

***Estimation of Potential Evapotranspiration with Estefnz Method
and GIS Techniques in Eastern Azerbaijan***

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Abstract

The accurate estimation of potential evapotranspiration is very important in water source management, agriculture, forestry and pasture sciences. Recently using of Geographical Information Systems (GIS) for accurate estimation has been developed and has showed good results. In this paper we estimate potential evapotranspiration in eastern Azerbaijan by Estefnz method. For calculation of coming net radiation (Rs) we used DEMSRTM images and solar analyst in ArcGIS software for 31 May, 10-11 am. After calculation of slope and aspects through digital elevation model, net radiation was estimated. The average temperature calibrates for elevation was imported in equation. Final maps show that the amount of potential evapotranspiration is between 0~15 mm/hour. Northern aspect and areas with high temperature have the higher potential evapotranspiration. Elevation and aspects are important factors than other factors in potential evapotranspiration control in the study area. The amount of evapotranspiration is higher than precipitation and therefore it is better that agricultural activities move to higher areas.

Keywords: Potential Evapotranspiration; Estefnz method; Solar Analyst; Eastern Azerbaijan; GIS.

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***Study and Zoning of Geographic Characteristics of Pistachio
Cultivation in the Zanzan Province***

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Abstract

This study aimed to identify the geographical features of the pistachio tree planting, cultivation-prone areas in the province and zoning done. For this study, data from 12 synoptic meteorological stations, 5 climatologic and 15 rain gauge stations were used. Zoning of areas for pistachio cultivation, the technique of GIS in terms of Bolein models and model AHP were used. Accordingly, by the use of software Arc/GIS, maps were prepared by value. Then the Bolein matrix of each layer of software Idrisi was drawn up in order of significance of each element. The final map was obtained by integrating maps in Arc/GIS. The results indicate that the ranges of northwest and northeast, including two stations of Abbar and Mahneshan, due to geographic conditions have limited cultivation of pistachio trees. Therefore, there is potential for cultivation in these areas. It was found that the AHP model for accuracy and attention to detail, gives better results than the Bolein model.

Keywords: Possibility studies; GIS; Pistachio; Zanzan Province.

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The Study and Analysis of Health-life and Availability of Health Indicators in Slum Neighborhoods Case Study: District of Shadgholikhan in Qom city

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Abstract

Today, the concept of health-life and healthy urban life, regarding rapid population growth, urbanization, migration, poverty and slumming that have changed to the common trends of the world, especially underdeveloped countries are of the most important issues of medical geography, life quality and stable development. Therefore, the present paper with the purpose of studying one of the most important slum living neighborhoods of Qom (Shadgholikhan), deals with knowing the existing problems of the residents on the aspect of related issues such as the abnormal condition of proximity, land users, education, economical situation and peoples' jobs. The method of study in the present paper is analytical-descriptive and a number of 380 questionnaires based on Cochran model were distributed among residents, so that the ideas of the neighborhood residents were collected in this way and field observations were also of the major axes. Later, to analyze the questionnaires the SPSS and tests such as Mann-Chi-Square, Whitney, ANOVA, Tukey LSD, Variance equality test, and F test were used. The results showed that because of sever social and cultural and especially economic weakness of residents of Shdgholijhan neighborhood and also threatening interior and exterior factors in the neighborhood, the residents under study do not have clear access to health axes and therefore do not have suitable living health.

Keywords: Slumming; Living health; Health axes; City of Qom; Shadgholikhan neighborhood.

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Analysis of the Relationship between the Thickness and Height of the Inversion and the Severity of Air Pollution in Tehran

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Abstract

Air Pollution in Tehran is one of the fundamental problems of the city. This city is considered as one of the most polluted cities in the world. Part of pollution like the rest of the world Mostly is due to overpopulation, The use of fossil fuels, heavy traffic, lots of old vehicles, Inappropriate development industries and disregarding the location of industries and The other part of pollution Is related to the geography of Tehran that Located on the southern slopes of the Alborz Mountains and Surrounded by high mountains on the north and east. In addition to the impact of climate like a gentle wind and weather stability, the lack of precipitation and temperature inversion is very effective on Tehran's air pollution.

Between The selective inversions it can be seen that When the inversion height is close to the surface of earth, The severity of air pollution has been added. In the inversion transitions this problem Caused air pollution rises dramatically.

In The dynamic inversion the prevailing climatic conditions, has created deep Sustainability in the layers near the surface. Due to the process of descending ruling, in the large thickness of the atmosphere, Inversion depth increased.

Keywords: Inversion; Pollutant Standard Index; Severity Pollution; Deep Inversion.

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Investigation on North Sea-Caspian Teleconnection Pattern Effect on Autumn Rainfall Fluctuations in West and Northwest Regions of Iran

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Abstract

In this research the relationship between autumn precipitation rate in north west and western region stations of Iran and north Caspian sea teleconnection pattern in a time period of 29 years (1977-2005) have been calculated and analyzed. Results of the Pearson correlation analysis between the Northern Caspian sea pattern (NCP) index and North West and western regions autumn precipitation rates showed that in Positive phase of NCP autumn rainfall is increased from normal limit and in negative phase the rainfall is decreased. A relatively good linking between the northwest and west regions' fall rainfalls with NCP was calculated. The significance coefficient was calculated 0.31 for autumn long term mean rainfall of studied stations. The monthly correlation analyzes calculated indicated the highest correlation between monthly rainfall of stations and the NCP in December with an 0.52 correlation coefficient. Results also showed that Khoy station was affected more from NCP. This study established that In addition to the ENSO, common pattern of the effects on the autumn rainfall was previously approved and new NCP also affected rainfall fluctuations and autumn wet and dry spells occurrences in northwest and west regions of Iran.

Keywords: Teleconnection; North Caspian Sea Pattern; Autumn Rainfall; Northwest and West regions of Iran.

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Evaluation of Spatial Adaptation Ratio on Urban Comprehensive Plans Implementation Process; Case study: Bonab City

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Abstract

Urban comprehensive plans, as the most significant instruments for systematically directing and coordinating cities, are considered the most apparent manifestations of modern urbanization in Iran. These plans have been used since the mid-1960s in response to spatial-structural deficiencies seen in cities in Iran. Despite almost half-a-century history of having urban development plans and the ups and downs faced for designing and implementing them, the Evaluation process, which is a management tool for realization of objectives and accomplishments of comprehensive plans, has not acquired its necessary position in the planning system yet.

Therefore, it could be said that the strengths and weaknesses of the urban development plans have not been scientifically identified and no feedback has been provided to the planning system. Therefore, the aforementioned shortcomings, resulting from the missing link of assessment in the country's planning system, persist despite continuous efforts for designing different urban plans. Hence, in order to achieve a dynamic, constant, flexible system of planning those accords with realities, assessment of urban development plans is a necessary step which could not be ignored.

This article aims to investigate deficiencies of comprehensive urban plan in achieving their objectives and to assess the Implementation of such plan. It attempts to apply modern methods to assess comprehensive plans. In this method, Goal Achievement Method (GAM) is used along with tools of geographical information

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systems and per capita adaptation to adapted or non- adapted with location if physical fabric objectives.

Results obtained from this study indicate that expansion of cities all over the period has flown in the face of the proposed plan in different aspects, including urban boundary, directions of development, location of different uses, urban densities and the administration organization of plan has failed to match the expansion of the city with the proposed plan.

Keywords: Urban Development; Comprehensive Plan; Evaluation; Geographical Information System (GIS); Bonab City.

The Comparison of the Efficiency of MCDM Models in site Selection of Flood Spread in GIS Environment (Case Study: Garabaygan Catchment)

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Abstract

The selection of suitable location for implementing of flood spreading project and artificial recharge of aquifers is an important step. To assess this purpose, the Geographic Information System (GIS) conceptual models and decision making systems were used. Regarding different mentioned criteria, it is not possible to use GIS without appropriate Multi-Criteria Decision Making (MCDM) technique. The main aim for this research is to access the suitable location for flood spreading by using the most efficient criteria and classify them into several groups. Consequently, major factors such as slope, geology, geomorphology, hydrology, infiltration rate, cover and environmental impacts of the projects should be considered in the process of selecting appropriate site for artificial recharge through flood spreading. Also evaluating accuracy and application of conceptual models such as Logic Boolean, Multi classmaps, Binary Evidence, the Analytic Hierarchy Process (AHP) have been noticed. In this research, nine physical and environmental efficient variables essential for locating of flood spreading are used. The results indicate GIS-based data combination for ranking suitable location of flood spreading by itself, though it is not reliable enough. Also evaluating accuracy of models shows that accuracy of Binary Evidence model for identifying and ranking suitable location of flood spreading is more than that of Boolean model and the Multi class maps model can give better insights to create more realistic output scenarios The most

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important step in flood spreading process is to define optimal site. The Analytic Hierarchy Process (AHP) is an approach that is suitable for dealing with complex systems related to making a choice from among several alternatives and which provides a comparison of the considered options. In the present research relationship between GIS and Multi-Criteria Decision Making analysis has been investigated in order to find optimal site for flood spreading. The research emphasized the capability of resultant map to be used in site selection for flood spreading.

Keywords: Geographic Information System; Conceptual models; Flood spreading; The Garbaigan segment; AHP.

***Application of Analytical Hierarchy Process (AHP) in the Landslide Hazard Zoning Occurrence
Case Study: Gollojeh Watershed***

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Abstract

Zoning of landslide hazards is one of the ways used to determine critical areas. Landslide zoning maps can also be utilized in environmental planning to reduce damage. In the present article, the AHP has been applied to the Gollojeh basin located in Zanzan province. The most important factors in landslide occurrence in this study basin were identified as: Geology formation, slope, land use, height and distance from river, slope aspect, rainfall and faults. After layering and assigning them weights the final map was produced in Arc/GIS. The final results from this study show that the weight of nine criteria are respectively: 0.4092, 0.2485, 0.1439, 0.0786, 0.0479, 0.0309, 0.023, 0.0181 with geology and faults having the greatest and weights to be the least. Finally the landslide map denoting in four domains at very high risk, high risk, medium risk and low risk was prepared.

Keywords: Landslide hazard; Zoning; Analytical Hierarchy Process (AHP); Gollojeh basin.

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*Assessment of the Effectiveness of BRT System in Mashhad*M.H. Saraei¹Z. Mohamadzade²**Abstract**

People working in the field of transportation traffic and also experts who know expansion of special routes for bus, are one of the solutions for establishment of social justice and also causing speed in capacities of public transportation in metropolises. BRT is one of the temporary, short-term and low cost solutions for solving the traffic problems of third world metropolises. Mashhad is the host for about 15 million yearly pilgrims and tourists. The increase of pressure on infrastructure particularly traffic system is particularly clear. BRT system is raised for solving traffic problems in Mashhad since 1387. This research is applied and its aim is the assessment of effectiveness level of BRT in Mashhad. After the collection of data, the efficiency level of BRT special routes in Mashhad was investigated using AHP model. Research results indicate that 1013 routes have higher effectiveness. These routes provide services from west to east in the study area.

Keyword: Effectiveness; Analytical Hierarchy Process; City Mashhad; Bus Rapid Transit.

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The Study of Precipitation in North of Iran Using Cluster and Discriminative Function Analyses

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Abstract

In this research we used multivariable statistical methods (cluster and discriminative analysis) with the purpose of the recognition of spatio-temporal differences of precipitation in similar areas. We used monthly precipitation of 35 synoptic, climatic, and rain-gauging station data records of Northern Iran including three provinces of Golestan, Guilan, and Mazandaran for 1995-2007 periods. For grouping and homogenizing the stations, we initially applied Ward cluster analysis method. Then we used discriminative analysis and Wilk's Lambda for finding out the validity of cluster analysis calculations. Results obtained from cluster analysis with Euclid interval method indicated that 4 major clusters can be drawn according to the amount and the location of the precipitation in the study area. Discriminate analysis showed that 82.3% of the clusters in our analysis were valid and about 17.7% were incorrect. The Wilk's Lambda method also proved the differences between the means.

Keywords: Precipitation; Cluster Analysis; Discriminate Analysis; North Western Iran.

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The Survey of Intervening Factors in the Formation of Rocky Architecture in Rural Area, the Case Study: Kandovan Village in East Azerbaijan

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Abstract

Rural architecture purpose is not only providing shelter for communities, but also representing powerful means of communication. Communication between human and natural environment, economic and social condition is the most important relationship in rural architecture. Vernacular architecture creates buildings that whose function arose from their attitude. The rock with natural element and minimal destruction by humans, have the highest point in terms of visual superior. Human attitude creates the world around them. But sometimes this attitude is affected by intervening forces in outdoor environment. In rocky architecture, in addition to cultural aspect, nature and geology of the region have important role in the formation of these types of settlements. In this research reviewing features and physical forms of rocky architecture, the reasons of establishment in Kandovan village were analyzed by descriptive-analytical methods and field survey. Results show that in the range of 1 to 6, habitats with average 23.5 and livelihood with average 3.5 are the most important factors in the formation of rocky architecture in Kandovan village respectively.

Keywords: Rural; Rocky architecture; Kandovan, Vernacular architecture.

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Investigation on Aji-Chay River Meander Changes on Flood PlainM. Bayati Khatibi¹**Abstract**

Meanders, as a interesting water flow patterns in nature, is giving dynamic to courses of rivers. Creation of curvature on courses of rivers is give enough energy for migrate active channel on floodplain. This migration is main reason for many geomorphology in events is floodplains and at final is changing the floodplain pattern .These changing is created many problems for man-made structures that is constructed at bank or on courses of rivers. Aji-Chay River, as a typical meander is migrate on floodplain by creation curvature on its course (is situated at 37° 58' to 38° 07' N and from 46° 15' to 47 °45' W). In this article is analyzed and estimated migration rate, migration potential and time of migration ,by use of experimental methods, by satellite and areal images In this study rely on parameters of meanders, as bind and width of river corridor is estimated by use of W methods and Δt , R/W calculation, in order to investigation on capability of rivers for movement .In this study also is estimated time of active channel migration on floodplain by use of valid methods .The results of this study show that active channel of Aji-Chay repeatedly movement on floodplain in during time and because these movement and changing and bank erosion, is flatten the floodplain .In part of Aji-Chay course time period for completed a cycle of migration is from 1 to over 5 years. This period is vary in many parts of river course. The results of this study also suggested that sinuosity rate at length of Aji-Chay course is changed in during time and old race of water flow is evidence these changes.

Keywords: Channel dynamic; Meander; Channel migration; Time migration; Floodplain; Aji-Chay.

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The Analysis of BRT System and the Measurement of Social and Economical Impacts of Environmental Issues of Tabriz Mega-city

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Abstract

Today the phenomenon of the urbanization has made the most complicated issues and challenges in the urban affairs and the urban transportation is one of the most essential problems in the process of the urban planning issues in this regard. Hence, the construction of the most suitable infrastructures regarding to the transportation affairs and praising the whole citizens to apply the same public transportation systems such as the buses, Metro can be considered as the main fundamental challenges of the urban managers in this pavement. Among this, the system of the bus rapid transportation is considered as one of the most effective approaches in the field of the public transportation efficiently. This makes also the high potential benefits being used in many various cities of Iran. Since the application of this kind of the transportation system needs special equipments, it will affect on the neighborhood affairs directly or indirectly economically and socially. The main purpose of the study is to investigate the impacts of the BRT transportation systems on the residential and commercial contexts in Tabriz Mega-city.

Based on this, the impacts of the BRT path has been specified by the application of many various library and field-based studies and then the research questions have been responded by the use of the field-based studies and the descriptive and inferential analysis. The analysis of the gathered questionnaires from the impact of the BRT system shows that the reaction of challenging fields along with the residential and commercial units are completely different towards the

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implementation of this plan while it has been attracted the satisfaction of the residents and commercial units relatively in relation to the implementation of the related plan potentially.

Keywords: Public transportation; Rapid bus systems; BRT; Tabriz Mega-city; Efficacy.

Evaluation of Urban Density and City Fraction Rate and its Effects on Increasing of Households Costs in Bojnourd City

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Abstract

Form and pattern of urban growth is a sign of growth and spread in various stages and environment. This is related to social, economic, natural and human factors and has a different pattern and influence above factors. This article evaluates urban growth compression and sprawl rate and its effects on increasing household costs. Research method is analytic-survey and based on documents and questionnaires, data and information are consisting of indicators and criteria such as; area, population and density with the use of Holdren and Moran coefficient models. The data on urban journeys were tested by Chi Square and related to assessment of urban growth compression and sprawl rate in Bojnourd. After concluding on growth pattern and sprawl rate, we studied three neighborhoods in three textures of Bojnourd. Results show urban sprawl in continuation stages with 46% in recent decade compared to other decades. The process increased through automobile use and household economic costs.

Keywords: Compression growth, Sprawl growth, Economic costs, Bojnourd City.

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