International Journal of Computational Intelligence Systems and Applications. Volume 5, Issue 1, (2017) 31-33
http://www.cayley-nielson.com/ijcisa/

The study of the transformation of CaoFeiDian coastline by GIS

Hui Chao[1*], Yuejiao Niu[1], Yingqi Li[1], Ruihan Cheng[1]
[1]North China University of Science and Technology, Tangshan, Hebei 063009, China
*Corresponding author
E-mail: [1]*hchao@ncst.edu.cn*

Abstract

In this paper, we made a preliminary study of Marine function zoning index method、overlay analysis, comprehensive analysis under the support of GIS spatial analysis method and established the index evaluation model application rules. According to the Bohai Sea area remote sensing image date、natural environment investigation and social economic date, we analysis Marine function zoning of Bohai Sea region comprehensively through the remote sensing image interpretation method and analysis of GIS spatial analysis method. These research methods that apply to Bohai Sea region function zoning further analysis the rule of Bohai zoning and sea area use as well as revealed the main types and distribution characteristics of the area. It provided scientific and effective decision support for the sustainable utilization of the Bohai Sea area.

Key words: Remote sensing technology; GIS spatial analysis; Marine function zoning; Bohai Sea region.

1. Introduction

Marine functional zoning is according to the sea and adjacent land natural resources, environment and geographic location, and considering the ocean exploitation and utilization present situation and the need of economic and social development, and drawn with a certain leading function, rational development and utilization of resources, can play the best benefit area. Marine functional zoning is our country in the late 1980s the basic work of a Marine management, its core is the Marine functional zoning, work due to the complex ocean function attributes, which involves many factors, lack of effective quantitative analysis of the functional partition method.

In this paper, by combining theoretical research and instance validation, as well as using the GIS spatial analysis in support of the Marine functional zoning index method, superposition analysis method, comprehensive analysis to the Bohai Sea natural attribute index, maritime space governance, planning with the sea and sea status function superposition analysis. The purpose is to control and guide the use of the sea, protect and improve Marine ecological environment, and promote sustainable use of Marine resources.

2. Data

The Bohai Sea, as the inland sea of our country, is divided into Liaodong bay, bohai bay, Laizhou bay, bohai middle and Bohai Sea . According to the national Marine functional zoning, the Bohai Sea can be divided into liaodong peninsula, west liaohe mouth adjacent sea area, western liaoning, jidong area, tianjin, huanghua area, laizhou bay and adjacent to the river estuary waters, the temple island islands and

ISSN 2331-1924 /
May, 2017

adjacent waters, seven key central Bohai Sea . Bohai Sea coastal zone from the Angle of brother mountain in the southern tip of liaodong peninsula to penglai of shandong peninsula Angle, including (part) in liaoning province, hebei province, tianjin and shandong (part), mainly belongs to the liaohe river, haihe river basin, the Yellow River basin, with liaohe delta wetland, the haihe river mouth delta wetland, the Yellow River delta wetland, and abundant resources of Marine fishery resources, port, oil and mineral resources, sea salt, landscape resource and tidal flats resources.

3. Methods

Based on the analysis of the distribution characteristics of the Bohai Sea area, this paper studies the distribution characteristics of Bohai Sea area.

Bohai Sea through 2009 TM imagery interpretation, using the data collection, laboratory analysis, field investigation and the research methods of combining with geography, ecology, economics, ocean science and other multi-disciplinary cross synthesis method, the help of the related discipline theory and the practice results, technical route as shown in Figure 1.

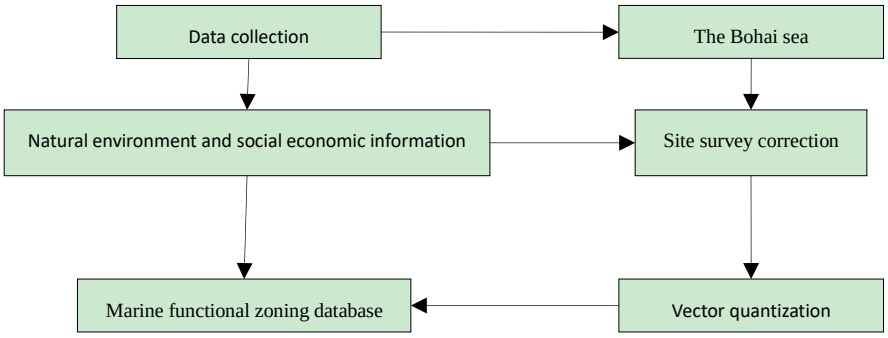

Fig.1 Technology map

Table.1 Statistics of three provinces and one city of Bohai Sea region

Economic zone	LN（hm^2）	HB（hm^2）	TJ（hm^2）	SD（hm^2）	Total（hm^2）
Fishing in the sea	347350	37940	1792	265560	652642
Transport by sea	12210	3160	16128	5030	41583
Industrial and mining	16500	420	163	5250	25225
Tourist entertainment	1470	750	82	720	3022
Submarine Engineeing	120	-	-	860	1385
stretched out in the sea	7610	1270	670	4380	17493
Sewage dumping	110	110	112	290	622
Special sea	60	-	519	3600	11229
Other sea	350	-	-	110	460
Total（hm^2）	385780	43660	19466	285800	753671

5. Conclusions

The Bohai Sea is a semi-enclosed inner sea, the water exchange is poor, the self-purification ability is low. The economic and social development in the Bohai Sea area has caused the overexploitation of the

bohai resources, and the pollution and ecological deterioration in the coastal areas have not been effectively controlled. There is a growing conflict between offshore and aquaculture, Marine traffic and sea water, oil exploration and aquaculture and tourism. Division and analysis of Marine functions in Bohai Sea

According to the national Marine functional zoning method, the Bohai Sea area can be divided into 10 types of Marine functional district: port shipping area, the fishery resources utilization and maintenance, use of mineral resources, tourist area, water resources utilization of the resources, ocean energy use, by sea, Marine protected areas, special use of area and resources.

In accordance with the guidelines for the Marine functional zoning classification system and classification standard, on the basis of the Bohai Sea area natural environmental characteristics, advantages and social economic development actual regionalization of natural resources. Among them, the port of shipping area 38, mineral resources utilization area 11, tourist area of 55, Marine fishing area of 27, Marine culture zones, 71, 35, Marine protected areas in 29, yantian district special use area 18, reservation 27.

Therefore, the protection of Marine resources and ecological environment is highly valued by the use of bohai resources. Using GIS technology to analyze the Marine area of

Bohai Sea, it is helpful to realize the development and management of Marine land integration in Bohai Sea area, and realize the sustainable development strategy of the coastal zone.

Acknowledgments

This work was supported by scientific research fund of North China University of Science and Technology, the project of Tangshan science and technology 14130208a. H. Chao is with the Marine technology research group of North China University of Science and Technology, Tangshan, 063009, (e-mail: hchao@ncst.edu.cn).

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