Venus Tounkour 2007: Probable Effects of Urbanization and Industrialization on Hydro-meteorological Characteristics in the Eastern Coast Basin. Master of Science (Watershed and Environmental Management), Major Field: Watershed and Environmental Management, Department of Conservation. Thesis Advisor: Assistant Professor Wanchai Arunpraparut, D.Agr. 86 pages.

The goals of this study are to find factors from the influences of land use change emphasizing industrialization and urbanization that alter on temperature and precipitation in Eastern Coast Basin and to predict the trend of temperature and precipitation changes caused by such alteration in the future.

Based on historical data of Urban during in 1986-2001 from the Office of Agricultural Economics, and industrial area in 1969-2005 period from the Department of Industrial Works, it was indicated that urban area trend of the Eastern Coast Basin had been increased in each year. The proportion of urban in Chanthaburi and Rayong are higher than other provinces, about 17.19 Km^2 or 34.06% and 16.36 Km^2 or 28.08%. Urban and industrial area in the Eastern Coast Basin had increased at the rate of 0.20 and 2.23 Km^2per year respectively.

The rate of changes in temperature for each month of all stations analyzed by regression and the comparison of temperature change rate between urban and rural stations (based on the available data from 1985-2005) showed that the higher rate of increase in mean monthly temperature, annual mean temperature, annual mean temperature in dry period (Nov-Apr), was found at Sattahip station (0.07 and 0.07 ˚C per year respectively). Maximum temperature in terms of mean annual maximum temperature and mean maximum temperature in dry period of urban area was higher compared to rural area. As for moving average analysis of mean rainfall in urban stations, it is seen that all stations showed a decreasing trend.

Regression analysis indicates that both parameters applied in the model (industrial and urban area) are essential influence on temperature, Industrial area plays most essential role in temperature change. It shows the most significant influence on mean temperature at Rayong station. Combination of industrial and urban areas indicate more significant influence on maximum temperature. Although the change is small influent in temperature, it implies some interesting impact on the change of temperature. Regression analysis results also should that aerosols in terms of SO_2 and NO_2 have significant influence in decreasing cloud cover in wet period. At Sriracha station, the mean SO_2 and NO_2 decreased cloud cover while the maximum SO_2 and NO_2 caused decreasing cloud cover at Chonburi station. In addition industrial area and urban area are sources releasing aerosols particular SO_2 and NO_2 which subsequently should decrease rainfall in every stations both annual and wet period. However, the PM 10 should uncertainly change of rainfall in this region.