

SEASONAL COMPARISON OF LANDSAT ETM+ DERIVED LAND SURFACE TEMPERATURE FOR SOUTHERN BALI

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Urban areas consist of various natural semi-natural and manmade surfaces which modify the structure, composition, and energy balance of the urban environment. In recent years the Urban Heat Island (UHI) effect has received more attention and has been suggested as one of the causes of global warming. However, few studies have been conducted of thermal infrared remote sensing of tropical islands in different seasons. This study investigates the land surface temperature (LST) over the southern part of the island of Bali represents typical tropical climatic conditions and land use. The variation of LST with different types of land use/cover was analysed using the Landsat 7 Enhanced Thematic Mapper (ETM) thermal bands for May 2002 and March 2003 which are typical a dry and rainy month respectively. Since the two images were acquired in different season in the year, LST were normalized before comparison. Preliminary results suggest that the temperature difference between land covers is more important than the seasonal differences for each land cover, although this needs to be confirmed by further images. It suggests that the season of acquisition is not critical for the study of UHI effects in this kind of landscape. This is advantageous since the area is frequently cloud covered and imagery can be hard to obtain. In both images the zones of greatest heating were scattered, mainly found in areas of dense bare land, building, residential areas, and grassland area. These included downtown Denpasar, Ngurah Rai International Airport and Serangan Island. Work is continuing to further characterise the areas.

Keywords: urban heat island, Denpasar, land use/cover, Landsat, land surface temperature