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**ANALYZING THE TEMPORAL VARIATIONS OF NET PRIMARY PRODUCTIVITY OF TAIPEI CITY THROUGH REMOTE SENSING**

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**ABSTRACT:** This study applies remote sensing to estimate the net primary productivity (NPP) of Taipei City. The objective is to analyze and understand the temporal variation of NPP for the reference of urban planning in Taipei City. The research processes include the calculation of vegetation indices from SPOT images (2002~2006), the estimation of fraction of photosynthetically active radiation (FPAR) and photosynthetically active radiation absorbed by green plants (APAR), the estimation of NPP, and finally the temporal variation analysis of NPP. The result is as follows. The mean NPP of Taipei City is 152 gC/m2/yr from 2002 to 2006. The total NPP ranges from 3.82x104 ton/yr to 4.32x104 ton/yr, and the mean NPP in five years is 4.10x104 ton/yr. The annual NPP growth rate is -0.073x104 ton/yr (R2=0.31) and the decreasing trend illustrates the maximum NPP is in 2002 and the minimum NPP is in 2006. As for the temporal analysis from seasonal NPP variations, the NPP accumulation is mainly distributed between April and October. The NPP in these seven months is about 77% of the annual NPP. The mean NPP in spring, summer, autumn and winter is 36.72 gC/m2, 56.85 gC/m2, 41.49 gC/m2, and 16.78 gC/m2, respectively. Obviously, four seasons have different fluctuation trends from 2002 to 2006. For example, the NPP in summer has an increasing trend. The annual NPP growth rate is 1.076 gC/m2 (R2=0.38). However, the decreasing trend is obtained from other three seasons. The annual NPP growth rates for autumn, winter and spring are -1.478 gC/m2 (R2=0.18), -1.378 gC/m2 (R2=0.37), and -0.913 gC/m2 (R2=0.20). From the above result, it can be concluded remote sensing is a timely, effective, feasible, and large scale approach to estimate the NPP and to analyze the temporal variation of NPP. The result obtained from this study can be extended for the reference of urban planning in Taipei City.