characteristics, namely there was a garden, plants, and the number of vehicles and fewer. Areas with different characteristics is expected that the SVF are different. The sixth six locations is shown in Table 1 and Fig. 2. The announcement was taking pictures and download pictures from the camera. Then do digitization using global mapper program to separate open area covered by buildings, plants and other objects. The

open split green color while covered area divided black color.

Calculation of Surface Geometry or sky view factor (SVF) with formula KTB/KTT where KTB is open (sky view) and the numerator is the area covered by buildings and other objects. This is in accordance with the formula height: width (H/W), where H is the area formed simple regression analysis to see the correlations between SVF with temperatures in the area.

Relationship between UHI and SVF conducted to see the connectedness between UHI and SVF value. Independent variable is the SVF, while the dependent variables is the temperature.

3. RESULTS AND DISCUSSION

3.1 The SVF

SVF obtained from six locations. Five locations in the city of narrow streets Apartment Cempaka Mas (JSITC), the path width Apartment Cempaka Mas (JLITC), in the front Colleges Kanisius (DKK), Utan Kayu (UK), in the front KWI (DKWI). The rest of the locations are in rural areas of Tambun (TB). Hemispheric fisheye image taken in March 2012 using a digital

camera: Nikon CoolPix 950 fitted with a Nikon FC-E8 Fisheye lens. that is not enclosed buildings, plants and other objects, while W is a vast hemisphere picked up by the camera (Oke, 1982).

At early in the selection of the measurement SVF is.

The time chosen is represented three times with very different activities are as follows: the work day Monday, October 17, 2011, the regular holidays Saturday,

September 10, 2011 and a national holiday or feast of

Idul Fitri Tuesday, August 30, 2011. Implementation flow chart shown in Fig. 3.

Afterward, the temperature measurement in the six area. Once the temperature data obtained then perMeasurements carried out at six stations with the

measurement of three-time basis at the time of the work day (HK) regular holidays (HCB), and national holidays (HCN) at each location.

Measurement time from

06:00 am West Indonesian time (WIB) to 18:00 pm each evening an hour for 12 hours each day of measurement.

The minimum temperature at six stations occur in the morning 06.00 hrs. The lowest temperature occurs in TB with SVF =0.78 respectively: working day of 26.9°C, ordinary holidays 24.5°C, and the national holidays of 24.87°C. Instead highest maximum temperature occurs in the UK with SVF =0.45 in the regular holidays 38.4°C, and the national holidays of 38°C. The lowest temperature occurred at locations with SVF 0.78 outside the city, while the highest temperature in the location with the SVF 0.45 in the city

center which has characteristics as compact settlements with general transport links.

Shifting the temperature reaches a maximum temperature varies at each location (Fig. 5).

In sunny weather conditions indicate a shift in temperature from minimum to maximum temperatures generally occur from 09:00 am to 15:00 pm with a peak maximum temperature at 11:00 and 12:00 am. Various stations according to the pattern is JSITC (SVF =0.21) and DKWI (SVF =0.47), and at 12 in JUTC (SVF =0.42). Meanwhile, TB (SVF =0.78) with the use of paddy land in the rural areas suffer attrition normal temperature according to

Report generated by smallseotools.com

Plagiarism Scan Report

Summary	
Report Generated Date	07 Feb, 2018
Plagiarism Status	100% Unique
Total Words	787
Total Characters	4897
Any Ignore Url Used	

Content Checked For Plagiarism:

Shifting the temperature reaches a maximum temperature varies at each location (Fig. 5). In sunny weather conditions indicate a shift in temperature from minimum to maximum temperatures generally occur from 09:00 am to 15:00 pm with a peak maximum temperature at 11:00 and 12:00 am. Various stations according to the pattern is JSITC (SVF =0.21) and DKWI (SVF =0.47), and at 12 in JUTC (SVF =0.42). Meanwhile, TB (SVF =0.78) with the use of paddy land in the rural areas suffer attrition normal temperature according to the sun's rays that the maximum temperature of 35.3°C on weekdays, 35.9°C on ordinary holidays, and 37°C on holidays nationally. The maximum temperature at the three time took place at 13.00 noon. Although research in this short time of three days, but because this study was conducted at the time of which has different characteristics, namely HK, HCB and HCN, it generally can describe the actual temperature conditions prevailing in the city of Jakarta at present. The results showed an enormous increase in temperature in the city of Jakarta today. Based on the findings obtained an average temperature of 32.44°C.

When compared with the results of studies performed by Avia (2010); Maru and Ahmad (2014a, b) the increase in temperature in the last 10 years a very significant upward trend reflects the Jakarta city temperatures increased very significantly. Avia (2010) describe the magnitude of the average temperature in the period 1991-2002, namely 27.9°C compared with the previous period, the average temperature of 26.4°C. As a result, the temperature rise in 10 years in 2002 to 2012 of 0.6°C per year.

Although research in this short time of three days, but at the time the study was conducted with different characteristics, namely HK, HCB and HCN, then generally able to describe the actual temperature conditions occur in the city of Jakarta at present. The results showed an enormous increase in temperature in the city of Jakarta today. Based on the findings obtained an average temperature of 32.44°C. When compared with the results of studies performed by Avia (2010);