Fig.1 DEM of Beijing-Tianjin-Hebei Area

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	/(ẃ/hm²)	/(ẃ/hm²)	/(ẃ/hm²)	/(ẃ/hm²)	/(ẃ/hm²)	/(ẃ/hm²)
	3001.25	686.00	428.75	1543.50	0	0
	2315.25	771.75	763.18	14663.25	394.45	0
	2744.00	686.00	514.50	13291.25	17475.85	25.73
	3344.25	1672.13	1251.95	1466.33	8.58	17.15
	1123.33	1123.33	1406.30	15589.35	15589.35	8.58
	2795.45	934.68	608.83	2143.75	2135.18	291.55
	85.75	257.25	857.50	257.25	85.75	8.58
	2229.50	42.88	85.75	60.03	8.58	0
	1097.60	34.30	8.58	4759.13	3721.55	8.58

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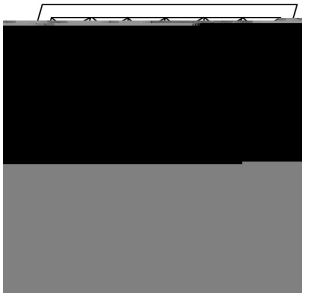

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Fig.2 Topological structure of SOFM

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Analysis) ᾷ ˅ ی ┘ ɟ

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Fig.3 Regionalization of ecosystem service in Beijing-Tianjin-Hebei Area

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Abstract Studies showed that ecosystem services are closely related to land utilization. Human activities have been relentlessly developing and using the land, causing serious exhaustion of land resources and making ecological environment change from bad to worse, which in turn poses severe threat to the sustainable utilization of ecosystem services. For sustainable land use and human well-being promotion, it is important to integrate ecosystem service into the land use decision-making process. Creating partitions based on different ecosystem services is of great significance for land use and management of ecosystem services. Taking Beijing-Tianjin-Hebei as a case area, the study in this report assessed the ecosystem service value of each unit based on IGBP land use data from 2001 to 2009. Regionalization of ecosystem service was created by SOFM Neural Network. In order to recognize the main ecosystem services of each region, the study calculated the hot spots of ecosystem service by ArcGIS. Combined with national major function oriented zoning, the study put forward proposals for making the policies on the future land development. The results indicated that Beijing-Tianjin-Hebei Area can be divided into four regions based on ecosystem service values: Ⅰ. Bashang Plateau and northwest Hebei mountain region, Ⅱ. Yanshan and Taihang Mountains region, Ⅲ. Central and southern Hebei Plain region, and Ⅳ. Bohai Sea coastal area. The ecosystem service value of Bohai Sea coastal area continued to rise while that of the other areas decreased to different degrees: Ⅱ Ⅰ Ⅲ. Wind and spring floods eroded soils in region Ⅰ and the soil are quite fragile. In order to conserve water and soil, proper land-use policies should be made for region Ⅰ. The key restoration measures include improvement of rangeland management, financial incentives to elimination of overstocking, and re-vegetation with appropriate rest periods during which grazing should be banned. Most of the hot spots of biodiversity service are distributed in region Ⅱ, but the value goes down with each passing year. Therefore, policy makers should pay more attention to biodiversity conversation in this region. As part of rapid urbanization efforts, the type of ecosystem service in region Ⅲ is quite simple. Food production is the dominant service while other services are quite low especially for water conservation and soil formation. On the premise of guaranteeing food production, proper policies should be made to adjust the proportion of urban land use to increase other ecosystem service such as carbon sink and pollination services. The resources of beach soils of region Ⅳ are rich, but the utilization ratio is low because of serious soil salinization. It is urgent for decision makers to provide guidance for salinization control, such as promoting water saving agricultural techniques and reducing artificial recharge of groundwater, to limit the increase of salinity. In addition, region Ⅳ should make full use of wetland because wetland can provide many services such as water conservation. The results indicated that SOFM Neural Network has strong advantage in objectivity and clear classification and is of great importance as a supplement to ecosystem service regionalization. The dividing method of GIS and SOFM clustering can identify regional differences and similarities of ecosystem services value and works well on ecosystem services regionalization.

Key words: ecosystem service; SOFM neural network; regionalization; Beijing-Tianjin-Hebei Area