ABSTRACTS

Comparison of Morphometric Characteristics of Anticlines and its Application in Oil Exploration (Case study: Male-Koh and Noa-Koh Anticlines)

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Malehkoh anticline in Lorestan province and Noakoh anticline in Kermanshah province are parts of Folded Zagros structural zone. The purpose of this research is to evaluate and compare the morphometry of oil-rich Malehkoh and oil-less Noakoh anticlines and to assess the application of these studies in the exploration of oil resources. To achieve the purpose of this study, at first topographic maps at a scale of 1:50000 and geologic maps of the study area at scales of 1:250000 and 1/1000000 were digitized in ILWIS software and then geologic and topographic data were obtained. Morphometric characteristics of anticlines were extracted based on Quickbird imagery as well as field works. The morphometric indexes of anticlines such as Fold Symmetry Index (FSI), Fold Front Sinuosity (FFS), Anticline Divide (AD) Aspect Ratio (AR), Bifurcation Ratio (Rb), Drainage Frequency (Fs), Drainage Density (Dd) and characteristics of triangular facets such areas and base lengths were obtained. Results of this study represent that the high rates of FFS, AD and Ar, and low rates of Rb, Dd and Fs indexes as well as large triangular facts in Noakoh anticline are indicators of oldness, tightness and more erosion and therefore of escapement of oil of mentioned anticline. On the other hand, in the oil- rich Malehkoh anticline, smaller triangular facets, lower rates of FFS, AD, and Ar and higher rates of Rb, Dd and Fs indexes reveal the youthfulness, less erosion and therefore preservation of oil resources in mentioned anticline. This study represents that development and compression of Noakoh anticline have resulted in the downward movement of neutral surface and thereby progress and connection of extensional to compressional fractures, and then has allowed migration and escapement of oil recourses of anticline. Overall, results of this study reveal that mentioned morphometric parameters are appropriate indexes for distinguishing oil- rich and oil- less anticlines.

Keywords: Malehkoh, Noakoh, Morphometry, Oil, Zagros, Fold Symmetry.

Selecting The Optimum Spectral Ratio for Detecting the Amount of Soil Cation and Anion by Using ASTER Satellite Photographs Case study: Dareh Anjir of Kavir-bafgh

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Spectral ratioing or division of photos is probably considered as the most common arithmetic operations for enhancement of ground surface phenomenon by satellite images and has different usages in geological, ecological and agriculture and ecology. The main objective of this study is to evaluate various Spectral ratioing for separation of soil cations and anions and consequently selecting the optimum Spectral ratioing by using ASTER satellite photos in Bafgh, Dareh Anjir Kavir. To achieve this purpose, after applying geometric and radiometric correction and average filter, 56 various band ratios were produced.

Then, 42 samples of soil were collected from ground surface 0-5 cm and the amount of their cations and anions was measured. The point map prepared from the profiles area were crossed with all informative layers obtained from spectral ratioing and the value of each profile reflectance was extracted. Cross validation method was used to measure the correlations and Root Mean Square Error between the estimated values of each band ratio and laboratory of each profile.

The results showed that bands ratioing   (b5/b6, b5/b8, b1/b2), (b11/b12, b6/9, b9/6) and b1/b2 can be used for enhancement of calcium, potassium and magnesium respectively b5/b6, b11/12 and (b7/b9 and b11/b10) can be used for enhancement of sulfate and bicarbonate respectively with the acceptable accuracy (R^2>0.5 , RMSE <13.61).

Keywords: Spectral ratioing, Enhancement, Cation , Anion, ASTER imagery, Dareh Anjir Kavir.

Study of Development Rate of Small and Medium Cities of Iran

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The overall and integrated development of the country, in a way which covers all people and groups and also all its places, needs a balanced spatial structure and settlement system. Access to such balanced situation needs the strengthening and development of small and medium cities in Iran provinces. Therefore the main question of this research is that "How much is the development rate of small and medium cities of Iran's provinces in year 2006"? To answer this question, after reviewing the theoretical bases, the evaluation variables were determined and the research hypothesis was offered based on more development of small and medium cities in the northern and western provinces of Iran".

For evaluating and testing the research hypothesis, in the frame work of analytical-descriptive method, the overall index of "development rate of small and medium cities" was operated and measurable by six main indicators and based on simple weighting method. The required data were gathered by library method. The weights of indicators were obtained by AHP group method.

Data analysis and hypothesis test was made by descriptive statistical methods and also independent t-test. The results showed that expansion rate in small and medium cities in different provinces is various. The significant difference between the northern and western provinces with the provinces of southern and eastern ones was approved. The results showed a relation between the expansion rate of such cities with the natural environment and also the regional and national pattern of expansion.

Keywords: Small and medium cities, Iran's provinces, Expansion rate.

Study and Evaluation of Public Participations in Local Sustainable Development by Using TOPSIS Model Case study: Uremia

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Always paying attention to the social participations of the citizens of a society in the development and progress of main managerial objectives is considered as one of the most important subjects in urban management especially in metropolitan scale. Paying attention to self excitation participation of people for local management shall not be considered especial for metropolitans of the current era. Meanwhile the beautiful and magnificent ancient cities, for their development and promotion had no way to rely on their people.

The purpose of this paper is to evaluate the public participations in local sustainable development by using TOPSIS model in Uremia. The research methodology is descriptive- analytical method and is based on library, documentary and field studies. The under study area consists of three districts of (Isar, Maysam, Azarbaijan) in Uremia city. The considered regions with respect to 6 qualitative and quantitative criteria, including participation level in managing local affairs, participation in local decision makings, participation in payment of urban duties,   participation in protection of local green spaces, inform the local problems to urban managers and the local developed level , have been evaluated by TOPSIS model.

The results obtained from TOPSIS model showed the hierarchy and prioritization of the districts in Uremia as A2>A1>A3. So A2 placed (Maysam) is in the first rate, A1 (Azarbaijan) at the second rate and Isar at the last rate (A3).

Keywords: Social participation, TOPSIS Model, Sustainable development.

Explanation of Effective Factors on Crisis- Creation and Management of Iran and Pakistan Borders

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International borders as lines which separate political entities from each other have a recognized importance and countries make a great effort to control them. But the threats at the borders of the countries are not removed only through the security and army forces at the borders, and here the borders' management will become so important. Borders' management includes the political, economical and civil activities and in addition to border line, covers the border regions.

Iran is among the countries which has the highest number of neighbors and numerous local factors and economical and political disorders in neighboring countries has caused a great deal of problems for control and management of the borders. So that some borders of Iran can be called crisis pints. This issue is more happened in eastern borders especially at Iran and Pakistan borders. So that despite the efforts made by the relevant foundations in respect of the borders' management, no desirable and appropriate actions are made.

In the current research, we study the effective factors on crisis and also management of Iran and Pakistan borders by using descriptive – analytical method. The objective of authors of this paper is to answer this question that what are the effective factors on crisis at Iran and Pakistan borders? And which challenges Iran is faced with for management of its borders with Pakistan?

Results shows that border specifications including its History, method of formation and type of border in addition to the state management capability in Security field and cultural-economical specifications of the border regions and cooperation of neighboring countries are effective factors in crisis and management of Iran and Pakistan borders. Weakness of local economy and culture weakness in border regions and non-conformity with dominant culture of the country, penetration of fundamentalism, terrorism in addition to bad conditions of economical and political features of neighbors are the most important challenges of Iran for optimal management of its border with Pakistan.

Keywords: Border, Border management, Crisis creating, Border region, Iran, Pakistan, Baluchistan.

The Relationship Between Precipitation Status and Daily Temperature Status in Iran

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One of the study approaches in climatolog is to investigate the relationship of climatological elements. Various methods have been used. One of these methods is using probability rule to find this relations. This paper attempts to find and investigate the relationship of daily precipitation and temperature status in Iran based on conditional probability method . In order to achieve the aim of the paper, Esfazari database, version one, with daily time resolution of 1961/3/21 up to 2004/12/31 which collected based on 1436 synoptic climatic and precipitation stations and by using Kriking interpolation method with time resolution of 15×15 km and 7187 cells , have been used.

stations   has been used. This database has been established using 1436 stations over Iran

Based on probability distribution related to the temperature of each cell, Probability distributions of every pixel and their 25 and 75 percentiles of temperature have been estimated. At each cell, the days with daily temperature of less than 25, was the cold day and the days with percentile equal or more than 75 was considered as hot days and the daily temperature between 25 and 75 percents is considered as a day with optimum temperature. so that seasonal specification of temperature has been shown in this definition. Accordingly the cold, moderate and hot days have been defined as well as the no precipitation, low precipitation and high precipitation days based on mean of probability distribution in every pixel.

So that, the lack, shortage and high precipitation has been recognized. At the next step, the frequency together with temperature and precipitation events of each day was presented in a matrix. Then the matrix of the probability of each precipitation – temperature events in relation with any status of precipitation was calculated. On this basis, the probability of occurrence of each precipitation classes at each three seasons of warm and cold and transition for each pixel of Iran's map have been estimated. Finally the conditional probability of each temperature occurrences with precipitation status for each pixel have been calculated and the relevant analysis and maps of each status has been presented.

This feature shows the precipitation status for each season. The current research, while indicating the climatic facts, also has approved and showed the findings of Iranian's climatologists as quantitative and probability. Maximum precipitation in cold season in 36% of Iran with probability of 30%-40% and the days with no precipitation covers about 43% of Iran. In warm season, about 97% of Iran has no precipitation in 50-90 percent of days and 3% of country experienced this situation about 20-50 percents of the days. Meanwhile about 17% of country 40-60 percents of days and 56% of country 30-40 percents of days have low precipitation amounts. During fall and spring about 78% of Iran area has 60-90 percents of days without precipitation, 10-30 percents with heavy precipitation and 20-30 percents with low precipitation.

Keywords: Probability, Conditional Probability, Temperature and Precipitation Attitude, No-Precipitation day, High-Precipitation day.

Evaluation of Performance Stimulation of Surface Flow by SALAS Water Balance Model in Catchment Area of Kohgiluyeh and Boyerahmad Province

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The present study has been programmed with the aim of evaluating the efficiency of SALAS water balance models (Annual and seasonal) in hydrometry stations of Kohgiluyeh and Boyerahmad Provence which had suitable statistical time period. After analyzing the hydrometrical data of the total 10 stations of the province, seven hydrometric stations were selected which had precipitation and discharge data with statistical time period of minimum 20 years. Furthermore, using "trial by error" method to achieve the lowest root mean square error (RMSE) and correlation coefficient, optimal parameters were obtained for SALAS models.

The evaluation of the model function was made by using different accuracy including efficiency coefficient (CE), root mean squared error (RMSE) and coefficient of determination ($R^{2)}$. For calculating the efficient criteria, the values simulated by SALAS model and the values measured in hydrometric stations were used. In general, the simulation results shows that annual SALAS water balance models has estimated the flow rate value better than the seasonal one.

Salas seasonal model in most cases has estimated the values less than the actual amount. In fact flows underestimated by seasonal model. Modeling results showed that Nazmkan, Saidabad, Batary and Pataveh hydrometricstations had better performance than the other stations, and Nazmakan station annual scale: RMSE= 104 and CE=0.94) and Saidabad (seasonal scale: RMSE = 93 and CE=0.88) had the best performance while Zohre, Kata and Btary stations had lower performance in comparison with the other stations. Generally it can be said that Salas model ,with respect to its simplicity, can be used in the basins with no hydrometrical station and with similar climatological and geological conditions and small and even plain basins can be used for the flow of river simulation. For snowy basins, the amount of snow and the resulting runoff should also be considered in the modeling, to be exact and have a great accuracy .

Keywords: Modeling, SALAS, Discharge, Hydrometric data, Prediction, Runoff , Water Balance**.**

Evaluation of the Locating of New Towns of Tehran's Urban Area by Using of Multi- Variables Evaluation Method

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Locating of new towns is one of the main factors in determining the success or failure of new towns in accessing their pre- planned objectives, and also one of the main challenges that new towns' planners are faced with. This issue with regard to the stability of new towns in the past decade and the possibility of studing the results made by their establishment patterns, can provide an effective framework for planners in the future planning. So, this paper tries to evaluate location of new towns around Tehran as one of the samples generalized to the other cities in the country. Therefore, with respect to the accepted and desirable criteria for assessing the location capacities and their establishment distances in relation with the main city of Tehran, the possibility of analyzing distance variable on desirable function of these towns is calculated and considered. In this regard, firstly, by utilizing the world literature and emphasis on previous experiences, assessing indexes were determined and then evaluated by using quantitative analysis methods such as AHP and TOPSIS. The performed assessments and obtained results showed that in terms of accessing the proper criteria of locating new towns in the Tehran's cities; 'Parand' new town with .597 score is the most successful and 'Pardis' new town with .381 score is the weakest, this issue in addition to the distance, is due to other general conditions of locating including proper access, environmental conditions and neighboring with urban markets.

Keywords: New towns, Location, Multi criteria evaluation.

Evaluation of Urban Safety Area About the Risk Possibility of Urban in Habitats of Isfahan Province

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The existence of multi faults and geographic dispersion of earthquakes in our country indicates that a large part of Iran is faced with the earthquake hazard, which covers a great volume of country's population. Isfahan province is among the earthquake zones of Iran, so that based on the historical documents, a number of its cities have experienced destructive earthquakes.Also the existence of numerous faults and register of a great number of earthquake focal points during the last 100 years in this province indicates the active faults in this area. Population growth of this province during the last five decades has increased to four times. For the purpose of analyzing and studying the method of distribution and dispersion of urban population in this province, "Entropy model" has been used, which the obtained results shows that population distribution in this province is completely centralized and unbalanced, also a lot of residential areas in Isfahan province are placed at the vicinity of such faults and are faced with risk and high vulnerability. Therefore for avoiding the development of new cities and expansion of current habitats in the areas with high risk, and non settlement of different economical activities in these areas with the aim of decreasing seismic vulnerability, zoning the seismic hazard in this province seems necessary.

Based on the prepared zoning map, about 37% of Isfahan province area is located in the zones with high and very high risk, which includes 34% of the cities and 10.5% of urban population.

Keywords: Seismic vulnerability, Urban habitats, Hazard zoning, Isfahan Province.

Study and Comparison of the Function of Rayman Model Parameters in Determining Proper Tourism Calendar Case study: Isfahan

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Climate is one of the most important factors in determining the suitable time for recreation and tourism industry. The high population of Isfahan, its suitable location at the center of Iran and having great tourism attractions has made it to be recognized as the tourism core in Iran.

In this study, in order to determine the suitable time for recreation and tourism in Isfahan, the bioclimatical indexes (PET, PMV, SET) of Rayman model were used. For this purpose climatic parameters such as temperature, relative humidity, cloudiness and the wind speed were obtained form the Iranian Meteorological organization (1995- 2008) period . Finally, considering the long-term average of the parameters mentioned above, the values of the indexes SET, PET, and PMV were calculated and the climate comfort time was determined. The results which are presented as calendar time show that, according to the results of PET& PMV indexes, the days 1-17 April & 20 October - 6 November are the best time period for recreation and tourism in Isfahan. But, according to the outputs of SET index, although the climatic comfort period is in the same months, but prolonged heat stresses was the dominant condition which can't be compatible with climate reality of the area. Finally, a comparison among 3 indexes showed that PET and PMV indexs were more compatible with Bioclimatic conditions of the study area.

Keywords: Tourism, Bioclimatic Index, Climate comfort, Isfahan.

Review the Efficiency of Empirical Relations on Estimating the Peak Flow Rate of Flood in Arid Areas of Central Iran

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Flood, is a natural event, which every year causes severe and great life and property damages in the world, and also creates serious obstacles for social and economical development of the countries. Therefore, studying this phenomenon particularly estimating peak flow rate of flood and identifying the effective factors on it, has a great importance for mitigating its damages. In general, implementing empirical methods is one of the methods for estimating maximum flood in the basins with no hydrometric stations .Theses methods are based on one or more effective factors on formation of flood and sometimes is presented for special areas with particular physical and climatic conditions.

Therefore, for using the said methods, the review and evaluation of their regional coefficients seems necessary.

In fact, these coefficients reveal the impact of terrestrial and atmospheric factors in converting precipitation to runoff and creating peak flood discharge. This research tries to provide a more detailed analysis of Fuller empirical approach and its regional coefficient calibration in Central Iran basin. The importance of calibrating this approach is obvious since Fuller method is widely used in different parts of Iran to estimate maximum discharge as design flood for water related projects. So far, this approach has been used for designing Hydraulic structures in different parts of Iran, regardless of calibrating its regional coefficients.

In this research, the 31 years statistics of ten hydrometric stations has been used in this basin in order to be calculated based on the moment flow rate quantities of flood in different return periods. statistical analysis at the first stage showed that the empirical method of Fuller in this wide climatic limit with the existing weak climatic quality has no appropriate efficiency. But the test results of Fuller's empirical in other climatic zones (semi-dry , semi humid and humid) implies a relatively high efficiency. . Langbyn homogeneity test (which is often used for determining the hydrologic homogeneous groups) based on the findings of this study did not show a high efficiency in central Iran.

Keywords: Fuller Empirical Method, Regional Coefficient, Peak Flood Discharge, Central Iran Basin.

Zoning the Landslides of Givichay River Basin by Using Multi Layer Perceptron Model

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Landslides represent morphodynamic processes which occurs on the sloped lands, and may damage residential , industrial, gardens and croplands. In this investigation multi-layer perceptron model of back propagation (BP) was used in landslide zoning in Givichay river basin. To evaluate the created neural network, the dataset related to 41 landslide events were presented. Then for processing landslide data in MATLAB software, 8 Layers consisting slope, slope direction, DEM, lithology, distance from the fault, hydrographic network, land use and landslide distribution using field studies, topographic , geological maps and satellite images was prepared in ArcGIS software. These layers were scaled in the range between 1 and 0 based on the largest value for each normalized layer. Then the normalized data was fed to three-layer Perceptron (feed forward) with the back error propagation algorithm. These data was first trained and then tested in the network. The final structure of the network has 8 neurons in the input layer, 20 neurons in the hidden layer and 1 neuron in the output layer. 80 percent of data was considered for training and 20 percent for testing. Finally, with regard to the output weights, landslide zoning maps in five classes: very high, high, medium, low and very low risk were drawn. The obtained results showed that the formed geological structure by Certaceous lime and Andesit Porphyry and also access to high humid resources has made the eastern heights of Boogharodagh and Aladagh in the area of Talesh mountains to have a high potential in the occurrences of landslides.

Keywords: Landslide, Artificial neural network, Multi-layer Perceptron, Zoning, Givichay river basin.

Recognition the Factors Affecting the Distribution and Occurrence of Sinkholes in the Region of Kermanshah Gazorkhani by Using Logistic Regression

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In This study, the factors controlling sinkholes and karst sinkholes morphometry were studied. The most popular form of karst in the study area was sinkholes. The first step in understanding karst forms and the factors controlling the evolution of sinkholes is morphometry (morphometric). 200 sinkholes were identified in the study area using field work and 1:25000 digital topographic maps and digital elevation model (DEM 10 m).For each sinkhole various parameters, including depth, area, major and minor axis, major axis orientation and faults, pitting index (the amount of cavitation), Also the sinkhole density map was prepared. The results showed that the sinkhole in the study area had simple, compound and complex forms. The results also showed that in the slope>20 there was no sinkhole. The results of logistic regression showed the fault, elevation and rainfall were the most important controlling factors in sinkhole events.

Keywords: Sinkhole, Morphometry, Gazorkhani, Logistic regression.

Regions of Iran with Persistence of Precipitation

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In the present research, for studying the continuity of Iran's precipitation, the daily precipitation data of 1437 synoptic, climatic and rain gauge stations in the time period of 1961/3/20 up to 30.12.2004 (15992 days) have been used. These data were interpolated on the area of Iran by using Simple Kriging method in a regular network of 15 * 15 kilometers. Then, based on the conventional criteria of rainy day ($\geq 0.5mm/day$), precipitation persistence of Iran together with their share in providing precipitation and the rainy days at each point of Iran(7187 points) have been estimated. Then the different points of Iran, with respect to the share of precipitation persistence in providing rainy days and precipitation have been compared and zoned. Therefore, based on the rainy day (0.5mm and more in a day and night).

The rainfall persistence in Iran was vary from 1 day up to 45 successive days . The percentage share of each persistence (45) in providing rainy days and precipitation in Iran (7187 points) were estimated and with $R_{7187*90}$ array is the basis for Iran's zoning.

Performing cluster analysis on the Euclidian distances of this matrix by combination Ward method indicates that, based on the control of rainfall persistence in Iran's regions, there are five relatively homogeneous regions. The geographical order of these regions illustrates dependence of Iran's rainfall quantity on geographical unevenness, closeness to humidity sources and the effect of seas. Statistic tests such as homogeneity test confirm the correctness of this region division.

Keywords: Rain day, Precipitation Persistency, Cluster Analysis, Regionalization, Iran.

Time-Spatial Investigation of Iran's Annual Temperatures During 1961-2008

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This paper investigates spatial variability of temperature trends over Iran in the last 48 years. In order to evaluate the trends, time series of minimum, maximum, and mean temperature for all synoptic and climatologic stations throughout Iran from 1961 up to 2008 were collected. With the help of the prepared data base, the isothermal maps with spatial resolution of 15✕15 Km were calculated and plotted by Kriging interpolation method. So that each map with 7196 pixels covered Iran's borders. Therefore, 3(three) arrays with dimension 7196*48 were provided.

For evaluating the temperature trend, parametric methods of Linear Regression and Mann-Kendall test have been used. Using such tests on each of the arrays showed that Iran's temperature is increasing. Such increase has happened more in flat and low height areas. Among these, minimum temperature is more important and in 60% of the country shows an increasing trend, while the increasing trend of maximum temperature covers only 27% of the country. On the other hand , the trend intensity is not the same in all the zones, and for minimum trend, its intensity in Kerman province at the west of Loot desert and in Shahdad area, central parts of Semnan province, east of Khuzestan, south of Ilam province and west of Kermanshah province is more and these areas are more endangered with environmental damages resulting from increasing minimum temperature, while the provinces of North Khorasan , Hamedan, Chaharmahal Bakhtiyari are endangered with increasing trend of temperature.

Keywords: Climate Change, Temperature Trend, Linear Regression, Mann-Kendall Test, Iran.