**The effect of urban heat island on the precipitation pattern around Tainan city in Taiwan**

W.-M Yen 1, T.-H. Lin1,2, G.-R. Liu2, and C.-Y. Liu2

*1 Institute of Space Science, National Central University*

*2 Center for Space and Remote Sensing Research, National Central University*

*Jhongli City, Taoyuan 32001, Taiwan*

*Tel: 886-3-422-7151#57646*

Email: owen0112@hotmail.com

Abstract:

 Tainan is the oldest city in Taiwan and the increasing population density leads her to be a big city, as well as intensify the urban heat-island effect. The previous researches indicate that the precipitation could be influenced by the intense urban heat-island effect, such as the thunderstorm for example. In summertime, urban heat can generate the convection can be caused from the heat surface of urban area, and then reduce the rainfall rate from terrain lifting effect. As a result, the regional precipitation pattern could be altered, especially during the summertime. In order to have better understanding the impact of urbanization on the precipitation, impervious surface area (ISA) as the index of city urbanization associated with the intensity of urban heat island effect (UHI) are used in this study.

Landsat data is utilized in this study since the visible and thermal Infrared spectral bands can be provided for calculating the values of ISA and UHI at the same time. After the land cover type classification, we can derive the value of ISA around the areas of Tainan city and the changes along with the time. Then, the rainfall data during June、July and August from 1993 to 2012 which exclude the data in typhoon days from Center Weather Bureau (CWB) over Tainan city are collected to examine the correlation between ISA, UHI and precipitation. Although the preliminary results show that the difference of precipitation is not significant, the pattern did changed in somewhere between urban and rural areas. The following investigation still keep on going.

Keyword：Urban heat island effect; Precipitation; Impervious surface area