

SPATIAL AND STATISTICAL EVALUATION OF THE TEMPERATURE TRENDS OVER THE PHILIPPINES IN RELATION TO LAND COVER CHANGES

Edward P. Cajucom^{1,2}

Adviser: Gay Jane P. Perez, Ph.D.¹
Co-adviser: Marcelino Q. Villafuerte, Ph.D.²
Reader: Cherry L. Ringor, Ph.D.¹

¹Institute of Environmental Science and Meteorology, University of the Philippines Diliman, Quezon City 1101 Philippines - cajucom_edward@yahoo.com

²Department of Science and Technology - Philippine Atmospheric, Geophysical & Astronomical Services Administration (DOST-PAGASA), BIR Road, Quezon City, 1100 Philippines
Philippines

Abstract

The effects and impacts of global warming are now evident worldwide. These impacts are expected to exacerbate and this will highly affect the economy and therefore, the lives of the people. While all regions and countries will experience similar warming trends, the impacts and severity will vary locally. In the Philippines, over the past 65 years (1951-2015), a significant increase of 0.68°C in the annual mean temperature was noted (DOST-PAGASA, 2018). Several scientific assessments and studies have confirmed that this warming is most likely to be due to anthropogenic/human activities which could then also be attributable to land cover changes (DOST-PAGASA, 2011). Thus, this study aims to evaluate the seasonal and interannual temperature trends and variabilities of the Philippines in relation to land cover changes. Statistical analyses will be applied to identify whether monotonic trends exist and are significant in the temperature dataset present in the historical data of 56 PAGASA synoptic stations. Temperature anomalies and Diurnal Temperature Ranges (DTR) will also be computed for better understanding of the observed trends using the temperature maximum, minimum and mean temperatures for each synoptic station across the country. For the changes in the vegetation cover, NDVI will be utilized using Climate Engine. Statistical evaluation will be performed to determine whether the changes in the NDVI, mainly because of urbanization, significantly affect the temperature trends present in all the study areas in the Philippines.

Keywords: Temperature trends, land cover changes, NDVI, Climate Engine, significant change