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Survey of geomorphic and morphotectonic indixes to assessment active tectonics in Abdoughi area, North east of Yazd, Central Iran

(Manuscript received: Monday, April 14, 2014, in final form: Wednesday, May 25, 2016)

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Abstract

Morphotectonic is one of the new recognition methods of tectonic movements and earthquakes knowledge. Study and measurement of landscapes and forms which made by active tectonics are important objects in morphology science. Active tectonic movements have recorded in the morphology of rivers, drainages, alluvial fans and mountain fronts in a region. Research area is located between 55° 30' - 57° 00' E and 32° 00' -33° 00' N in Central Iran structural zone. In this paper, we have studied geological map of Abdoughi and processed satellite images, digital elevation model (DEM), geomorphic and morphotectonic indices along the main faults. Also tectonic activities were measured in this area. The results of mountain- front sinuosity (Smf), ratio of valley-floor width to valley height (Vf) and ratio of valley width to valley height (V) indicate respectively: 1/15, 0/94 and 9/88 values. The displacement of the rivers, alluvial fans and triangular facets indicate tectonic activity during Quaternary along the faults. The morphotectonic evidences and seismicity data show which Abdoughi area is an active region.

Keywords: Active tectonic, Abdoughi area, Morphotectonic index, Central Iran, Yazd.

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Statistical and synoptic analysis of cold waves in North West of Iran

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Abstract

This study tries to identify, classify, and analyze synoptic cold wave in North West region of Iran. This study applies standardized (z scores) index of Minimum Temperature in the period of 1951-2010.as such cold waves were classified based on the intensity of occurance. Out of occured cold wave in North West of the coldest identified wave pertaingt each class for synoptic analyzes were selected. This study suggests that the prevailing pressure pattern during the relevant wave indicates high pressure over the earth surface as well as deep trough in upper layer. From the continuing cold standpoint, the role of changing position from pavallel wind in to meridional corresponel to blocking is very offective. Blocking in turn leads to reduction in speed of cold air masses which are originating from higher latitude. They were assouclated with cold waves. More precipitation as so ciated with higher latitude as well as low speed flows will lead to strong and continious waves.

Keywords: Climate hazards, cold waves, cold wave classification, Super cold wave, North West of Iran

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Statistical - Spatial Analysis of the Core of Siberian High Pressure System Period 1955-2014

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Abstract

One of the Siberian high pressure system is the Earth climate system, atmospheric important. The purpose of this study, analysis of core changes Siberian high pressure system in the period mentioned. To identify the core spatial variations in the timeframe mentioned data, daily sea level pressure and temperature of the earth's surface with a resolution of 2.5 degrees within the space of 30 to 65 degrees north latitude and 130 degrees east longitude from the database 45 to NOAA NCEP / NCAR for the cold was extracted. The core of the GIS spatial data analysis system and two separate zones and point to output six decades was ten years old and were analyzed. To study the process of change, determine the direction of the trend, type and timing of changes in temperature and pressure of the core of the system the test of Mann-Kendal is used. Comparison between the first and sixth decades 60-year period showed that the core in January from the East to the West and in October and March from the North East to the South West from the Balkhash Lake to Baikal there has been a significant shift. Results also showed that during the same period the Siberian High central pressure was reduced in January while the land surface temperatures in January showed a significant upward trend. Unlike the months of October and January, in March the central pressure had few mutations but no trend was observed. However, during this month the Earth's surface temperature has increased significantly during the mentioned period.

Keywords: High Pressure, Siberia, Statistical Trends, Mann-Kendall, GIS

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Design and Implementation of Integrated System for Urban Land Use Change Modeling

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Abstract

According to urban environment complexity and dynamism and need to targeted land use change, incorporation GIS and PSS in the form of Spatial Planning Support Systems is inevitable. The aim of this study is to develop a spatial planning support system for urban land uses change (ULCMS), such that planners can enter expert knowledge in the form of desired criteria and weights and see their influence in results. The developed system including modules for land suitability evaluation, calculation of the area of required land and land use change. Access models, neighborhood models and Multi Criteria Decision Making methods, fuzzy operators, linear regression, maximum potential and hierarchical optimization models is used in planning and implementation these modules. System practical test performed for measuring residential, commercial, industrial, agriculture and service land use changes for the year 1390 and 1395 in Shiraz city. The result shows that ULCMS help users in better understanding, showing complexity of land use system and development and improvement land management strategies for the creation of better balance between urban expansion and environmental conservation.

Keywords: Land use Planning, Spatial Planning Support System, Linear regression, Major Urban Plan, Multi Criteria Decision Making

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Analysing the Physical Quality of Reconstructed Residential Environment of Bam City

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Abstract

In developing countries, every year natural hazards causes major losses in urban and rural settlements. In this regard, it is noteworthy that in December 2004 bam earthquake caused widespread damages. With over 9 years passed of this crisis and reconstruction after that, it is important to assess the quality of reconstruction. So, the problem is that how is the physical quality of Bam that reconstructed. So, based on the theoretical framework, two hypotheses were offered. Then, based on the theoretical bases and previous studies, the operational definition of physical quality concept offered in three indexes and 40 indicators, and combined by AHP and SAW methods. Needed data gathered by households, experts and field questionnaires. For testing hypotheses used causal-comparative and correlation methods. Sample size calculated by Cochran's method (۳۱۱ households). Sampling has done by cluster and random methods. Gathered data were analyzed by: One-way ANOVA and Tukey-test at first hypotheses; and correlations methods at second hypotheses. The results showed that the physical quality of reconstructed residential environment in Bam is different between various neighborhoods. Also, the results of correlation test showed that general physical quality have significant relation with literacy, income, occupation and socio-economic status at 99 percent of confidence. According to the findings, physical quality at society scale has socio-economical aspects. So, we must pay attention to this point seriously.

Key words: Bam City, Construction Quality, Socio-Economic Status

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Seismic hazard zoning in Urmia urban area

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Abstract

Today, the resiliency of the human centers, especially urban centers against the natural hazards such as earthquakes, is one of the main challenges in the targeted management of urban. One of the effective strategies in the control, containment and prevention of risks from earthquakes is zoning of urban areas in terms of vulnerability. In this regard, the purpose of this study was to determine the zoning and seismic active zones in the urban area of Urmia city. The seismic – tectonic situation and recorded seismic data surveyed in the current study. Findings showed that there were seismic active zones in the Uremia city area. The seismic effects and geo-tectonic results Verified, so the results marked that local geology condition would be effective in earth motion. This research investigated the local geology features especially fault, geo units and seismic data in zoning of seismic risk. Many methods are proposed by different researchers. In this study the SABTA (1987) method has been used for estimating seismic risk by using most important parameters such as seismic, fault and geology data. The obtained results showed that the P.G.A measure variation was from 0.035 to 0.33 which indicated the existence of seismic activity in the study area.

Key word: Geographic Information System, morph - tectonic, Zoning, Seismic hazard, Uremia

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Impact of urban development and land use changes on the climate of the city of Shiraz and Fasa

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Abstract

Expansion of urban areas has impacted on climate in local and global scale. As a result, residents' life would be influenced accordingly. In this study, the effects of changes in land cover and land use change on climate of Shiraz and Fasa were studied in a long-term period. To ensure the normal data, Kolmogrov-Smirnoff test was employed. The minimum and maximum temperature parameters and relative humidity were evaluated using non-parametric Mann-Kendall and regression method in a 45-year period (1966-2010). The results showed a decreasing trend for the minimum temperature and humidity for Fasa and minimum and maximum relative humidity for Shiraz whereas other quantities showed an increasing trend. The study examined the effects of land use changes and land cover types in the 23-year period (1987-2010) using images of LANDSAT satellite of TM sensor on temperature pattern in two cities. During these 23 years, a reduction of 113 square kilometers for barren land of Shiraz and 5/7 square kilometers for barren land of Fasa and extending 110 kilometers residential users and 3/5 square kilometers in Shiraz and Fasa were reported.

Key words: urban development, land use changes, temperature patterns, Fasa, Shiraz

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Monitoring Identification of salt crusts in dry areas by satellite data's processing

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Abstract

Monitoring the salt crusts in arid areas by satellite data processing in this research, monitoring the salt crusts of KASHAN and MAHARLOO arid areas by using LISSIII datas of IRS-P6 satellite was accomplished. After exerting essential corrections for visual inter pretation , contrast optimization and making pseudo-colorful images were used to specity the salt crusts. Then , according to the salt crusts' spectral reflections in different bands and spectral rationing, RSCI (ratio salt crust index) and NDSCI (normalized different salt crust index) were described. The purpose of submitting these indexes is to maximize the differences between spectral reflection and its background in order to make a high quality image for them to be distinctive. finally, by using threshold and error matrix , it was specified that RSCI and NDSCI indexes showed the best separation. The results showed that RSCI and NDSCI indexes are functional for monitoring the salt crusts of arid areas using mutti-spectral satellite data.

Keywords: Salt, drid Areas, satellite data, LISSIII.

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