Geophysical Research Abstracts
Vol. 20, EGU2018-5806, 2018
EGU General Assembly 2018

The optimal allocation of Land Use Changes in Jing-Jin-Ji Urban Agglomeration Based on the Coupling Coordination Degree of Ecosystem and Economics

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It's important to explore the trade-off between ecosystem protection and economic development, and to solve problems of ecological-economical harmonious development in urban agglomeration with this trade-off. This study proposed the concept of the coupling coordination degree of ecosystem and economics for land use planning, and set one optimizing goal: optimizing the ecosystem-economics coupling coordination degree and four kinds of land use scenes, i.e. "ecosystem protection", "overall consideration", "food security" and "economic developing", based on the land use demands of Jing-Jin-Ji urban agglomeration cooperative development strategies. A CLUE-S model was built to simulate the land use optimal allocation and a coupling coordination degree model was development for integrative consideration harmonious development within ecosystem and economics. Results show that, compared with Year 2015, great changes occur on land use areas and patterns in the year 2025 under different scenes. The ecosystem-economics coupling coordination degree is 94.57 under "ecosystem protection" scene, and more than that under economic developing scene. Spatially, the increase of ecological land including forest land and grass land is more often seen in Bashang plateau, Yanshan Mountains as well as Taihang Mountains. And the increase of wet land often occurs in the Eastern coastal area. There are obviously some trade-offs between ecosystem services value and economic value, but we can find some scenes with high ecosystem-economics coupling coordination degree, means ecological-economical harmonious development in urban agglomeration. This study has great reference value in Ecological practice work for Jing-Jin-Ji urban agglomeration, based on the ecosystem-economics coupling coordination degree.