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Variation of ecosystem services' value of Kunshan based on the land use change

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The value measuring ecosystem services — scientific basis for protection and restoration of regional eco-environment, is directly related to the structure and composition of ecosystems. At broader spatial scales, land use plays an important role in determining ecosystem properties and dynamics. Previous studies have focused more on static assessment of ecosystem services' value but less on its dynamic properties and the underline mechanisms. This paper explored the quantitative measurements of ecosystem service in a fast growing area in the Yangtze River Delta (Kunshan) and examined the changes of these measures with the cover changes between 1994 and 2001. The results showed that: (1) the value of ecosystem services decreased 122 million RMB (4.93%) and 72 million RMB (4.12%) respectively when assessed by the two different indices. (2) The linear changes of ecosystem services' value of the two indices could be modeled with equations $Y-1 = -199.62X-1+25088$ ($R^2=0.906$) and $(Y-2) = -121.25X-2+17342$ ($R^2=0.907$). (3) The ecosystem services' value in this fast growing area in the Yangtze River Delta was negatively and linearly correlated with GDP, population, and GDP per capita, with GDP per capita as the most important predictor. (4) The ecosystem services' value predicted would continue decreasing in the future 10 years, and effective actions are needed to maintain ecosystem services of the region. Finally, it concluded in this study that future studies should pay more attentions on dynamic valuation of ecosystem services' value and the mechanisms controlling the changes of ecosystem services in order to provide useful guidelines for ecology protection and sustainable development.

[Key Words] : land use ecosystem services value variation Kunshan Yangtze River Delta

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