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Phenomenology in Geomorphology

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Introduction

It has passed more than two centuries from the proposed paradigms in new Geomorphology. Theorists in 17 and 18 Ad were the first people proposed new ideas in knowledge of Geography, however we affirmed that a mental inactivity overruled in knowledge of Geomorphology and researchers shift into new techniques in 5 past decades. In that time knowledge of Geography naturally divided into meiosis on subject and human Geography and both of them boast of each other. But at the same time in non-Geographic sciences, more people in phenomenology[1] field proponed becoming thoughts innovations to the scientific society. The most eminent is called the present of "logical researches" Edmund Husserl (1913), "Being and Time" book Martin Heidegger (1988) and "philosophical researches" article Wittgenstein (1985). In Geography and Geomorphology field, Grove Karl Gilbert (1843-1918) is the pioneer of this method. When he expressed Noumenonology with modern deep concept, almost all of the west philosophers were unable to understand and by passing the time this intellectual method emerges in his words. Now ideas switch from concrete objectivity to Noumenonology so the principles of this idea define as "practical elements".

Methods and Material

In analysis of nature in Noumenonology and the way of evolution in viewpoint of “Positivism " in Geomorphology , firstly major paradigms in the field of " Rational positivism " were read. Then seven clear sighted in " Positivism " like "James Hutton", "Charles Darwin ", "Charles Lyell", "Davis", "Hjulstrom", "Strahler" and "Hack" in Phenomenology field (with two historical and process ideas) were selected and their opinions about the way of "recognition" of phenomenon emerge in Geomorphology. Also, the words of scientists such as Bertalnefi, Gilbert and Hillier read out in "recognition" of phenomena in Noumenonology field. The indices of these two groups have compared together.

1-Philosophic attitude is an essential matter for foundation of a consistent and reliable phenomenology (Novali, 1990). Hence, Hegel Noumenonolgy is considered as a philosophic fund of "Phenomenology in Geomorphology". In Hegel philosophic Noumenonology, concrete realities and objectivity phenomenon what a latent inside and spirit of phenomena called Noumenonology. "So against of other Phenomenologists, in this research, “Positivist” equals to “Phenomenology” and “knowledge of exist” equals to “Noumenonology”.

Results and Discussion

After study of those theorist's words from 1804 to 1992 their main propositions emerge that could express innovation in " Phenomenology Differences between Noumenonology and Phenomenology by: 1-Phenomenologists can separate phenomenon from observer. 2- Noumenonologists believed that recognition of phenomenon is in relation to "Antecedent's" observer. 3- Phenomenologists assert on nature and recognition of phenomena. Noumenonologists define recognition science as a relation between phenomena and their relations with each other. 4- Difference between Noumenonologists and phenomenologists were summarized in reductionism of phenomenologists. 5- Noumenonology in Geomorphology express another main subject called "net behavior[1]". 6- Positivism Geomorphologists (phenomenologists) concentrate on scientific reality that is clear dimension of reality. Noumenonology Geomorphologist follows an interpretation of phenomena rather than scientific certainty in relation with other phenomena. 7- Another difference between Noumenonologists and phenomenologists is in 'Special imagine':

a- The concept of structure in systematic attitude assign as rigid and in Noumenonology is afloat.

b- Generality in 'Special imagine' has more hardware aspect. But in Noumenonology is more than visual and objectivity. 'Special imagine' is defined with boundaries and frameworks, like a basin. Noumenonology represent as a network of phenomena that raise a specific action in "special device".

Conclusion

According to the above studies and discussion about those attitudes, the result of Phenomenology and Noumenonology in Geomorphology expressed:

Partition of Geomorphology knowledge in quantity and quality in phenomenology and Noumenonology field is not a correct one. Because some people in Noumenonology, they often were mathematician and physicist and they used concrete data in them researches. Edmund Husserl a mathematician, Hillier cosmologist and Gilbert Geomorphologist.

Noumenonology is a reliant method to visual data, objective data and specify depth relations of this world, ahead of scientific methods. Philosophical principle of this attitude against The Vienna Circle is deeper and better that others. Because notional basis of this attitude is directed more on naturalism of human means base element in Geography. In our era Noumenonology in Geomorphology, can be wider by genesis of different philosophic forms of Gérard Genette, Heidegger and Hillier from what primary executed.

Keywords : Phenomenology, Phenomenology, Geomorphology, Gilbert.

1-Antecedent and consequent relations are therefore not merely linear, but constitute a plexus: and this plexus pervades nature,... It is the province of research to discover the antecedent of phenomena (GILBERT, 1886, P.286).

References

- Paknahad, Seyyed Mehdi (2014). Phenomenology and Religious Experience (Proceedings), Tehran. Thought of the evening. Pages 115-253.
- Shahabadi, Mohammad Reza (2010). Philosophical Recognition, Teaching, Volume 23. Number 1. Pages 4-5.
- Flick, Eve(2015). Coming to qualitative research, translation of Hadi Jalili. Tehran. Release 15- 492
- Cook, Ronald; Jancharlzdurkamp (1999). Geomorphology and Environmental Management, Shapur Goodarzin-Nezhad translation. First Edition. Tehran. Publication side. Pages 1-364
- Mohammadpour, Ahmad (2010). Method in the Method of Making Knowledge in Humanities, Second Edition. Tehran. Publication of sociologists. Page 21.
- Ash, James. Simpson, Paul (2016). Geography and post-phenomenology, progress in Human Geography, Vol.40 (1), P 48-66.
- Bertalnefi, Ludwig von (1987). Principles, Evolution and Applications of General Theory Systems, Translated by Kiumars Pariani, Tehran: Tondar Publication. PP. 1- 340.
- Chorley, Richard J. and Shum, Stanley, A, and Sweden, David, E. (1996). Geomorphology, Geomorphological Perspectives, Translated by Ahmad Motamed, First Volume, Tehran: SAMT Publication, PP. 1-162
- Chorley, Richard J (1962). Geomorphology and General Systems Theory, United States Government Printing Office Washington 25, D.C.
- Darwin, C.R (1842). The Structure and Distribution of Coral Reefs. Smith Elder& Co., London, 214 pp.
- Darwin, C.R (1859-1872). On the Origin of Species by Means of Natural Selection. John Murray, London,1859, 1st ed., 502 PP. 1860, 2nd ed., 502 PP.1862,3rd ed., 538 PP.1866, 4th ed., 529 PP.1869, 5th ed.,596 PP. 1872, 6th ed., 458 pp.
- Davis, William M. (1899). The Geographical Cycle, *The Geographical Journal*, 14(5): 481-504.
- Darabi, Ali (2009). Phenomenological Approach in Analyzing Political Things, Political Science Quarterly, Vol.2, No. 5, Autumn, PP. 48-61.
- Entezary mozhgan (2014) Astral Climate Journal of Geography and Environmental Planning, Vol. 25, No 1, PP 2-10.
- Fyrouzi, Badi'ullah (1970). Geomorphology, Isfahan: Mashal Publication.pp 1-368.
- Gilbert, Grove Karl (1886). The inculcation of scientific method by example, with an illustration drawn from the Quaternary geology of Utah, American Journal of Science, Series 3, 31 P 284-299.
- Gilbert, Grove Karl (1877). Report on the Geology of the Henry Mountains. Government Printing Office, Washington, DC, 160 pp.
- Heidegger, Martin (1988). Being and Time, translated by John Macquarie & Edward Robinson, Oxford.
- Hutton, James (1788). Theory of the Earth; or an investigation of the laws observable in the composition, dissolution, and restoration of land upon the Globe. Transactions of the Royal Society of Edinburgh, Vol. 1, Part 2, PP. 209-304.
- Hutton, James (1795). Theory of the Earth, with Proofs and Illustrations, Vol. I. Cadell, Junior & Davies, London and W. Creech, Edinburgh, 620 pp.
- Hillier, Bill (1996). Space is the Machine, Cambridge University Press, Cambridge, UK.

- Hillier, Bill. Hanson, Julienne (1984). The Social Logic of Space, Published by Press Syndicate University of Cambridge, 276 pages.
- Hack, J.T., (1975). Dynamic equilibrium and landscape evolution. In: W.N. Mel born and R.C. Flemal (Editors), Theories of Landform Development. State Univ. NewYork,Binghamton, PP.87-102.
- Kavousi, Ramin (2007). Gestalt and Attitudes, Quarterly, Cultural-Artistic (Mystical), Aftabe-Asrar, Vol. 1, No. 3, PP.105-108
- Kamali Nejad, Mohammad Hussein (1996). Husserl and the establishment of phenomenology, Kayhan Andisheh, No. 68, PP. 60-79.
- Kennedy, A. Barbara (1992). Hutton to Horton: views of sequence, progression and equilibrium in geomorphology, Geomorphology 5, Elsevier Science Publications B.V. PP. 231-250.
- Lowenthal, David (1961). Geography, Experience and Imagination, Towards a Geographical Epistemology: Annals of the Association of American Geographers, Vol. 51, No. 3, PP. 241-260.
- Lyell, C. (1830-1833). Principles of Geology: Being an Attempt to Explain the Former Changes of the Earth's Surface by Reference to Causes now in Operation, 3 vols. John Murray, London. Vol. I (1830) 511 pp; Vol. II (1832) 330 PP.; Vol III (1833), 398+109 pp. Re printed in facsimile, M.J.S. Rudwick (Editor), 1970.Verlag vs. Cramer, Lehre, 3 Vols.
- Lyell, C. (1837). Principles of Geology: Being an Inquiry How Far the Former Changes of the Earth's Surface by Reference to Causes now in Operation, 4 vols. John Murray, London, 5th ed., Vol. 1, 462 pp.
- Lyell, C (1840-1875). Principles of Geology: or, Modern Changes of the Earth and its Inhabitants Considered as Illustrative of Geology, 3 vols. John Murray, London. 1840: 6th ed., 3vols.;1833: 9th ed.,855 pp; 1875: 12th ed., Vol. 1,655 pp.; Vol. II, 652 pp.
- Merrens, H. Roy (1969). The Physical Environment of Early America: Images and Image Makers in Colonial South Carolina, *Geographical Review*, Vol. 59, No. 4, Published by American Geographical Society, pp. 530-556. DOI: 10.2307/213861
- Nematolahi Fateme (2014). Terrestrial space in geomorphology, geography and environmental planning, Vol 25, No.1, Spring, PP.109-120.
- Nawali, Mahmoud (1990). "What is phenomenology?", Journal of Faculty of Literature and Humanities, Tabriz University, vol. 135 and 136, PP.96- 125.
- Nawali, Mahmoud (1993). "What is phenomenology?", Translated by Darnik Andre, published by Tehran, Publications of the Organization for the Study and Compilation of Human Sciences Books of Universities, PP.1-205.
- Nourtaghani, Abdul Majid (2011). Social Logic of Space, Book of Moon Science and Technology, Vol 2, No. 52, August 19-22.
- Patton, M. Q. (1990). Qualitative Lester, Stan. (1999). An introduction to phenomenological research. Taunton: Development Publication. Evaluation and Research Methods. London: Sage Publications.
- Partoee parvin (2013). Phenomenology of the Place, Second Edition, Tehran: Institute for the Compilation, Translation and Publication of Matn, PP.1-276.
- Relph Edward (1970). An inquiry into the relations between phenomenology and Geography, University of Toronto the Canadian Geographer, Volume 14, Issue 3, September, Pages 193–268, DOI: 10.1111/j.1541-0064. 1970.tb01567.x 193-201.

- Ramesht, Mohammad Hossein, Mahmoudi, Tayebeh, Entezari, Mogan, Vali, Abbasali, Rabbani, Ali (2016). Spatial identity and its role in the crystallization of Iranian civilian nucleus, Journal of Quantitative Geomorphology Researches, June.Vol.4, No 4, PP.56-71
- Ramesht, Mohammad Hossein, Rahdan Mofrad, Mohammad (2016). Geographical Instrument of Iran, Tehran: Nashre-Olgoye Pishraft, Publication, affiliated with the Center for Islamic Pattern of Iran. PP.1-91
- Rezazadeh, Taher (2008). "Application of Gestalt Theory in Art and Design", aeene kheial Publication, No. 9, PP.31-36.
- Relph, Edward (2011). Place and Infallibility Sense, Translated by Jalal Tabrizi, Tehran: Nashre Kavosh. PP.1-177.
- Relph, Edward, (2016). Place and Infallibility, Translation by Mohammad Reza Noghsan Mohammadi, Kazem Mandgari, Zahir Mottaki, Second Edition. Tehran: Publication Armanshahr, PP.1-208.
- Strahler, A.N., (1952). Dynamic basis of geomorphology. Geol. Soc. Am. Bull., 62: 923-938.
- Sack, Dorothy. (1992). New wine in old bottles: the historiography of a paradigm change, Geomorphology, 5, Elsevier Science Publications B.V. Amsterdam, 251-263.
- Soja, Edward (1990). postmodern geographies, the reassertion of space in critical social Theory, verso, second impression, London-New York.
- Shutz, Alfred (1992). Several major concepts of phenomenology, translation of Yousef Abazari, Special Philosophy Culture, No. 11. PP.11-32.
- Shahbazi, Alireza, Ramesht, Mohammad Hussein (2013). "The evolution of the theory of subjectivity from Darwin to Dorman Campus, Natural Geography Research", Vol.45, No.4, winter, PP.15-28.
- Shapourian, Reza (2007). General Principles of Gestalt psychology, First Edition, PP.192-1.
- Sadeghi, Mojtaba, Javan, Jafar, Rahnama, Mohammadrahim (2015). Disturbing the Nature of Geographic Space, From the Phenomenology of Hermeneutics, Journal of Geographical Studies in Arid Zones, Year 5, No., Spring, PP.12-28.
- Sadeghi, Mojtaba, Javan Jafar, Rahnama, Mohammadrahim (2016) methodology of recognition of geographic space? The temporal nature of the methodology of geographic space recognition from the perspective of Phenomenology of Hermeneutics, Journal of Geographical Studies in Arid Regions, Volume 7, No. 25, Autumn, PP.17-36
- Smith, David Wodraph (2014) Phenomenology Translation of Massoud Oliya Encyclopedia of Stanford Philosophy Tehran: Ghoghnos Publication PP.1-95.
- Verno, Rogue, Val-Jan (2000). A Look at Phenomenology and Being Philosophies, Yahya Mahdavi's Translation, Tehran Printing: Kharazmi Publication. PP.1-404.
- Hack, J. T (1975). Dynamic equilibrium and landscape evolution. In: W.N. Mel born and R.C. Flemal (Editors), Theories of Landform Development. State Univ. New York, Binghamton, PP. 87-102.

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Studying the Role of Segregation in Emerging of Deteriorated Urban Fabrics
Case study: Ghasemabad Mashad

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Introduction
Over the recent decades, along with the growth of immigration to the cities, and occurrence of the macrocephaly phenomenon from one side, and the absence of planned and elaborated policies from the other side, spatial injustice, inequality, and monopolization of space has become more evident. In order to mitigate the inequalities, it is necessary to identify the obstacles which prevent cities to have an integrated setting and try to avoid them. Urban segregation as one of the most important motives in dividing the communities into parted groups is one of those obstacles which have augmented the rate of deprivation among the groups. Deprivation is a multifaceted phenomenon dealing with poverty, unemployment and low life expectancy. In this condition, the inner-group relations substitute the inter-group interactions and this would lower the effect of the middle class and as a consequence, the unwanted damages such as delinquency will rise. The accumulation of poverty is a sign of distress in the segregated parts of a city. It seems that segregation has a reciprocate relation with distress, and the deterioration of urban fabrics.
Mashhad as an age-old city, and like many other Iranian cities, has a Heterogeneous urban fabric which encircles segregations and deteriorations. Among the 13 municipal districts of Mashhad, Qassem-Abad in the west-end of the city (10th District), has been chosen as the case of this research. In this area, one could observe a great deal of spatial segregation, social decline, unwillingness to move to the area, weak mental image, and bad attributes which have made it a good case to studying the distress and urban segregation. This research pursues the relation between these two phenomena as well as a thorough study on the area to depict the multiple aspects of segregation.

Methods and Material
The objective of this research is practical, using a quantitative method and a descriptive-analytical approach. For making a hypothesis, first, the theoretical backgrounds of urban segregation and distress are reviewed using the related literature documents. Then for testing the hypothesis which demonstrates the meaningful relation (and correlation) between segregation and distress, a series of criteria and index are given. The weight of each index is designated from the experts' opinion, and by using the data of the "Mashhad's Detailed Plan" in the studied area, the actual status of each index reveals. In the second step, in order to well define the socio-economical and physical segregation, the 'hot points' analysis and 'depth map' are used. In the third step, the results have been compared and the final deduction is given.

Results and Discussion

The results of the first step show that social indexes have the most important impact on the deterioration of urban fabrics. This means that the physical criteria which are the norm for the designation of deteriorated urban fabrics formulated by the Supreme Council of Urban Planning and Architecture could not actually determine the real deteriorated areas affected by social deficiencies. Comparing the official map of the deteriorated areas in the 10th municipal district of Mashhad with the results of the research shows that the integrated deterioration covers a larger area than what is projected on the official map.

The results of the second step show the accumulation of socioeconomically similar groups in the specific parts of the area, while for the physical aspect the fine-grain, small and old dwelling units are also segregated as distinct clusters. This could also be verified by studying the segregation as a result of the depth assessment in the fabric. As such this could be declared that the weaker socio-economical groups are occupying the units which are smaller, older, situated in the depth of the local network and this will increase the segregation.

The results of the third step show that a very important percent of deteriorated blocks (about 76%) are occupied by the socio-economically weak groups and as such it could be concluded that 'deterioration' and 'segregation' have an important reciprocate relation. As a conclusion one could say that first 'Qassem-Abad' had been identified as an affordable district for the deprived and poor population of the city, afterward other socioeconomically similar groups had been absorbed by this magnet and gradually the area became agglomerated by the people who brought with them waves of isolation and segregation.

Conclusion

This research has given three distinct results as the conclusion: first, it has been tangibly observed that urban segregation has a very clear reciprocate relation with the deterioration of urban fabrics. Second, there are some areas that are segregated but the integrated deterioration (considering social, economic and physical conditions as the main components of deterioration), is not yet visible in them. For these areas, it is strongly probable that deterioration would conquer the field, and hence areas 'prone' to deterioration in near future will abound. So if there would not be any preventive solutions and policies, the segregation will pave its road to the accumulation of weaker groups which in its turn, will aggravate the conditions, and make the area fall into rubble. Third, it is very necessary to undertake special policies and accelerate the fundamental approaches like urban regeneration to stop the deterioration and distress process. Otherwise, and by the continuation of the process, urban segregation would be a natural result of the clustering of communities, suffering from poverty and deprivation.

Keywords: Urban segregation, Distress, Deteriorated urban fabric, Integrated deterioration, Deprivation, Qassem-Abad Mashhad.

References

- Azhdari, Aboul-Qasim; Aliakbar taghayee, Aref Zahirnezhad (2015). A Study on the Socio-Spatial Separation of Academic Groups and Occupations in Metropolitan Shiraz, Urban Studies. No. 16. Pages 67-80.
- Afrakhteh, Ha, and Abdoli, A. (2009). Spatial segregation and social disorders of distress fabrics (Babataher neighborhood in KhoramAbad). Journal of Applied research in Geographical Sciences (10): PP. 53-81.
- Afroogh, Emad. (1998). Space and Social Community. Tehran: Tarbiat Modares University.
- Afroogh, Emad. (1997). Space and Social Inequality: Spatial Segregation and Poverty Concentration in Tehran Residential Neighbourhoods. A Dissertation Presented for the Degree of Doctor of Philosophy, Tehran: Tarbiat Modares University.
- Aguilera, A, and Ugalde, E. (2007). A Spatially Extended Model For Residential Segregation. Discrete Dynamics in Nature and Society. PP. 1-20. doi:10.1155/2007/48589.
- Andersen, H. S.(2002). Excluded places. On the Interaction between Segregation, Urban Decay and Deprived Neighbourhoods . Housing, Theory and Society 19(4-3): PP.153-169.
- Azhdari, A., Taghvaie, A., and Zahirnezhad, A.(2015). Analyzing Socio-spatial Segregation of Educational and Occupational Groups in Shiraz Metropolitan Area. Motaleate Shari (Journal of Urban Studies) 4 (16): PP. 67-80.
- Baiely, N & Livingston, M (2007). Selective Migration and Nieghbourhood Deprivation: Evidence from 2001 Census Migration Data for England and Scotland. Urbam Studies: 45(4). PP.941-943.
- Cheshire, P. (2007). Segregated neighbourhoods and mixed communities. London: Joseph Rowntree Foundation.
- Clark, W. A. V (1991). Residential Preferences and Neighborhood Racial Segregation: A Test of the Schelling Segregation Model. Demography 28(1): PP.1-19.
- Conway, M., and Knovitz, J. (2000).Meeting the Challenges of Distressed Urban Areas. Urban Studies (4): PP.749-774.
- E. Kazmierczak, A, Curwell, S and Turner, J (2007). Assessment methods and tools for regeneration of large urban distressed areas . International Conference on Whole Life Urban Sustainability and its Assessment . Glasgow.
- Feitosa, F, and Wissmann, A (2006). Social-mix policy approaches to urban segregation in Europe and United States. Bonn: Zentrum fur Entwicklungsforschung,Universtat Bonn.
- Feitosa, F., Câmara, G., Monteiro, G., Koschitzki, T., and Silva, M (2007). Global and local indicators of urban segregation. Int J Geogr Inf Sci (21): PP.299-323.
- Firman, T.(2004). New town development in Jakarta Metropolitan Region: a prespective of spatial segregation. Habitat international (28): PP.349-368.
- Getis, A and Ord, J. K (1992). The Analysis of Spatial Association by Use of Distance Statistics. Geographical Analysis 24(3): PP. 189-206-. doi:10,1111/j.4632,1992-1538.tb00261.x.
- Gordon, I and Monastiriotis, V (2006). Urban Size, Spatial segregation and educational outcomes. Urban studies .Depatment of Geoghraphy and Enviroment (43): PP.213-236.
- Greenberg Raanan, M and Shoval, N (2014). Mental maps compared to actual spatial behavior using GPS data: A new method for investigating segregation in cities. Cities (36) : PP. 28-40.

- Habibi, S.M. and Maghsoudi, M (2010). Urban Renovation: International Definitions, Theories, Experiences, Charters & Declarations, Urban Methods and Operations. Tehran: University of Tehran Press.
- Hataminezhad, H., Farhoudi, R & MohammadPourJaberi, M (2008). Analysis of Social Inequality in Prosperity of Urban Services Land uses. Human Geography Research Quarterly (65): PP. 71-85.
- Hernandez, G and Guadalupe, M (2005). Socio-spatial segregation, Labor market integration and medium incom group deterioration in ZacatecasGuadalupe urban zone Mexico. Papeles de POBLACION (46).PP. 68-96.
- Hillier, B. (1996). Space is the machine. London: University of Cambridge.
- Kesteloot, C (2003).The Geography of Deprivation in Brusseles and Local Development Strategies . S. Musterd, & W. Ostendorf, Urban Segregation and the Welfare State . London and New York: Taylor & Francis e-Library.
- Massey, D., Neil, S., Julius Wilson, W., and Mitchell, F. (2001). Residential Segregation and Neighborhood Conditions in U.S. Metropolitan Areas. Racial Trends and Their Consequences: (1). PP.1-31.
- Meshkini, A, and Amirfakhriyan, M. (2015). Priorities for Downsizing Process in Informal Settlements in Mashhad City. Journal of housing and rural environment 34 (151): PP. 107-123.
- McConville, S. (2001). Examining Residential Segregation Pattern. the Ralph and Leis center for Reginal Policy Studies.
- Meen, G., Gibb, K., Goody, J., McGrath, T., and Mackinnon., J. (2005). Economic Segregationin england: Causes, consequences and policy. Bristol: The Policy Press.
- Mega, V., and Pederson, J (1998). Urban Sustainability Indicators. Luxembourg: Europen Foundation for the Improvement of Living and Working Conditions.
- Musterd, S., and Ostendorf, W (2000). Urban Segregation and the Welfare State.Iniquality and Exclusion in Western Cities. Journal of Housing and the Built Environment (15). PP. 201-204.
- Nightingale, C. H (2013). The-segregation-paradoxes. http://www.mascontext.com/.July 7. http://www.mascontext.com/issues/17-boundary-spring-13/the-segregation-paradoxes./.
- Ogbu, J. U and Simons, H. D. (1998). Voluntary and Involuntary Minorities: A Cultural-Ecological Theory of School Performance with Some Implications for Education. Anthropology & Education Quarter (29): PP.155-188.
- Olima, W. H. A (2001). The Dynamics and Implications of Sustaining Urban Spatial Segregation in Kenya: Expriences from Nairobi Metropolis. University of Nairobi: Incoln Institute of Land Policy.
- Ord, J. K and Getis, Arthur (1995). Local Spatial Autocorrelation Statistics: Distributional Issues and an Application." Geographical Analysis 27(4). Doi: 10,1111/j.4632,1995-1538. tb00912x.
- Papoli Yazdi, M.H., and Rajabi Sanajerdi, H. (2010). The Theory of Urban and Surrounding. SAMT.
- Peach, C (2009). Slippery Segregation: Discovering or Manufacturing Ghettos? . Journal of Ethnic and Migration Studies 35(9): PP. 1395-1381. Doi:13691830903125885/10,1080.
- Rafieian, M, Ghazaie, M. and Ghazi, R. (2018). Studying the Socio-Spatial Segregation of Migrants in Mashhad. Quarterly of Social Studies & Research in Iran 7(1):PP. 151-178. doi:10.22059/JISR.2018.239125.547.
- Rahnama, M. (1998). Urban Spacial and Geographical segregation (Old Fabric of Mashhad). Journal of Lanquage and Literature Faculty of Letters and Humanities. PP. 201-218.

- Romero, H., Vásquez, A., Fuentes, C., Salgado, M., Schmidt, A, and Banzhaf, E (2012).Assessing urban environmental segregation (UES) The case of Santiago de Chile. Ecological Indicators (23): PP.76-87.
- Rousta, Majid (2010). "The Role of Social Components in the Implementation of Urban Renewal." Journal of Manzar 2 (10): 26-30.
- Sabatini, F.(2003). The Social Spatial Segregation in The Cities of Latin America. Inter-American Development Bank: Sustainable Development Department.
- Shala, V and Quainoo, R (2007). Ethnic Dwelling Segregation in Rosengard malmö högskola Hälsa och samhälle. muep.mah.
- se/bitstream/handle/5751/2043//Ethnic 2520%dwelling2520%segregation.pdf.
- Talen,E(2008).Design for Diversity: Exploring Socially Mixed Neighborhoods. Architectural Press.
- Tunstall, R., and Fenton, A (2006). In the Mix: A Review of Research on Mixed Income, Mixed Tenure and Mixed Communities. What Do We K now? York: Joseph Rowntree Foundation.
- Ueland, J and Warf, B (2006). Racialized Topographies: Altitude and Race in Southern Cities . American Geographical Society 96 (1): PP. 50-78. Doi: 10,1111/j.0846,2006-1931.tb00387x.
- UN-Habitat (2001) The state of the World's cities report. Nairobi: UN-Habitat.
- Varesi, H, Zangiabadei, A., and Yaghfoori, H. (2008). A Comparative study of Public Utilities Distribution from a Social Justice Perspective (A Case study: Zahedan). Journal of Geography and Development 6 (11): 139-156. doi:10.22111/GDIJ.2008.3651.
- Vaughan, L. (2005). The relationship between physical segregation and social marginalisation in the urban environment. World Architecture (185): PP. 88-96.
- Vaughan, L (2007).The spatial syntax of urban segregation. Progress in Planning (67):PP. 205-294.
- Veiga, D (2012). Urban Inequalities and Segregation In Montevideo. Urban and Regional Research Committee RC (21): PP. 1-32.
- W.Boat, F (2003). Exclusion and Inclusion: Segregation and deprivation in Belfast .S. Musterd, & W. Ostendorf, Urban Segregation and Welfare state .London and New York: Taylor & Francis e-Library.
- White, M. J.(1983). The measurement of spatial segregation. American Journal of Sociology (88): PP.1008-1018.
- Yazdani, M, Soltani, A., Nazmfar, H., and Attar, M(2016). The Measure of Residential Segregation of Socio-Economic Groups by Using Multigroup Indices in Shiraz City. Geographical Sciences 16 (42): PP. 197-222.
- Yi, H (2005). Socio-spatial Segregation in Metropolitan Nucli Areas: A Case study of Nanjing Xilu Street. Tongji University: Shanghai,college of Architecture and Urban Planning.

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A Survery on Landslides of Poshtkuh Region in Fereydonshahr by Entropy Model

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Intriduction

Today, cities are exposed to natural hazards for many reasons. These risks, that are associated with many human and financial damage, require urgent and preventive measures. Poshtkouh is one of the cities of Fereydounshahr. The purpose of the present study was to analyze and zonate geomorphic hazards in Poshtkouh area of Fereydoun Shahr city, with about 581 square kilometers located in the west of Isfahan province. The method of this research is descriptive-analytic. In descriptive part, using documentary studies and then using aerial photographs, Google Earth, geological maps and field studies, the land-slope zoning map was carried out and through entropy model The Arc GIS 10 software was developed. The results show that the distance from fault (60.84), geology (12.49%), direction of gradient (11.38%), elevation classes (7.17%), distance from the river (5.74%), slope (2. 59%) were affected by the occurrence of landslides in the region. The zoning map of the area shows that low risk zones (31%), moderate (33%) and high risk areas (36%) of the region are included. Construction with distances from faults and geological layers in the high-gliding areas, immunization of communication paths and control of excavation and excavation operations in the geological layers are the most important steps to reduce the damage of the slope motions in Poshtkuh zone area of Fereydoun Shahr.

Methods and Material

The method of this research is descriptive-analytic and its type is developmental-practicala and, using documentary studies, and the required data and information were gathered. Information layers such as slope, topography, vegetation cover, land use altitude map, etc. were prepared using topographic maps of 1: 50000, geological maps of 1:100000 and 1:250000 and digital elevation model of Iran. These maps were used as the main tool in this study and ArcGIS 3.0 was used to analyze the data and preparation of the required maps. Using air photos and Google Earth, landslides were identified. Then a field survey was conducted to control the data layers of land. In the following, landslides were investigated in the area of 6 factors: geology, fault, waterway, topography slope, direction of gradient, elevation classes as factors influencing landslide occurrence. These six layers of information were converted in to Raster layers and digital data. Due to the characteristics of the landslides area taken, the weight of each layer and the entropy for the classification matrix layer was formed. Decision Matrix contains information that entropy can be used as a criterion for evaluation.

Results and Discussion

By studying the landslide location of the area, it was determined that 38 landslides occurred in the area, 7 landslides in the low risk zone, 17 landslides in the middle danger zone and 12 landslides in the high risk zone, and showed low zones The danger is 31% of the area, the areas with a medium risk of 33% and 36% in the high risk area. Which states that the region has a high potential in landslide events. According to the zoning map of the area, it became apparent that the high-risk area is on slopes above 30 degrees, with an altitude of 2500 meters and at a distance of 2000 meters up to the faults. This area has occurred mostly in marl formations and weathered radiolarites, and consists of thin lime rock, limestone, clay loam, conglomerate and sandstone, rock and gypsum. According to the direction of gradient, most slopes are south-east. Low risk zones are located between 0-5 degrees. At altitudes less than 1500 meters and above 3500 meters. And at a distance of 200-0 meters from the faults. In total, this area is located in landslide in high risk areas of Isfahan province with 581/5 square kilometers. The high-risk area in the zoning shows that central areas, including the first Poshtkuh are located linearly along the Choghagolie Bridge to Pashandegan and countryside. The existence of villages and inhabitable areas are due to the occurrence of landslides in the foothills and about 39% of them are located in landslide.

Conclusion

In zoning of landslides of the study area, the entropy model shows the accuracy and validity, and finally, it can be said that the studied area is considered as high risk areas of Isfahan province. The zonation of the studied area with entropy model showed that the most important factor in the occurrence of landslides in the area are faults and with 60.84 percent, the area is affected by the creation of landslides. Rainfall also plays an important role in the initiation of landslides in the region, especially during heavy rainfall and massive movements can be expected. Accordingly, about 50% of slippery areas with an annual rainfall of 620-590 mm. About 39% of the villages encounter landslides.

Therefore, avoiding any construction in the near the faults and areas with a Marn and Radiolarite, with steep slopes, and high and medium risk areas.

Keywords: Landslides, Poshtkuh, Fereydoun shahar, Entropy Model.

References

- Asgharpour, Mohammad Jawad, Multicriteria Decisions, Tehran: Tehran University Press, 2006.
- Akbar, Somayeh et al (2013). Landslide hazard assessment using Fuzzy-based fuzzy model and Fuzzy combination method-Maqan control in Maskoun-Jiroft area, Quarterly Journal of Engineering Geology, Kharazmi University, Vol. 7, P. 1Natural Resources Office of Isfahan Province (1997). Detailed plan of renewable natural resources of Farsidehshahr poshtkoh Basin, Integration Report.
- Pour Ghasemi, Hamid Reza et al (2012). Landslide hazard zonation using Bayesian theory, Agricultural science and technology collection, Water and Soil Science,Vol.16, No.62, PP.109-121
- Jalali, Nader (2000). Final report of the Landscape Landslide Risk Assessment (SAR), in order to find the most consistent method with the country's conditions, is a research project on soil and water conservation.

- Geographic organization of the armed forces with topographic maps of 1:50000 sheets (Wohran-Ostgan-Faridounshahr-Galeh sorkh).
- Geological Survey and Mineral Exploration Geological Plans 250000/1 and 100000/1
- Suri Salman (1394). Landslide hazard zonation using artificial neural network method, Quarterly Journal of Remote Sensing and Geographic Information System in Natural Resources, Vol. VI, P.4, PP.15-31.
- Fatemi Aghda et al., 2005, Risk of landslide risk using a fuzzy system in Rudbar area, Journal of Science, University of Tehran, Vol. 31, No. 1, PP. 43-64.
- Alaei Taleghani, Mahmoud, (2011). Geomorphology of Iran, Qomes Publications
- Ghyumyan, Jafar, Shoaee, Ziauddin (1998). Landslide of the Blue Village of Chaharmahal-Bakhtiari province, Proceedings of the 2nd National Conference on Earth Traffic and Coping Routes to Its Risks.
- komakpanah,Ali, Hafezi Moghadas, Nasser(1994).Landslide hazard zonation methods,Proceedings of the specialized workshop on the study of strategies for reducing landslides in the country.
- Karami Fariba et al., 2008, The risk of earthquakes and the risk analysis of population centers of the earthquake (Bostanabad, East Azarbaijan, Geographical Survey, Vol.23, Issue 4, PP. 77-96.
- Moghimi Ebrahim, et al (2013). Evaluation and zoning of landslide hazard in Roodbar city using network analysis process, Quantitative Geomorphology Researches, No. 4, PP.103-118.
- Moghimi, Ebrahim javad Bagheri, Taher Safarrad (2012). Landslide hazard zonation by entropy model, Case study: Northwest Zagros northeast, Natural Geography Research, No. 79, PP.77-99.
- Yamani Mojtaba, et al (1393). Giomorphological evaluation of the potential of landslide in the anticline of Black Mountain, West of Iran, Planning and space design, Vol.18, Number 3, Autumn 2014. PP.148-170.
- Nowroozi Khatieri, Khadijeh et al (1392). Risk Analysis of Urban Municipal Floods and Earthquakes (Case Study of Tehran Region 20), Journal of Geography and Environmental Studies, No. 7, PP. 53-68.
- Kumar Dahal , R (2008). Predictive Modeling of Rain Fall- induced Landslide Hazrd in the Lesser Himalaya of Nepal Based on Weights – of – evidence , Geomorphology , Vol .102, PP. 496-510.
- Zongji,Y,et al, (2010). Regional Landslide zonation Based on Entropy Method in Three Gorges Area , chea ,seventh In ternational conferenceon Fuzzy systems and knowledge Discovery.

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Rural-Urban Linkages, the Basis of Regional Development Case Study: Ahvaz Township

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Introduction

Urban and rural spaces both are becoming multidimensional spaces where the interaction between urban and rural areas has been intensified, for this reason, the dual concepts of urban and rural alone cannot explain such a continuum between these regions. This applies to the path of development, are promising aggressive transition from traditional ties towards reciprocity and complementarity, which village and town are put together in an interactive framework dynamic and complementary. The impact of these interactions is applied through the population, goods, investment, social equivalents, and administrative relations providing services flow and many different dimensions and have positive and negative impacts. Therefore, recognizing such flows is important to analyze rural-urban links and their relationship with regional development as well determine the sphere of urban influence and the quality of providing services to the villagers Rural, urban links can have positive and negative effects on the development of the area or area concerned. The present study, through studying the diverse rural and urban flows and investigating their relationship with regional developmental levels in Ahwaz, is intended to find meaningful relationships between them and the existence of the causative or parasitic role of Ahwaz city on the developmental areas of the area. Certainly, the scientific knowledge of these relationships and their role will have an effective contribution to urban and rural planning. Therefore, identifying the spatial effects of rural urban flows of Ahvaz city on regional development, is a general purpose of the research, which has been pursued in three sub-goals: the first objective is to determine the hierarchy of rural areas from the regional development levels in the city of Ahwaz (dependent variable); The second goal is spatial analysis of rural urban flows in this area (independent variable), and the third goal, finding the relationship between the two variables, as well as understanding the type of current flow between them.

Research Methodology

The present research is applied and its method is descriptive, analytical based on field and document data. The statistical population of the research of the villages of 20 households and above was Ahvaz city in 177 villages in 2011. Sample size was determined according to Cochran formula using the ratio or attribute of the topic of high or low flows or links of the villages to the city. Based on this, the sample size of 86 villages was obtained, and in order to ensure more certainty, 90 villages or 50% of the villages in the region were selected. Sample villages were identified by random sampling method including stratified sampling in first step and then simple random sampling. In the present study, the purpose of the region, the political and administrative boundaries of Ahwaz city and the purpose of the city, is the center of Ahwaz. The current flows between the villages of the region and the city of Ahvaz were considered due to the impact of the village from them.

In the present study, the purpose of the region is the political and administrative boundaries of Ahwaz city and the purpose of the city, is the center of Ahwaz. The flows between the villages of the region and the city of Ahvaz were considered due to the impact of the village from them. Data collection has been done in both documentary and fieldwork. Research variables are divided into two dependent and independent general groups. The dependent variable of the research was the level of development of each village, which was carried out using Electre multiplier compensation decision technique. The criteria for determining the level of regional development include 12 issues related to agriculture index with 10 variables and selected from rural service centers, scientific and educational criteria with 8 variables, economic and trade criteria with 10 variables, cultural and social criteria with 10 variables, criterion Infrastructure with 15 variables, health and treatment criteria with 15 variables, political and administrative criteria with 8 variables, religious and religious criteria with 8 variables, housing and building standards with 12 variables, transport and communication metrics with twelve variables extracted from data The statistical data of the census 2011 and the questionnaire, the population density index of villages based on 2011 in six categories and finally the state of gradient of the earth with six tons Brake, which are identified with 120 variables. These criteria were evaluated by completing the questionnaire by 30 experts using Dynamic Analysis Method and in Excel and Chius and Excel environment. In order to show the spatial mapping of the indexes, the GIS software used. Independent variable is at the macro and primary level, with eleven main factors of labor flow with two items, supply flow of basic needs with 6 items, flow of services with 10 items, flow of financing with two items, marketing flow and sales of products with four items , Flow of money exchange with two items, flow of rural-urban Investment with 4 items, flow of urban-rural Investment, with 4 items, flow of thoughts and experiences with two items, migration flows with 2 items and marrying flow with 2 items, that totally calculated and specified by four factors or regional link. In the analysis of information and findings related to rural- urban links, various techniques were used. In order to determine the relationship between the variables, Pearson's parametric test and spearman nonparametric test have been used. Multivariable regression and standard beta coefficients have been used to determine the relationship between the total independent variable and the dependent variable or parasite role of the city on regional development.

Results and Discussion

Regarding the overall linkage of the city with the level of development of villages in the area, the findings showed that, firstly, a significant correlation was found between the two variables at the level of 99%; secondly, of the 40 indicators that make up this variable, it has 34 significant relationships . Third adjusted coefficient of determination obtained from multivariate regression to 0.966 or 96.6 percent change in development by this intended 34 variables indicate that rural, urban linkage on the level of aregional development with the exception of two flowa (flow of information and experiences as well as flow of marriage) is a significant and positive type and thereby it can be concluded that the role of the metropolitan Ahvaz on the development of Surrounding villages of its region were positive and productive.

Conclusion

Regarding the importance and effective role of the city's influential streams and its indicators, the results of the findings as a result of using the standardized multivariate and beta regression showed that the flow of services in the first rank and labor flows, supply The basic needs, the capitalization of townspeople in villages, the flow of marketing and product sales, rural investment in the city, immigration, financing, exchange of money, information, experiences and the flow of marriage are in the next levels of this ranking. Among the indicators of these factors, the flow of people from rural to city with a beta coefficient of 0.682, the purchase of food from the city in a month with a coefficient of ą0.676, the rural population's use of urban educational services with a beta coefficient of 0.614 were located at the first up to the third rank of the efective ranks of the level of regional development. Thus, according to positive and productive role of Ahvaz city affected by these factors and indicators especially stream of urban services and labor flow and consequently the supplying basic needs and necessities of rural life, It was necessary to emphasize the growing attention of managers and planners on the rural, urban, and urban development of the area and their further expansion. Regarding the coefficients of importance of regional development criteria, the slope index with the score of 0.022 has the lowest and the population index with the score of 0.203 has the highest level of equilibrium and equality. The spatial layers of rural, urban (independent variable) and regional developmental (dependent variable) levels in Ahwaz showed that the villages of the area (21.1% of sample size) with Ahwaz metropolitan area have a very high correlation. Also, fourteen villages of the region(15.5 percent) have a high correlation, sixteen villages (17.7 percent) have relatively high links, sixteen villages (17.7 percent) have low links, and twenty-five villages (27.7 percent of sample size) have established very little relation with the city of Ahwaz.

Keywords: Rural-Urban Linkages, Regional Development, Productiv and Parasitic cities, Electre, Ahvaz.

References

- Afrakhteh, H (2009). Rural Management with Emphasis on Iran. First Edition. Ganje Mehr Publication: Tehran.
- Akkoyunlu, S (2015). The Potential of Rural-Urban Linkages for Sustainable Development and Trade. Journal of Sustainable Development and World Policy, Vol. 4, No. 2, PP. 20-28.

- Antrop, M (2004). Landscape Change and the Urbanization Progress in Europe .Journal of Landscape and Urban Planning, Vol. 67, PP. 9-26.
- Azizpour, F., Mohsenzadeh, A (2010). Theories and Approaches of Spatial Organization of Rural Settlements. First Edition, Pelican Publishing: Tehran.
- Bah, M., Cissé, S., Diyamett, B., Diallo, G., Lerise, F., Okali, D., Okpara, E., Olawoye, J., Tacoli, C (2003). Changing Rural-Urban Linkages in Mali. Journal of Environment and Urbanization, Vol. 15, No. 1, PP. 13-14.
- Berdegue, J., Carriaz, F., Jara, B., Modrego, F., Soloaga, I (2016). Cities, Territories, and Inclusive Growth: Urban-Rural Linkages in Chile, Colombia, and Mexico. Journal of World Development, Vol. 73, PP. 56-71.
- Chen, Y., Liu, M., Zhang, Q (2010). Development of Financial Intermediation and the Dynamics of Urban-Rural Disparity in China,1978-1998.Journal of Regional Studies,Vol.44, No.9,PP.1171-1187.
- Chunyang, H., Zhang, A., Huang O., Zhao Y (2016). Assessing the Potential Impacts of Urban Expansion on Regional Carbon Storage by Linking the Lusd Urban and In Vest Model. Journal of Environmental Modelling and Software, Vol. 75, PP. 44-58.
- Clayton, B., Dent, D., Dubois, N (2003). Rural Planning in Developing Countries: Supporting Natural Resource Management and Sustainable Livelihoods. Frist Edition, Earthscan Publication Ltd: London.
- Cloke, P (2008). Conceptualizing Ruralirty, in Handbook of Rural Studies. Frist Edition, SAGE Publications: London.
- Darban Astane, A., Ghadiri Masoums, M, Hajari, B (2015). Comparative Assessment of Cooperative Shared and Point Patterns of Service Delivery in Rural Administrations of Abarkuh and Lamerd Townships. Journal of Cooperatives and Agriculture, Vol. 4, No. 14, PP. 145-174.
- Ebrahimzadeh, I (2012). Organization of Town and Village Relations with Emphasis on Sistan. First Edition. Sahra Publications: Mashhad.
- Faraji, F (2013). Effective Factors in Creating Rural-Urban Links. Case study: Central District of Sarvabad City. Master's Thesis, Kharazmi University: Tehran.
- Ghadiri Masoum, M., Yousefi, H., Skbarpoor; M., Khalili, A (2012). The Conflict of Escaping of Youth from the Rural Areas with Rural Development; Case Study: Dismar Gharbi Rural District Jolfa Township. Jounal of Rural Research, Vol. 3, No. 10, PP. 97-117.
- Joo, H (2011). Comparative Analysis of Rural and Urban Start-Up Entrepreneurs. Master's Thesis, University Press of Kentucky: Lexington.
- Khobfekr Brabadi, H., Ghoreyshi, S (2012). Survey of Rural Linkages with Zahedan City and its Impact on the Rural Development Levels. Jounal of Rural Research, Vol. 3, No. 1, PP. 119-146.
- Kûle, L (2008). Concepts of Rurality and Urbanity as Analytical Categories in Multidimensional Research. Proceedings of the Latvian Academy of Sciences, Section B, Vol. 62, No. 1, PP. 9-17.
- Liu, Y., Fang, F., Li, Y (2014). Key Issues of Land Use in China and Implications for Policy Making. Journal of Land Use Policy, Vol. 40, PP. 6-12.
- Lynch, K (2004). Rural-Urban Interaction in the Developing World, Frist Editin, [Translation by Mohammad Reza Rezvani and Davood Sheikhi], Payame Publications: Tehran.
- Mayer, H., Habersetzer, A., Meili, R (2016). Rural-Urban Linkages and Sustainable Regional Development: The Role of Entrepreneurs in Linking Peripheries and Centers. Journal of Sustainability, Vol. 5, No. 745, PP. 1-13.

- McGee, T (2008). Managing the Rural-Urban Transformation in East Asia in the 21st Century. Journl of Sustainability Science, Vol. 3, No. 1, PP. 155-167.
- Mohammadi Dehcheshmeh, M (2012). Social Instability in the Iranian City's Canvas and Its Demographic Effects. Journal of Cultural Social Knowledge, Vol. 4, No. 1, PP. 5-20.
- Nazarian, A (2011). Urban Geography of Iran. Eleventh Edition, Payame Noor Publications: Tehran.
- Papeli Yazdi, M., Ebrahimi, M.A (2012). Theories of Rural Development. Seventh Edition. Samt Publication. Tehran.
- Pourtaheri, M., Roknedin Eftekhari., A., Mehdipourroshan, L., Enzaei, E (2015). Assessing Organic and Non-Organic Model of Rural-Urban Relations at Surrounding Villages; Case Study: Surrounding Villages of Babol City, Journal of Research and Rural Planning, Vol.3, No.4,PP.25-36.
- Pourtaheri, M., Roknedin Eftekhari., A., Rezvani, M.R., Azad Hedaya, H (2015). Analysis of the Rural Development System Using the Integrated Regional Network Pattern; Case Study: Iraq, Kirkuk Province, Journal of Rural Research, Vol. 6, No. 3, PP. 635-651.
- Purohit, B.C (2008). Health and Human Development at Sub State Level in India. Journal of Socio Economics, Vol. 37, No. 6, PP. 2248-2260.
- Rezaii, R., Ogli Vusat, E (2011). Study of Tehran Megalopolis Hinterland Using Time and Gravity Models, Journal of Town and Country Planning, Vol. 2, No, 3, PP. 5-28.
- Rezvani, M.R., Nazari, V.A., Khorasani, M.A (2010). Culture of Concepts and Terminology of Planning and Rural Development. First Edition. Jahad Daneshgahi Publication: Tehran.
- Rezvani, M.R., Shahcheragh, M (2011). Rural-Urban Links, Immigration Networks and Rural Development; Case Study of Dehmala Region, Semnan Province, Journal of Community Development, Vol. 3, No. 1, PP. 107-130.
- Rodríguez-Pose, A., Fitjar, R.D (2013). Buzz, Archipelago Economies and the Future of Intermediate and Peripheral Areas in a Spiky World. Journal of European Planning Studies, Vol. 21, No. 3, PP. 355-372.
- Rodríguez-Pose, A., Hardy, D (2015). Addressing Poverty and Inequality in the Rural Economy from a Global Perspective. Journal of Applied Geography, Vol. 61, PP. 11-23.
- Latifi, Gholam Reza (2010). A strategy for establishing a regional network to strengthen city-to-town links An agenda for policy research with reference to the Indonesian nation; Part I. Geographical Information (Sepehr). Year 19, Number 74. Pages 42-
- Sadoughi, M. (2009). The Role of Small Towns in Developing Rural Areas; Case Study: Hamedan, Faminin. Master's Thesis. University of Sistan and Baluchestan: Zahedan.
- Saedeh Zarabadi, Z.S., Tabatabaei, S.S (2014). Organizing the Rural Settlements of Damavand Based on Regional Network Indicators by Using TOPSIS Technique, Jounal of Rural Research, Vol. 5, No. 2, PP. 445-466.
- Saeedi, A (2011). Rural-Urban Relations and Links in Iran. First Edition, Mehre Mino Publishing: Tehran.
- Saeedi, A., Azizpour, F., Hosseini, S., Khalifa, I., Rika, J (2012). Comparative Study of Barriers to the Formation of Rural-Urban Bonds; Case: Marvdasht and Kohdasht Districts, Journal of Geography, Vol. 10, No. 33, PP. 7-26.

- Saeedi, A., Mikaniki, J (2008). Changing City-Village Relations with an Emphasis on Economic Activities, Journal of Geography, Vol. 6, No. 16, PP. 1-16.
- Serra, P., Vera, A., Tulla, A., Salvati, L (2014). Beyond Urban-Rural Dichotomy: Exploring Socioeconomic and Land Use Processes of Change in Spain 1991-2011. Journal of Applied Geography, Vol. 55, PP. 71-81.
- Shakouie, H. (2012). New Perspectives on Urban Geography. Fifteenth Edition, Samt Publication: Tehran.
- Siechiping, R., Kago, J., Zhang, X., Augustinus, C., Tuts, R (2015). Urban-Rural Linkages and the Role of Land Tenure. Paper Presented at The 2015 World Bank Conference On Land And Poverty, Washington, DC, March, PP. 23-27.
- Sojasi Qeidari, H., Roumiani, A., Mansouri, K (2017). Spatial Analysis of Rural-Urban Connections Based on the Sphere of Influence of Urban Centers Services; Case Study: Kouhdasht Township, Journal of Regional Planning, Vol. 7, No. 25, PP. 129- 142.
- Taleshi, M., Soltani Moghaddas, R., Ghaffari, R., Karamifar, E (2016). Investigating the Impact of Economic Structure of Agricultural Products on the Urban-Rural Relationship; Case Study: Central District of Dezful Township. Journal of Research and Rural Planning, Vol. 5, No. 2, PP. 195-212.
- UN-Habitat (2015). Enhancing Urban Rural Linkages to Harness the Transformative Power of Urbanization for Sustainable Development. Nairobi, Kenya.
- Wang, Y., Liu, Y., Li, Y., Li, T (2016). The Spatio Temporal Patterns of Urban-Rural Development Transformation in China since 1990. Journal of Habitat International, Vol. 53, PP.178-187.
- Yu, A., Wu, Y., Zheng, B., Zhang, X., Shen, L (2014). Identifying Risk Factors of Urban-Rural Conflict in Urbanization: A Case of China. Journal of Habitat International, Vol. 44, No. 37, PP.2248-2260.
- Zemani, M (2014). Metropolitan Links and Physical-Spatial Transformations of Surrounding Villages; Case Study: Karaj, Mohammad Abad Rural District. Master's Thesis, Kharazmi University: Tehran.

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Analysis of Land Use Change in Balanjchai Watershed Using Landscape Metrics

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Introduction

Land use optimization is one of the strategies to achieve sustainable development and reduce of resources loss. Land use refers to the use of land in existing condition, which covers all uses in different sectors of agriculture, natural resources and industry. Understanding the issue of how land use change is very important for large-scale management and future planning of area.

By knowing proportion of land use changes over time, one can predict future changes and take appropriate action. One of the ways that provide the spatial structure of space imagery is the landscape metric. Landscape is a layout in which a combination of local ecosystems or land uses in a region have been replicated in a similar form. The two basic aspects of the structure of the landscape, the composition and distribution of the spatial shape of the patches, can be measured by means of landscape metrics. Landscape metrics are categorized into three levels: Patch-level metrics defined for single patches and distributes spatial properties, content types, and stains texture; class-level metrics that apply to all types of patches. The class means all the stains that represent a type of use or a type of cover; metrics at the landscape level that representing a variety of classes and patches in landscape integrated.

Methods and Material

The Balanjchai area of Urmia (Iran) with an area of 35000 hectares is located at 35 km southwest of Urmia city with coordinates 37° 15' to 37° 22' North latitude and 45° 07' to 45°15' East longitude. In order to evaluate the accuracy of the maps drawn from the processing of images, two images were selected in years 1992 and 2016. ENVI 5.3

software was used for processing and post-processing satellite imagery. Quantitative change was carried out in Fragstats 4.2 software for the year 1992 to 2016. In order to calculate landscape metrics, the land use map in raster format was entered into the Fragstats 4.2 software after extraction in ENVI 5.3 software. After adjusting the software parameters, each of the metrics was calculated separately at the level of the class and landscape and their results were transmitted to Excel software. Finally, the charts of metric changes and trends in landscape changes were evaluated.

Results and Discussion

The assessment of the number of patches showed that the greatest change during this period was the number of patches in rangeland use. The increase in rangelands indicates shattering and disturbance in the land which has resulted in the expansion of agricultural and human landscapes. Comparison of patch density showed that the expansion of urbanization and increase of agricultural use, development of activities and landuse changes caused to reduce in the density of rangeland patches stains and would have a more fractional level than other classes. According to the results, the reduction of the largest patch is related to the barren and rangelands, which indicates the integrated destruction of the land cover for barren and rangelands. Reducing the metric of the largest patch for rangelands indicates the excessive use of rangelands in the expansion of agricultural use and the conversion of some parts of rangelands to human lands. The assessment of the shape of the landscape for agricultural applications shows a greater number, which suggests that agricultural change leads to more complexity and increased disruption of the shape of the patch. The analyst has the highest proportion of edge density belonging to agricultural land cover and has increased during the study period. Based on changes in the coverage of landscape, the percentage of urban land and agricultural lands in the specified time period has increased and the percentage of range and barren lands has declined. Which suggests that the expansion of urbanization and agriculture has led to the elimination of rangelands and the conversion of rangelands to other uses.

Conclusion

Determining the uses showed that indigenous people have created different patches or different uses throughout the years. These uses have been developed sustainably in the area of the region that have been rangeland and have been at the forefront of biodiversity degradation. The existence of human and agricultural uses in the Balanjchai area has led to a problem of their degradation and dispersal in the region, which can be an important factor in the destruction of natural resources in the region. The results of the research using class-level metrics indicate that, in general, landscape has been fragmented, in terms of shape is more complex and irregular, and more diverse in terms of the integrity of the structural elements, and, moreover, in terms of the type of coverage used in the unit area. The interpretation of the results also reflects the fact that human-made spatial and agricultural spatial patterns in the territory of the land over the period covered by the process have undergone a completely aligned change that could be due to the direct effect and intensity of more human presence in determining their spatial distribution pattern in comparison with other uses.

Keywords: Balanjchai spatial distribution pattern, Land division, Land use, Fragstats software.

References

- BihamtayeTusi, Neda; Alireza Safyanian; Sima Fakhran (2016). Detection of Landslide Changes Using Land Scale (Case Study: Khomeini Shahr), 2nd International Conference on Land Ecology. Isfahan University of Technology. Isfahan, 6 and 5 November 1395.
- Parivr Parastoo; Ahmad Reza Yavari; Ahad Setoudeh (2008). Analysis of temporal variations and spatial distribution of urban green spaces of Tehran in the scale of land imagery, Theology, Period 34, No. 45. Pages 73-84.
- Dejkam, Seyyed Sadeq; Bahman Jabbarian Amiri; Aliasghar Darvish Sefat (2015). Monitoring the changes of land imagery using synoptic analysis and satellite imagery (case study: Rasht city), natural environment. Period 68. Number 2. 225-238.
- Rezaei, Fatemeh; Samareh Falahatkar; Hashem Dadashpour (2017). Spatial-temporal variations of coastal and non-coastal cities of Mazandaran province using land-based landmarks, landslides. Period 9, Number 1. 57-79.
- Sotoudeh Ahad (2010). Identification of the Environmental Health Indicator as an Appropriate Substitute for Urban Development, Ph.D. Environment. Faculty of Environment. University of Tehran. 150 pages.
- N Salman Mahini, Abdul Rasul (2007). Territory and erodibility criteria as two categories of quantitative indexes for the rapid assessment of the effects of development plans, agricultural science and natural resources. Section 14. No. 1. Pages 1-11.
- Shaparian, Mina; Niloufar MehdiPour; Mohammad Shafizadeh; Sima Fakhran (2015). Evaluation of Changes in Spatial Patterns of Land Mapping at the End of the Zayandehrud River in the Past Decade, Second National Conference on Climate Change and Engineering, Sustainable Development of Agriculture and Natural Resources. Shahid Beheshti University. Tehran, September 26, 2015.
- Fathizad, Hassan; Ahmad Noahgar; Marzban Faramarzi; Fresh Mehdi (1392). Investigation of Land Use Land Changes Based on Territory Land Metrics Analysis Using Remote Sensing and GIS in Dehloran Dry and Semi-Dehlor Area, Land Area. Section 5. No. 1. Pages 79-99.
- Fathizad, Bakhtiar; Seyyed Mahmoud Hajimir Rahimi (2008). Detection of Land Use Change Using Object-Oriented Classification (Case Study: Andisheh Town), Geomatics Conference, Mapping Organization of the Country. Tehran. 23-22 May 2008.
- Karami, Arash; Jahangir juris (2011). Investigation of quantitative measurements of landforms in the conservation of sustainable land use patterns (Case study: Kohgiluyeh and Boyerahmad provinces), Theology. Volume 37, Number 60. Pages 88-79.
- Apan, A., Raine, S., & Paterson, M (2002). Mapping and Analysis of changes in the riparian landscape structure of the Lockyer valley catchment, Queensland, Australia. Journal of Landscape and Urban Planning, 59 (1): 43-57.
- Castillo, E. M., García-Martin, A., Aladrén, L. A. L. and de Luis, M (2015). Evaluation of forest cover change using remote sensing techniques and landscape metrics in Moncayo Natural Park (Spain), Applied Geography, 62(1): 247-255.
- Congalton, R. G (1991). A Review of Assessing the Accuracy of Classifications of Remotely Sensed Data. Remote Sensing of Environment, 37(1): 35-46.

- Fan, F., Wang, Y., & Wang, Z (2008). Temporal and spatial change detecting (1998-2003) and predicting of Landuse and land cover in Core corridor of Pearl River Delta (China) by using TM and ETM+ images. Environmental Monitoring and Assessment, 137(1-3): 127-147.
- Fiener, P., Auerswald, K., & Van Oost, K. (2011). Spatio-temporal patterns in land use and management affecting surface runoff response of agricultural catchments-A review. Earth-Science Reviews, 106(1): 92-104.
- Lausch, A,. & Herzog, F (2002). Applicability of landscape metrics for the monitoring of landscape change: Issues of scale, Resolution and Interpretability. Journal of Ecological Indicators, 2(1-2): 3-15.
- Leitao, A., Miller, J., Ahern, J., & McGarigal, K (2006). Measuring Landscape, A Planners Handbook, 272p.
- Leitao, A., Miller, J., Ahern, J., & McGarigal, K (2009). Measuring Landscape, Journal of Urban Affairs, 31(3): 376-378.
- Matsushita, B., Xu, M., &Fukushima, T (2006). Characterizing the changes in Landscape structure in the lake Kasumigaura basin, Japan using a high-quality GIS dataset. Landscape and Urban Planning, 78(3): 241-250.
- McGarigal, K., & Cushman, S.A (2002). The Gradient Concept of Landscape Structure: Or why are there so Many patches, University of Massachusetts Amherst, 44p.
- McGarigal, K (2015). Fragstats Help, Version 4.2.University of Massachusetts Amherst, 182p.
- Richards, J. A (2013). Remote Sensing Digital Image Analysis: An Introduction, 5nd Edition, Springer, 494p.
- Shi, Y., & Xiao, J (2008). Evaluating Landscape changing due to urbanization using remote sensing data: A case study of Shijiazhung, china. International Workshop on Geoscience and Remote Sensing, IEEE Computer Society Washington,DC,USA, 21-22 December, 508-511.
- Su, Sh., Ma, X., & Xiao, R (2014). Agricultural landscape pattern changes in response to urbanization atecoregional scale. Ecological Indicators, 40(1): 10-18.
- Tang, J., Wang, L., & Yao, Z (2008). Analyses of urban landscape dynamics using multi-temporal satellite images: A comparison of two petroleum-oriented cities. Landscape and Urban Planning, 87(4): 269-278.
- Weng, Q (2002). Landuse change analysis in the zhujiang delta of china using satellite Remote Sensing, GIS and Stochastic Modeling. Environmental Management, 64(3): 274-284.

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Analysis of Potential Areas Exposed to the Risk of Urban Flooding
Case Study: Zahedan City

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Introduction
Population growth, industrial expansion, urbanization, and urban buildings have led to dramatic changes in the morphology of drainage basin.Also, flatten the land, raping the rivers and streams, and changing the pattern of natural drainage cause flooding in the city.The purpose of this study was to investigate the relation between the urban floods in Zahedan city and structural and environmental factors, identify and measure human vulnerability so based on that to identify and prioritize the flood areas.Structural factors include roughness, land slopes, type of land use and the characteristics of the constructions that have provided the structural framework of Zahedan urban structures.

Methods and Methodology
First, the maps of the comprehensive and detailed plan were prepared by Sistan and Baluchestan Department of Roads and Urban Development. Also, the land use information, main torrents and the elevation points of the city were collected. After collecting maps, the required data and information were collected by the library and field methods. The Digital Elevation Model (DEM) was prepared and the slope and aspect maps were extracted from the DEM layer.

An Analytic Hierarchy Process (AHP) is a structured way of organizing and analyzing complex decisions based on mathematics. It was developed by Thomas L. Saaty in the 1970s and has since been widely studied and refined.By using the AHP hierarchy process analysis process, the decision-making process was performed to weigh the desired criteria. Variables were weighed on priority by Expert Choice(EC) software.

The decision maker evaluates the hierarchy tree, compares the factors and rival options. Then a pair of comparisons is made. These comparisons determine the weight of each of the factors.

Finally, AHP logic combines matrices derived from paired comparisons to determine the best decision for multi-criteria site locations.

In this research, the Delphi method has been used for general ranking and appropriate decision making for criteria.In this way, each of the experts in a paired comparison of criteria measures their opinion in a questionnaire, which is based on the AHP hierarchical technique.In this method, the weight of each criterion is obtained with a degree of priority, which is equivalent to a value of between 1 and 9, each number indicates the importance of a variable than another.Variables like torrents and streams, land use, elevation, and slope of the area as the main variables in increasing the risk of the flood were introduced to the experts and they were asked to evaluate the risk priority by hierarchical method and scale from 1 to 9. After determining the weight of each criterion, calculations and operations were performed to determine the hazardous locations using Geographical Information System (GIS) with weighted overlay operation.

Results and Discussion

In this research, four main criteria to determine hazardous flood areas were used: 1- elevation factor, 2-slope factor, 3- Land use, 4- Urban Torrents.

Regarding the input of different layers with different scales, they were compared to their scale in relation to the purpose of the study and were reclassified for overlapping operations. The purpose of the integration of maps is to identify the places exposed to the risk of flood. The dimensions of each pixel in the output map resulting from the integration of the maps should be determined in proportion to the area of the study area. In this research, each pixel represents an area of 100 square meters.

After the weighing overlapping process, the flood hazard zonation map was prepared in Zahedan. The results from the final flood hazard zonation map indicate that about 1% of urban areas are located in the very high-risk zone, 17% in the relatively high-risk zone, 42% in the normal range, 28% in Low-risk area and 12% are in the extremely low-risk zone. Therefore, considering the effective role of structural, environmental and climatic factors in the urban flooding areas, the most vulnerable parts of the city were identified against the risk of flood risk. These areas include the end of the streets of Maradqoli and Razmjomqadam, as well as the beginning of the streets of Imam Khomeini, Saadi and a large part of Shahid Rajaee Street.

Conclusion

The excessive development of the city on the alluvial plain and the reduction of the permeable surface by urban surface extension have led to flood risk. This has caused urban texture vulnerability to this environmental hazard.

Most of the most vulnerable urban flood areas are located in the end parts of the city and has been largely eliminated in the eastern and southeastern parts of the city due to the construction of flood bands and structural plains. The densely populated areas of the city with a population density of over 200 people are most likely to be found on low-value land located on the floodways and torrents. The regions of the eastern part of the city are more vulnerable to floods. Also according to the low price of land and population density in the eastern half of the city, vulnerability in this part of the city is more pronounced. Structural, managerial and educational proceedings to reduce the effects of the urban flood are essential and inevitable.

Keywords: Flood, Environmental Hazards, Zahedan, Urban development, GIS.

References

- Abil, A (2015). Relationship between the risks of urban flooding and structural and environmental factors (Case study: Zahedan city), M.s.c in Environmental Hazrards, University of Sistan and Baluchestan.
- Ahmad Zadeh, H, Said Abadi, S, Nouri, E (2015). A Study and Zoning of the Areas Prone to Flooding with an Emphasis on Urban Floods (Case Study: City of Maku). Hydrogeomorphology Journal , 1(2), 1-24.
- Amir Ahmadi,A,Keramati,S, Ahamadi,T (2011). Flood risk micro- zoning in the city of Neyshabur regared to urban development, Research in Urban Planning Journal, 2(7), 91-110.
- Asgharpour,M.J (1998). Multi-criteria decision making,Univrsity of Tehran Press, 398p.
- Azar,A,Memarian,A (1995). AHP New Technique for Group Decision Making,Management Khnoledge Journal,27, 28: 22-32.
- Bhattacharya, N (2010). Flood Risk assessment in Barcelonnette, France. Master of science thysis,International institute for geo-information science and earth observation enschede (ITC), University of Twente, Netherlands.91p.
- Correa, E.N., M.G. Saraiva, F.N. Silva and I.Romos (1999). Floodplain Management in urban Development Area, Part II, GIS-Based Flood Analysis & Urban Growth Modeling. Water Resources Management, 13, PP.23-37.
- Ekhtesasi,M.R,Sepeher,A (2011). Methods and models for assessing and providing a desertification plan,Yazd University Press, 288p.
- Eshghizadeh, M, Nora, N, Sepeher, A (2000). Spatial assessment of suitable areas for collecting water potential in a water catchment area system (Case study: Gonabad catchment area), Journal of Water and Soil Conservation,7(2),36-45.
- Farajzadeh, M (2013). Iran's Climatic Hazards, Samt Publication, 216p.
- Ghanavati,E,Karam,A,Alijani,M (2012). Assessment and zoning of flood risk in the Farahzad basin of Tehran using fuzzy model, Journal of Geography and Environmental Planning,23(4),121-138.
- Ghodousi Pour,H.(2011). Analytical Hierarchy Process, Amir Kabir University of Technology Publications,224p.
- Ghohroudi Tali,M ,Majidi Heravi,A,Abdoli,E,(2016).Vulnerability of Urban Flooding Case Study: Tehran, Darake to Kan, Journal of Geography and Environmental Hazards,5(17), 21-35.
- Ghohroudi Tali,M(2013), Vulnerability of railway in northern Lut Plain against floods, Journal of Geography and Environmental Hazards,1(2),1-18.
- Khosravi,M,(1992). The impact of urban development in increasing the intensity of urban flood, Case study :Zahedan City,Proceeding of 8th Congress of Iranian Geographers,University of Isfahan,Iran,2: 246-269.
- Liang, S., and C. R. C. Mohanty (1997). Optimization of GIS-Based Flood Hazard ZoningA Case Study at the Mahanady Command Area in Cuttack District, Orrisa, India. Journal of Chinese Soil and Water Conservation 28(1),11-20.

- Liang, S., and C.R.C. Mohanty, (1997). "Optimization of GIS-Based Flood Hazard Zoning-A Case Study at the Mahanady Command Area in Cuttack District,Orrisa, India", Journal of Chinese Soil and Water Conservation 28 (1), 1-20.
- Negaresh,H,Daraie,M (2009). Expansion of the city of Saqez and its effects on the flooding of Cham Saghez drainage basin,Journal of Applied researches in Geographical Sciences,11(14),145-165
- Plat,E.G(2002).Flood risk and flood management, Journal of hydrology 267(1-2),PP.2-11.
- Rashid, H (2011). Interpreting flood disasters and flood hazard precipitation from newspaper discourse: Tale of two floods in Red River Valley, Manitoba, Canada, Applied Geography, 31, 35-45.
- Saati,T.E,(2002). AHP Decision Making, Translated by: Tofigh, A.A, Iranian Center for Industrial Research and Training,354p
- Sadeghlou,T,Sajasi Ghidari,H (2014). Flood hazard management strategies in rural area by SWOC-TOPSIS technique (Case study: Ghare- chai river basin of Ramyan province), Journal of Geography and Environmental Hazards, 3(4), 105-128.
- Satty, T (1980). The Analytical Hierarchical Process, Planning, Priority Setting, Resource Allocation, New York, McGraw-Hill, 287p
- Sepher,A,Kavian, R(2014). Classifying Sustainability of Mashhad Urban Regions to Environmental Hazards Using SIMUS Linear Programming, Journal of Geography & Environmental Hazards, 3(9):125-141
- Taghvaie,M,Ghafari,S.R(2003) Prioritization in Rural Settlements by AHP (Case Study: Bazoft Village), Journal of Humanities University of Isfahan, 20(1), 47-74
- Taheri,M.R.(2009). Use of GIS in controlling urban flood,Jihad Daneshgahi Press, PP. 5-8
- The International Disaster Database (EM-DAT), 2016. -http://www.emdat.be/about.
- Winnaar, G. De, Jewitt, G.P.W, and Horan, M (2007). A GIS-based approach for identifying potential runoff harvesting sites in the Thukela River basin,South Africa. Physics and Chemistry of the Earth, 32,1058-1067.

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Modeling the Spatial Changes of Zagros Forests Using Satellite Imagery and LCM Model (Case study: Bastam, Selseleh)

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Introduction

During the last decades, the decrement of forest areas has come to attention in regional and global scales. Understanding the volume and extent of forest changes is necessary for better management, sustainable conservation and preventing forest resources from further destruction. To understand these changes, one known approach is to use satellite imagery and spatial models. Satellite imagery can play a key role in mapping and predicting changes at forest level due to the vast coverage, high speed, lower cost and repeatability in collecting relevant data. Spatial models can also be used to model the spatial pattern of forest degradation. The Land Change Modeler (LCM) is capable of creating different land degradation scenarios by integrating biological, physical, and socioeconomic factors. This model calculates the transmission potential between different land use/land cover based on Artificial Neural Network and Logistic Regression methods. Artificial Neural Networks are basic elements of artificial intelligence, and recently they have been applied simultaneously with the Markov Chain model for the temporal and spatial modeling of changes at forest level. Present study aims to model the temporal and spatial changes of Zagros forests using Landsat satellite imagery, Artificial Neural Network and Markov chain modeling. In addition, the most important variables affecting the development of these changes will be identified in Bastam, Lorestan province.

Methods and Material

Land use maps for the years 1985, 2000, and 2015 were prepared using the Maximum Likelihood Classification and Landsat TM and OLI Sensors. Land use changes modeling was done, using LCM model based on Artificial Neural Network and 7 effective variables include altitude, proximity of the residential areas, slope, direction, proximity of the roads, proximity of the river and land use map. The land use map for the year 2015 was predicted using the Markov chain modeling method. To evaluate the accuracy of the results, the error matrix was formed between the predicted map and the ground reality map for mentioned year. After assuring the accuracy of predicted results by the model

through using the changes of the second period (2000-2015), the map of the changes for the year 2030 was predicted.

Results and Discussion

According to the results, the rate of annual forest degradation in the first, second and total period were 33.38, 23.23 and 25.73 hectares respectively, indicating a higher degradation in the first period (1985-2000). Land use change modeling showed the greatest reduction in the forest area and the highest increase in the agricultural land use. Due to the high unemployment rate among the rural people and the dependency of livelihoods on agriculture and animal husbandry, many forest lands around the villages have been disappeared over the past years and have converted to agricultural lands. Moreover, the results of this study revealed that altitude and distance from residential areas, with Cramer correlation coefficient 0.47 and 0.43, had the most effect on land use change and forest degradation. Due to the fact that in low altitudes, the vicinity of the people to forest lands is remarkable so that most of the villages are resided at low altitudes, the rate of change and destruction in these lands are higher than the other altitudes. The Kappa coefficient 0.89 was acquired by the comparison of the modeling map and the reality map in 2015.

Conclusion

Finally, according to the results of this research, it can be argued that the Landsat satellite imagery, Geographic Information System, and LCM model based on Artificial Neural Network can be a beneficial method to accurately predict the extent of forest degradation and model land use changes. Results indicated the greatest reduction in the forest land use area and the highest increase in the agriculture land use area. Investigating the potential transmission of different classes showed that the greatest potential transmission was attributed the conversion of forest to agricultural land. Furthermore, it was found that the highest rate of forest demolition occurred near the residential areas and at low altitudes. Therefore, it seems that enhancing the degree of monitoring in these areas, rising awareness about the importance of forests and change of the lifestyle in this region can help to reduce the further forest degradation.

Keywords: Deforestation, Artificial Neural Network, LCM model, Markov chain, Landsat images.

References

- Azizi Ghalati, S., Rangzan, K., Sadidy, J., Heydarian, P., & Taghizadeh, A (2016). Predicting locational trend of land use changes using CA-Markov Model (Case study: Kohmare Sorkhi, Fars province). Journal of RS and GIS for Natural Resources. 7(1): 59-71.
- Azizi Ghalati, S., Rangzan, K., Taghizadeh, A., & Ahmadi, S (2014). LCM Logistic regression modelling of land-use changes in Kouhmare Sorkhi, Fars province. Iranian Journal of Forest and Poplar Research, 22(4): 585-596.
- Basse, R.M., Omrani, H., Charif, O., Gerber, P., & Bodis, K (2014). Land use changes modeling using advanced methods: Cellular automata and artificial neural networks. The spatial and explicit representation of land cover dynamics at the cross-border region scale. Applied Geography, 53:160-171.
- Bax, V., Francesconi, W., & Quintero, M (2016). Spatial modeling of deforestation processes in the Central Peruvian Amazon. Journal for Nature Conservation, 29: 79-88.

- Khoi, D.D., & Y, Murayama (2011). Modeling Deforestation Using a Neural Network-Markov Model. Spatial Analysis and Modeling in Geographical Transformation Process, 169-190.
- Koranteng, A., & Niedzwiecki, T. Z (2015). Modelling forest loss and other land use change dynamics in Ashanti Region of Ghana, Folia Forestalia Polonica, 57(2): 96-111.
- Linkie, M., Smith, R. J., & Leader Williams, N (2004). Mapping and predicting deforestation patterns in the lowlands of Sumatra. Biodiversity and Coservation, 13 1809-1818.
- Merten, B, & Lambin, F. E (1997). Spatial modeling of tropical deforestation in southern Cameroon: Spatial disaggregation of diverse deforestation processes. Applied Geography, 17, 143-162.
- Mirzaei zadeh, V., & Mahdavi, A (2016). .Geographic Space. 15(52): 75-96.
- Multipurpose forestry plan of Kakareza basin (2015). Department of Natural Resources of Lorestan Province, Jahade Sabz Consulting Engineers. 108 p.
- Parma, R., Maleknia, R., Shataee, Sh., & Naghavi, H (2017). Land Cover Change Modeling based on Artificial Neural Networks and transmission potential method in LCM (Case: Forests Gilan-e Gharb, Kermanshah Province). Town & Country Planning. 9(1): 129-151.
- -Quintero, G.V., Moreno, R.S., García, M.P., Guerrero, F.V., Alvarez, C.P., & Alvarez, A.P (2016). Detection and projection of forest changes by using the Markov Chain Model and cellular automata. Sustainability, 8(236), 1-13.
- Schneider, L. C., & Pontius, R. G (2001). Modeling land-use change in the Ipswich watershed, Massachusetts, USA. Agriculture, Ecosystems & Environment, 85(1), 83-94.
- Shojaeeian, A., Mokhtari Chelche, S., Keshtkar, L., & Soleymani rad, E (2015). Comparing the Performance of Parametric and Nonparametric Methods in Land Cover Classification using Landsat-8 Satellite Images (Case study: A part of Dezful city). Geographical Data. 24(93): 53-64.
- Sudhakar Reddy, C., Jha, C. S., Dadhwal, V. K., Hari Krishna, P., Vazeed Pasha, S., Satish, K.V., Dutta. K., Saranya, K.R.L., Rakesh, F., Rajashekar, G., & Diwakar, P.G (2016). Quantification and monitoring of deforestation in India over eight decades (1930–2013), Biodivers Conservation, 25: 93-116.
- Sudhakar Reddy, C., Singh, S., Dadhwal, V.K., Jha, C.S., Rao, N.R., & Diwakar, P.G (2017). Predictive modeling of the spatial pattern of past and feature forest cover changes in India. Earth system Science, 126(8):1-16.
- Taheri, M., Gholamalifard, M., Riahi Bakhtiari, A., & Rahimgholi, Sh (2014). Land Cover Changes Modeling of Tabriz Township Using Artificial Neural Network and Markov Chain. Physical Geography Research. 45(4): 97-121.
- Vafaei, S., Darvishsefat, A.A., & Pir Bavaghar, M (2014). Monitoring and predicting land use changes using LCM module (Case study: Marivan region). Iranian Journal of Forest. 5(3): 323-336.
- Yaghoub Zadeh, B (2014). Climate analysis of Aleshtar region, Selseleh division, Lorestan. Proceedings of the Meteorological Services of Lorestan Province. 1-17.

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Assessing the Attitudes of Residents of Rural Areas to the Development of Second Homes Case Study: Villages around the city of Sabzevar

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Introduction

In the present article, we seek to answer the question of how local residents are essentially resettled with residential property preferences of second homeowners? And how do second-house homeowners make locals accountable for what they want? As stated, local residents are looking for rural development and are thinking of increasing economic growth and improving the level of individual and social life. In contrast, the owners of the second homes have a great interest in preserving the natural and traditional quality of the countryside and are pursuing the ideal of living in the city, somewhat scarce. Obviously, what is also highlighted in many studies of 5secondary homes -can not simultaneously combine dwelling preferences for rural development and village preservation (the disagreement between local residents and the owners of second homes) . Although the authority and credibility of this dual theorem has been proven in many studies and can be generalized to other rural settlements, it does not apply to villages around Sabzevar, at least. In fact, the ownership and use of second homes in this case can not be attributed to the dual cuts of a city / village or city / suburb. Because the owners of the second homes often have local roots and are from the villagers who migrated to the city and linked with their hometowns and relatives, they have been making or buying second homes in their area.

Methods and Material

The method of this study is qualitative and its purpose is applied. Data collection has been extracted from semi-structured and in-depth interviews from 40 local residents. The participants were selected through homogeneous purposeful sampling and interviewed randomly (selecting a sample of similar cases and those with the same characteristics). The topics of the interviews were formed in the form of the following questions: 1) Express your opinion on the level of social participation of the owners of the second homes in the local community; 2) What role do you think the council and the local departments have in the development / development of second homes In this area how they handle second homes; (3) express your opinion on the expansion of second homes in this area; and (4) what kind of rural landscape is pleasant to you, and What should be the future of rural development (of course, for moral obligatiions , the participants will not be named) The texts were manually coded.

Discussion and Results

The results show that while village development and village conservation are two completely conflicting categories, studies have been combined. Local residents have committed their moral commitment to maximizing the utility of the rural environment to exploit the owners of second homes. local residents and second homes owners in Sabzevar have shared their content and preferences of their Nimbyism (development and protection of the rural) parallel to each other and are interdependent: an attempt to improve the quality of the residential environment, return the past faces of the village and the survival and revival of local values and traditions.

Local residents have concluded that one of the prerequisites for the survival of the economic and social life of rural settlements is the expansion of second homes and the interaction with urban people; the proximity to second homes makes valuable opportunities (economic, material, and Social) for the host community. Because they believed that there were many problems and deficiencies in terms of economics and infrastructure. More importantly, the number of inhabitants of the villages in the region, especially the youth, is decreasing daily and migrating to the city; if the situation continues, the village becomes a nursing home. Today, with the construction of villa houses, and second homes, once again, people returned to their native land, the village flourished, and the vitality and life expectancy survived among the villagers.

Conclusion

Forstad and Ray (2013). Argue that in countries where their villages have fragile economies and face declining populations, It is expected that local residents in some way will be caught up in the face of gaining economic opportunities with the residents' preferences and the consequences of their lives, and will endure irregularities. They come up with some kind of compulsion and will endure irregularities. In such cases, the villagers are turning to conservatism and their eyes are closed to the differences and differences that they have in common; in that sense, as long as they can, the opportunities created by the expansion of the second home But still have problems with it. Forrestad (2011) argues that where local residents are pessimistic about second homes, they expect the owners of the second homes to help the village and local residents without having any eyes and hopes of someone. It should be noted that in the case of Sabzevar villages it is somewhat different, as it was said that local residents first of all have ensured the authenticity of urban residents and are sure that all their efforts will be made for the development and prosperity of the village, This has been the case, and men of descent and compassion have been working, and by building second homes have revived hope in the heart of the villages of the region. Instead, the local residents have provided a safe and relaxed environment recreation of the people of the city. Although there are heavy invasion against second homes, some areas still have the capacity to expand second homes without challenges and free of any damage. Therefore, identifying the distinct geographic, cultural and social aspects of the development of second homes in developmental policies is essential.

Keywords: Local residents, Rural perspectives, Interests, Second homes tourism, Sabzevar.

References

- Afshar, Z (2014). The rural guide plan how the constructions involved? According to "Iran" from the effects of land use change on rural development, Iran Newspaper, No. 5752.
- Amar, T (2006). Investigation and analysis of second homes in rural areas (Case Study: Khorgam district, Roodbar county), Journal of geographical landscape, 1(1), 65-78.
- Anabestani, AK (2009). Physical Impacts of second homes on development of rural settlements, Journal of rural and Development, 12(4), 149-166.
- Dadvarkhani, F., Zamani, H., Ghadiri Masoum, M., & Ashery, I (2013). The role of second homes tourism in physical changes rural areas (Case Study: Baraghan Dehestan, Savojbolagh county), Journal of Rural research, 9(5), 277-299.
- Einali, J., & Roumiyani, A (2013). The financial investment in rural development with emphasis on second homes tourism, Case Study: Buin Zahra County, Journal of Space Economics and Rural Development, 3(7), 75-91.
- Fazelnia, Gh., Kiyani, A., & Ramezandadeh Lasbouyi, M (2011). Analyzing the effect of second homes on the structure of the host community in terms of tourist (case study Barseh, Tonekabon county), Journal of the geographical landscape in Human Studies, 6(12), 102-119.
- Fesharaki, P (1994). general rural geography, Payam Noor University, Tehran.
- Firooznia Gh, Rokneddin Eftekhari, AR., & Valikhani, M (2011). The consequences of constructions (second homes) in rural areas: Tarroud, of Damavand County, Journal of Geography, 9(31), 149-170.
- Hosseini Abari, SH (2001). Entry on rural geography of Iran, Isfahan University, Isfahan.
- Malekshahi, GR,& Hoseynian, S Z(2014).The role of tourism in economic change & environmental second homes (Case Study:of Chelav,Amol),Journal of Urban Planning,2(8),133-148.
- Ramezandadeh Lasbouyi M, Rezvani, MR., & Akbarpoor, M (2015). Analysis of the environmental impacts of second home tourism from the perspective of the host community and visitors, Journal of Human Geography Research, 47(4), 625-643.
- Rezvani MR., Akbariyan, MR., Rokneddin eftekhari, AR., & Badri, SA(2011). Comparative analysis of the economic impacts of tourism and second homes with daily tourism on rural areas with a view to sustainable development (Case Study: Shemiranat County, Tehran province), Journal of Rural research, 2(4), 35-62.
- Rezvani MR., Badri SA., Sepahvand F., & Akbariyan Ronizi, SR (2012). Second home tourism and its impact on improving the quality of life for rural residents (Case Study: Roodbar of Qasran, Shemiranat county), Journal of Urban and Regional Studies and Research, 4(13), 23-40.
- Rezvani MR., Safaei, MJ (2005). Second home tourism and its impact on rural areas: opportunity or threat,Case Study:Tehran northern rural areas,Journal of Geographical Research,37(54),109-122.
- Rezvani, MR (2003). reviews the development of second homes in rural areas of north Tehran, Geographical research, 45 Issue, 59-73.
- Tabasi, A (2015). Paradise Peaks resort rural ecotourism West Khorasan Razavi: Tabshan, the official website of Tabas rural. http://www.tabasvillage.ir/site.
- Ziaee, M., & Salehi nasab, Z (2008). Second home typology and Physical Impact on Rural Areas (Case Study:Roodbar of Qasran),Journal of Human Geography(Geographical Research),40(66),71 84.

- Alipour, H., Olya, H. G., Hassanzadeh, B., & Rezapouraghdam, H. (2017). Second home tourism impact and governance: Evidence from the Caspian Sea region of Iran. Ocean & Coastal Management, 136, 165-176.
- Bell, M. M. (2007). The two-ness of rural life and the ends of rural scholarship. Journal of rural studies, 23(4), 402-415.
- Brannen, J. (2005). Mixing methods: The entry of qualitative and quantitative approaches into the research process. International journal of social research methodology, 8(3), 173-184.
- Brewer, D. D., Garrett, S. B., & Rinaldi, G. (2002). Free-listed items are effective cues for eliciting additional items in semantic domains. Applied Cognitive Psychology, 16(3), 343-358.
- Bunce, M. (2003). Reproducing rural idylls. Country visions, 14-30.
- Bunce, M. F., & Bunce, M. (1994). The countryside ideal: Anglo-American images of landscape. Psychology Press.
- Duenckmann, F. (2010). The village in the mind: applying Q-methodology to re-constructing constructions of rurality. Journal of Rural Studies, 26(3), 284-295.
- Farstad, M. (2011). Rural residents' opinions about second home owners' pursuit of own interests in the host community.Norsk Geografisk Tidsskrift-Norwegian Journal of Geography,65(3),165-174.
- Farstad, M., & Rye, J. F. (2013). Second home owners, locals and their perspectives on rural development. Journal of Rural Studies,30,41-51.
- Fish, R., Phillips, M. (1997). Explorations in media country: political economic moments in British rural television drama. In third British French Rural Geography Symposium, Nantes, September.
- Flyvbjerg, B. (2004). Phronetic planning research: Theoretical and methodological reflections. Planning Theory & Practice, 5(3), 283-306.
- Halfacree, K. (2007). Trial by space for a 'radical rural': Introducing alternative localities, representations and lives. Journal of rural studies, 23(2), 125-141.
- Halfacree, K. H. (1993). Locality and social representation: space, discourse and alternative definitions of the rural. Journal of rural studies, 9(1), 23-37.
- Hall, C. M. (2005). Tourism: Rethinking the social science of mobility. Pearson Education.
- Ilbery, B., & Bowler, I. (1998). From agricultural productivism to post-productivism (PP.57-84). Addison Wesley Longman Ltd.
- Jaakson, R (1986). Second-home domestic tourism.Annals of tourism research,13(3),367-391.
- Jackson, P. (2001). Making sense of qualitative data. Qualitative methodologies for geographers: Issues and debates, 199-214.
- Jeong, J. S., García-Moruno, L., Hernández-Blanco, J., & Jaraíz-Cabanillas, F. J. (2014). An operational method to supporting siting decisions for sustainable rural second home planning in ecotourism sites. Land use policy, 41, 550-560.
- Jones, O (1995). Lay discourses of the rural: developments and implications for rural studies. Journal of rural studies, 11(1), 35-49.
- Leitner, S., & Lessenich, S (2003). Assessing welfare state change: the German social insurance state between reciprocity &solidarity. Journal of Public Policy, 23(03), 325-347.
- Malmsten, J (2004). Maaseutu mediassa. Maaseudun uusi aika, 1(2004), 5-19.
- Marjavaara, R (2008). Second home tourism: The root to displacement in Sweden?. Doctoral dissertation, GERUM 2008:1, Umeå University, Umeå.

- Marsden, T (1999). Rural futures: the consumption countryside and its regulation. Sociologia ruralis, 39(4), 501-526.
- Müller, D. K (2002). Reinventing the countryside: German second-home owners in Southern Sweden. Current Issues in Tourism, 5(5), 426-446.
- Müller, D. K., Hall, C. M., & Keen, D (2004). Second home tourism impact, planning and management. Tourism, mobility and second homes: Between elite landscape and common ground, 15-32.
- Murdoch, J., & Pratt, A. C (1997). From the power of topography to the topography of power. Contested countryside cultures: otherness, marginalisation and rurality, Routledge, London, 51-69.
- Murdoch,J & Marsden, T (1994). Reconstituting rurality UCL Press.
- Overvåg, K. (2011). Second homes: Migration or circulation? Norsk Geografisk Tidsskrift-Norwegian Journal of Geography,65(3),154-164.
- Overvåg, K., & Berg, N. G (2011). Second homes, rurality and contested space in Eastern Norway. Tourism Geographies, 13(3), 417-442.
- Paris, C. (2014). Critical commentary: second homes. Annals of Leisure Research, 17(1), 4-9.
- Perkins, H.C(2006). Commodification:re-resourcing rural areas.Handbook of rural studies,243-257.
- Phillips, M. (1998). Investigations of the British rural middle classes-Part 1: From legislation to interpretation. Journal of rural studies, 14(4), 411-425.
- Ryan, G. W.& Bernard, H. R. (2003). Techniques to identify themes. Field methods, 15(1), 85-109.
- Ritchie, J., Spencer, L., & O'Connor, W. (2003). Carrying out qualitative analysis. Qualitative research practice: A guide for social science students and researchers, 219-262.
- Rye, J. F. (2011). Conflicts and contestations. Rural populations' perspectives on the second homes phenomenon. Journal of Rural Studies, 27(3), 263-274.
- Rye, J. F., & Gunnerud Berg, N. (2011). The second home phenomenon and Norwegian rurality. Norsk Geografisk Tidsskrift-Norwegian Journal of Geography, 65(3), 126-136.
- Saunders, M.N.K., Lewis, P., Thornhill, A (2003). Research Methods for Business Students, third ed. Financial Times Prentice Hall, London.
- Stemler, S. (2001). An overview of content analysis. Practical assessment, research & evaluation, 7(17), 137-146.
- Van Dam, F., Heins, S., & Elbersen, B. S. (2002). Lay discourses of the rural and stated and revealed preferences for rural living. Some evidence of the existence of a rural idyll in the Netherlands. Journal of Rural Studies, 18(4), 461-476.
- Wolfe, R. I (1977). Summer cottages in Ontario: Purpose-built for an inessential purpose. Second homes: Curse or blessing, 17-34.

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Investigation of the Relationship Between Land Use Changes and Land Surface Temperature Using Satellite Imagery (Case Study: Marivan city)

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Introduction

Rapid changes in the use of land cover in urban areas have become a major environmental concern and have caused many environmental issues, including the reduction of green space and the development of the heat Island (Amiri et al, 2009: 2610). Land surface temperature (LST) is an important factor in global warming studies and as a factor for climate change. LST also is one of the important parameters in the study of the thermal environment and the urban heat island.

The use of remote sensing data to estimate LST greatly reduces the cost of estimating the temperature rather than the using of direct measurement in climate station. Remotely – sensed urban heat island using satellite images shows different features rather than those measured directly.) M. Roth and T.R.OKE1989; Amiri et al., 2009: 2610; Ghorban Nia Khiabari et al. 2016). Some studied were conducted to estimate spatial pattern of impervious surfaces and the green space and their impacts on land surface temperature. The results of these studies showed that in areas where vegetation cover has decreased or the human population has increased, the heat islands have increased. (Efat et al. 2014; Weng, Q et al. 2004; Ronald et al.2017).

Also, in Iran, concerns about the potential impacts of land use change and climate change and their relations to increasing environmental hazards in recent years have led to many studies on the relationship between land surface temperature and land use change using satellite imagery. Amiri et al , 2007; Ghorbannai khabiri et al. 2016; Akhondzadeh et al.2008; Mazidi et al. 2015; Khosravi ae al. 2017 ; meyjani et al. 2016) . The results of this research show that with the increase in the areas of the building and the reduction of vegetation, the extent of the heat island spread over the cities. Also, this research showed that the thermal properties of the land surface temperature and its patterns can be identified through the type of land use.

The purpose of this study is to investigate the effects of land use change on land surface temperature using Landsat satellite imagery over a 33-year period. Considering the high environmental

importance of this area and the reliance of the people of Marivan city on exploitation of natural resources, agriculture and livestock, The results of this research can be useful in planning the development of this region and emphasize the necessity of considering the consequences of land use change, the importance of using modern technologies and remote sensing data in environmental planning.

Methods and Materials

-Study area

Marivan city is geographically located at 35 ° 30'N North latitude and 46 ° 25'E East longitude. The average height is about 1320 meters above sea level. According to the census of 2016, the population of this city is 195,263, the third largest city in the province of Kurdistan. (Statistical Center of Iran, 76: 1395). Marivan has an average rainfall of 450 mm and a relative humidity of 70%, with an area of 2326.5 km^2.

-Input Data

To calculate the LST in 1984 and 2000, the thermal bands of Landsat 5 and 7 was used, as well as Landsat 8 thermal bands for the 2017 image. To mapping the land use in the studied area, all bands of images without thermal and panchromatic bands have used.

Methodology

In this study, land surface temperature maps were prepared using SEBAL algorithm and thermal bands. Then, in order to study the land use change, land use map of Marivan city was prepared during the study period and land use changes was investigated during the studied period Then, in order to determine the relationship of land use changes with land surface temperature, the maximum temperature of each land use was extracted in ARCIGIS10.4 software and then the level of land surface temperature changes in each land use during the studied period was investigated.

Results and Discussion

In this study, After applying the maximum likelihood classification algorithm, the classification accuracy (Table 2)was evaluated (Tilahun et al., 2015: 197; Sophia et al., 2017: 617; Megahed et al, 2015: 1756, Kiani et al., 20014: 59). In this study, land use changes in four classes of surface water, built up areas, bare lands, agricultural lands and vegetation (rangeland and forest) were investigated. Then, the changes of each user were determined and the relationship between the temperature of the surface of the earth and each user was determined by extracting the maximum temperature of each landuse in each period. investigating the area of landuse during the studied period shows that vegetation class during 33 years (1984-2017) decreased by 369.33 square km and the land use of built up areas, Bare land and water bodies was increase to 449.01, 105.44, 87.01, and the agricultural lands has been reduced by about 272,12 square kilometers during this period. Also, the study of land surface temperature maps in Marivan city during the 33-year period (1984-2017) shows that the temperature of this area has increased by 5 degrees Celsius. One of the reasons for increasing the land surface temperature in this area is to reduce the vegetation and increase the built up and bare lands, so by examining the maximum temperature in these classes it is determined that the temperature of the vegetation class during the studied period was increased about 7.05 degrees

Celsius and also This increase in temperature was also observed in two classes of built up and bare lands, and the temperatures of these classes increased by 5 and 4/51 ° C, respectively, which this shows the effect of the changes in the vegetation , built up and bare lands on the increase in land surface temperature.

Conclusion

The purpose of this study was to determine the relationship between land use change and land surface temperature. The results show that there are an increasing trend in built up and barren land areas and a decreasing trend in vegetation area. The SEBAL algorithm was also used to extract land surface temperature, which shows that the temperature has increased in all classes of land covers. According to the synoptic station data in Marivan, the maximum temperature in 1984, 2000, and 2017 were 28, 31.8, and 32.2, respectively, which, as compared with the values obtained from LST, shows the results of the trend increase temperature. Also, the results of this study indicate that with increasing population, the area of built up lands increased during the studied periods and the increase in construction had a negative effect on the vegetation around the city, which is one of the reasons for increasing the temperature in the vegetation cover. On the other hand, due to the increase in bare lands and the deterioration of agricultural land during the study period, there may be a decline in the economic benefits to farmers, the mountainous situation and the gravity, the fragmentation of agricultural land and the lack of fertile soil, especially at altitudes, which led to many This agricultural lands is converted from bare lands, which is one of the reasons for increasing temperature in agricultural and bare lands.in generally the results of this study show the relationship between land use changes in increasing land surface temperature.

Keywords: Land surface temperature, Land use, Marivan city, SEBAL, Satellite images, Landsat.

Reference

- Amiri R., Alimehdi, A., Alavipanah, S. K (2008). Study of spatio-temporal variation of heat in relation to land use / coverage in urban area of Tabriz using thermal and reflection data of TM and + ETM Landsat, Journal of environmental studies, 43, 107-120.
- Amiri, R, Weng, Q, Alimohammadi, A, Alavipanah, S K (2009). Spatial–temporal dynamics of land surface temperature in relation to fractional vegetation cover and land use/cover in the Tabriz urban area, Iran. Remote sensing of environment, 113(12), 2606-2617.
- Abdolahi, J., Cheraqi, M. A., Rahimian, M. H (2009). Comparison of Environmental Impacts of Land Use Change on Vegetation Change and Surface Temperature in Urban and Non-Urban Areas by Using Outcome Measurement, Journal of environmental studies, 34(45), 85-96.
- Adel Effat, H, Abdel Kader, O (2014). Change detection of urban heat islands and somere lated parameters using multi-temporal Landsat images; a case study for Cairo city, journal of Urban Climate, 10, 171-188.
- Akhondzadeh, M, Sarajyan, M. R (2008). Application of Terra-ASTER satellite images in thermal island display in urban areas, The 2nd natural disaster conference, the scientific pole of engineering and natural disaster management, Technical College, university of Tehran, 15 p.
- Artis, D A, Carnahan, W (1982). Survey of emissivity variability in thermography of urban areas. Remote Sensing of Environment 12(4), 313-329.

- Arekhi, S., Niyaz, Y (2011). Assessing different remote sensing techniques to detect land use changes (Case study in Dareshahr, Ilam province), Iranian journal Rangeland and desert research, 17(1), 74-93.
- Arekhi, S., Niazi, Y., Shabani, A (2012). Evaluating Spatial Pattern of Changes Trend of Landuse/landcover with use of Transformation Techniques (Case Study: Dareshar Catchment, Ilam Province), journal of Geo graphic space, 12 (38), 165-182.
- Alavipanah,S.K(2007).Thermal remote sensing, second edition, university of Tehran press,Tehran, Iran.
- Alavipanah, S. K., Matinfar, H. R., Rafiei Emam, A (2009). The application of information technology in the earth sciences, first edition, university of Tehran press, Tehran, Iran.
- AlizadehRabiei, H (2013). remote sensing (principle and application),12th edition, Samt publication, Tehran, Iran.
- Chavez, P. S (1996).Image-based atmospheric correction- revisited and improved. Photogrammetric Engineering and remote sensing, 62(9). 1025-1036.
- Eosifi, S., Moradi, H. R., Hosseini, S. H., Merzaei, S (2012). Monitoring land use changes in Marivan city using TM and ETM+, Journal of RS & GIS in natural resource, 2(3), 97-105.
- Fayzi Zaheh, B., Haji Mir Rahimi., S. M (2009). land use change detection in the Andesheh city in Tabriz Using Objective Classification Method, Geometric Conference, 10 p.
- Hashemi, S. M., Alavipanah, S. K., Dinarvandi, M (2013). LST assessment using thermal remote sensing in urban environment, Journal of environmental studies, 39(1), 81-92.
- Iran's Statistics Center (2016). Census of Population, https://www.amar.org.ir
- Iran Meteorological Organization, climatic data, https://www.irimo.ir
- Kiani, O, Alizadeh Shabani, A, Nazari Samani, A (2014). Assessing the IRS-P6 satellite image classification accuracy using the Google Earth database to provide land cover / land map (A case study: Taleghan watershed), Journal of Geographic Information (Sepehr), 23(90), 50-59.
- Landsat Project Science Office (2002). Landsat 7 Science Data User's Handbook. Available online from following website: http://ltpwww.gsfc.nasa.gov/IAS/handbook/handbook_toc. Html, Goddard Spa. Flight Center, NASA, Washington, 1-186.
- Landsat 8 (L8) Data users Handbook (2016). Approved by: K. Zanter, LSDS CCB Chair, USGS, version2.0, 22 March 2016, 1-98.
- Lillesand, T, Kiefer, R W (1987). Remote sensing and Remote Sensing and Image Interpretation, 7th Edition, John Willy and sons, New York.
- Lu, D, Weng, Q (2006). Spectral mixture analysis of ASTER images for examining the relationship between urban thermal features and biophysical descriptors in Indianapolis, Indiana, USA. Remote Sensing of Environment, 104(2): 157-167.
- Megahed, Y, Cabral,P, Silva, J, Caetano, M (2015). Land Cover Mapping Analysis and Urban Growth Modelling Using Remote Sensing Techniques in Greater Cairo Region-Egypt, International Journal ofGeo-Information, 2015, 4, 1750-1769.
- Mather, P (2001). Classification methods for remotely sensed Data, Taylor& Francis publisher, First Edition, London,
- Nonomura, A, Kitahara, M, Masuda T (2009). Impact of land use and land cover changes on the ambient temperature in a middle scale city, Takamatsu, in Southwest Japan. Journal of environmental management, 90(11), 3297-3304.

- Owen, T W, Carlson, T N, Gillies, R (1998). an assessment of satellite remotely-sensed land cover parameters in quantitatively describing the climatic effect of urbanization. International Journal of Remote Sensing, 19(9):1663-1681.
- Peernazar, M., Zandkarimi, A (2015). ENVI Software User's Guide to Satellite Image Processing, first edition, Naghos publication, Tehran, Iran.
- Ramezani, B, Dokhtmohammad, S. M (2011). Recognition of the spatial boundary of the formation of thermal island in Rasht, Geographical Urban Planning Research, 1(1), 49-64.
- Ramezani, B, Mohammadi, M (2011). The Recognition of Urban Heat Island in Rasht City, journal of physical geography, 3(10), 111-125.
- Rasouli, A. A (2009). Principles of applied remote sensing, first edition,Tabriz university press, Tehran, Iran.
- Richards. J. A., Xiuping. J (2006). Remote sensing Digital Image Analysis, An Introduction, chapter 9, 4th Edition, Springer.
- Roth, M, Oke, T R, Emery, W (1989). Satellite derived urban heat islands from three coastal cities and the utilization of such data in urban climatology. International Journal of Remote Sensing, 10(11), 1699-1720.
- Ronald, C, Estoque, M, Yuji, M, S W (2017). Effects of landscape composition and pattern on land surface temperature: An urban heat island study in the megacities of Southeast Asia, National Library of Medicine, U.S, 15(577), 349-359.
- Sophia, S, Rwanga, Ndambuki, J, M (2017). Accuracy Assessment of Land Use/Land Cover Classification Using Remote Sensing & GIS, International Journal of Geosciences,2017,8,611-622.
- Sobrino, J A, Jiménez- Munoz, J C, Paolinib, L (2004). Land surface temperature retrieval from landsat TM ,Remote Sensing of Environment, 90, 434-440.

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Analysis of Spatio-Temporal Changes of the Boundary Layer Height Based on Output European Centre for Medium-Range Weather Forecasts (ECMWF) in Iran

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Introduction

The boundary layer is of great importance in terms of air quality and the processes of air and meteorology. The term "boundary layer" has been taken from the topic of fluid mechanics by the meteorologist's wisdom, whose research has focused on the lower airway. Some scholars have focused their attention on pilot studies of the boundary layer and its transformation on the Earth's surface. The height of the frontier is one of the most important components of the spreading of pollutants and the air quality of the layer near the ground. The boundary layer is defined as a layer of fluid (water or gas) that immediately lies adjacent to a material level and a significant exchange of momentum, heat, or mass occurs between the surface and the fluid. The boundary layer is formed due to the interaction between the atmosphere and its surface (ground or water) at a time scale of several hours to one day. The boundary layer, combined with a combination of mechanisms, provides human life by mixing and exchanging air as a fluid. Everything that occurs near the surface of the earth is more important in the planning and use of weather data. Layer height studies are widely used to better understand this part of the atmosphere for weather applications in urban pollution management, land use, and human well-being.

Methods and Material

In this study, the ERA-Interim version of the European Center for Medium-Range Weather Forecasts (ECMWF) was used to evaluate the Boundary Layer Height (BLH) over Iran. As mentioned, the ERA-Interim version of the ECMWF database was used to examine the height of the layer. The BLH data for the Iranian region was downloaded monthly from 1979 to 2015, with a spatial resolution of 0.125 × 0.125 degrees arc from the base database. Subsequently, using NcDump software, decoded data was obtained, resulting in arrays of dimensions of 9966 × 444.

Results and Discussion

Maximum height of the boundary layer in June and minimum height of the boundary layer occurs in January. Changes when the boundary layer of high impact tracks seasonal changes and circadian cycle takes. The variation pattern of the height of the layer is influenced by the condition of air and ground heating in different seasons and the elevation and roughness of the region. In cold weather, the thickness of the fringe is less and in the warmer days, the reverse is increased. The air temperature can be considered as the main factor in these changes in the height and thickness of the boundary layer. The higher the surface heating, the greater the thickness of the fringe, so there is a direct relationship between the air temperature and the thickness of the fringe. The pattern of spatial variations in the height of the border layer in the cold months is more coherent than the warm months of the year. The coastal and adjacent areas of the sea always have the lowest thickness of the boundary layer due to the role of sea moderation in the air temperature. In terms of spatial arrangement, the high and rugged areas of Zagros and coastal areas with the least thickness of the borderline and desert areas of the inner regions, especially in south-eastern Iran, are the thickness of the border layer at the highest level. In the cold months of the year, the highest elevation of the border layer in the southeast of Iran and in the hot years of the year, especially in June and July, is drawn to the western and southern Kerman and Northern provinces of Hormozgan. Throughout the year, the areas adjacent to the sea are the lowest point of the border layer due to the role of moderating the sea. In mid-spring until mid-summer, the height of the fringe height is the highest. From the west to the east and from north to south, the height of the border is increased. The highest point of the fringe height corresponds to the Barry and Desert areas and the desert with a warm and dry temperature regime.

Conclusion

The spatiotemporal changes in the height of the border layer over Iran have a vital effect on low circulation patterns, as well as its vertical patterns. Based on the prevailing physical processes, two levels of surface layer elevation can be identified for the country: 1. Coastal regions that provide a change in lake with sustainability in terms of dry indoor regions; 2. the lining of the inner desert areas with high instability. These regimes have vast geographic areas. In Iran, when the convergence belt affects the south eastern regions of the region, parts of these areas, especially in the Oman Sea region, are affected by the ITCZ system, which can be seen in the change of the height of the border layer. In the northern coastal areas and some of the southern coastal areas, especially in the Persian Gulf, which are cloudy, the height of the border is low. These low levels are related to the stable nature of these clouds (the thermodynamic structure associated with the type of cloud), so that in areas where the Cumulus clouds are more dominant than Stratocumulus clouds, one should see a lower depth of the boundary layer on one side and It was less seasonal and even daily change on the other. This can easily be seen in the monthly fluctuation of the lake height compared with the coastal areas of the north and south of the country.

Keywords: Boundary layer height (BLH), Changes in spatiotemporal boundary layer, ECMWF database, Version of the ERA-Interim, Iran.

References

- Darand, Mohammad; Soma Zand Karimi (2005). Detection of the temporal-spatial accuracy of the rainfall data base of the European Center for Mid-Range Forecasting (ECMWF) on Iran Land, Natural Geography Research. Period 47, No. 4. Pages 651-675.
- Fallah Ghalheri, Gholam Abbas (2004). The Wetlands, Hakim Sabzevari University Press, Sabzevar, P.403.
- Ahlgrimm, M., & Forbes, R. (2014). Improving the representation of low clouds and drizzle in the ECMWF model based on ARM observations from the Azores. Monthly Weather Review, 142(2), 668-685.
- Ahlgrimm, M., & Randall, D. A. (2006). Diagnosing monthly mean boundary layer properties from reanalysis data using a bulk boundary layer model.Journal of the atmospheric sciences,63(3),998-1012.
- Baklanov, A., Mestayer, P. G., Clappier, A., Zilitinkevich, S., Joffre, S., Mahura, A., & Nielsen, N. W (2008). Towards improving the simulation of meteorological fields in urban areas through updated/advanced surface fluxes description. Atmospheric Chemistry and Physics, 8(3), 523-543.
- Barlow, J. F(2014).Progress in observing and modelling the urban boundary layer.Urban Climate, 10, 216-240.
- Chemel, C., & Sokhi, R. S. (2012). Response of London's urban heat island to a marine air intrusion in an easterly wind regime. Boundary-layer meteorology, 144(1), 65-81.
- Darand, M., Zande Karimi, S. (2015). Evaluation of Spatio-Temporal Accuracy of Precipitation of European Center for Medium-Range Weather Forecasts (ECMWF) over Iran. Physical Geography Research Quarterly, 47(4), 651-675. doi: 10.22059/jphgr.2015.56054 (In Persian).
- Du, C., Liu, S., Yu, X., Li, X., Chen, C., Peng, Y., ... & Wang, F. (2013). Urban boundary layer height characteristics &relationship with particulate matter mass concentrations in Xi'an,central China.Aerosol Air Qual Res,13,1598-1607.
- Dupont, J. C., Haeffelin, M., Badosa, J., Elias, T., Favez, O., Petit, J. E., ... & Bonne, J. L. (2016). Role of the boundary layer dynamics effects on an extreme air pollution event in Paris. Atmospheric Environment, 141, 571-579.
- Fallah Ghalhari, Gholmababs (2014). Boundary layer climate, Hakim Sabzevari University Press, Sabzevar, 403 p (In Persian).
- Guo, J., Miao, Y., Zhang, Y., Liu, H., Li, Z., Zhang, W., & Zhai, P. (2016). The climatology of planetary boundary layer height in China derived from radiosonde and reanalysis data. Atmos. Chem. Phys, 16(20), 13-309.
- Jiang, Q., Doyle, J. D., & Smith, R. B. (2006). Interaction between trapped waves and boundary layers. Journal of the atmospheric sciences, 63(2), 617-633.
- Jiang, Q., Smith, R. B., & Doyle, J. D. (2008). Impact of the atmospheric boundary layer on mountain waves. Journal of the Atmospheric Sciences, 65(2), 592-608.
- Köhler, M., Ahlgrimm, M., & Beljaars, A. (2011). Unified treatment of dry convective and stratocumulus-topped boundary layers in the ECMWF model. Quarterly Journal of the Royal Meteorological Society, 137(654), 43-57.
- Letzel, M. O., & Raasch, S. (2003). Large eddy simulation of thermally induced oscillations in the convective boundary layer. Journal of the atmospheric sciences, 60(18), 2328-2341.

- Liu, J., Huang, J., Chen, B., Zhou, T., Yan, H., Jin, H., ... & Zhang, B. (2015). Comparisons of PBL heights derived from CALIPSO and ECMWF reanalysis data over China. Journal of Quantitative Spectroscopy and Radiative Transfer, 153, 102-112.
- Liu, S., & Liang, X. Z. (2010). Observed diurnal cycle climatology of planetary boundary layer height. Journal of Climate, 23(21), 5790-5809.
- Sarkar, A., & De Ridder, K. (2011). The urban heat island intensity of Paris: a case study based on a simple urban surface parametrization. Boundary-layer meteorology, 138(3), 511-520.
- Scorer, R. S. (1949). Theory of waves in the lee of mountains. Quarterly Journal of the Royal Meteorological Society, 75(323), 41-56.
- Seidel, D. J., Ao, C. O., & Li, K. (2010). Estimating climatological planetary boundary layer heights from radiosonde observations: Comparison of methods and uncertainty analysis. Journal of Geophysical Research: Atmospheres, 115(D16).
- Simmons, A. J., Willett, K. M., Jones, P. D., Thorne, P. W., & Dee, D. P. (2010). Low-frequency variations in surface atmospheric humidity, temperature, and precipitation: Inferences from reanalyses and monthly gridded observational data sets. Journal of Geophysical Research: Atmospheres, 115(D1).
- Smith, C. M., & Skyllingstad, E. D. (2009). Investigation of upstream boundary layer influence on mountain wave breaking and lee wave rotors using a large-eddy simulation. Journal of the Atmospheric Sciences, 66(10), 3147-3164.
- Smith, R. B. (2007). Interacting mountain waves and boundary layers. Journal of the atmospheric sciences, 64(2), 594-607.
- Stull, R. B. (2012). An introduction to boundary layer meteorology (Vol. 13). Springer Science & Business Media.
- Van Dam, B., Helmig, D., Neff, W., & Kramer, L (2013). Evaluation of boundary layer depth estimates at Summit Station, Greenland. Journal of Applied Meteorology and Climatology, 52(10), 2356-2362.
- Von Engeln, A., & Teixeira, J (2004). A ducting climatology derived from the European Centre for Medium-Range Weather Forecasts global analysis fields. Journal of Geophysical Research: Atmospheres, 109(D18).
- Von Engeln, A., & Teixeira, J. (2013). A planetary boundary layer height climatology derived from ECMWF reanalysis data. Journal of Climate, 26(17), 6575-6590.
- Wouters, H., Ridder, K. D., Demuzere, M., Lauwaet, D., & van Lipzig, N. P. M. (2013). The diurnal evolution of the urban heat island of Paris: a model-based case study during summer 2006. Atmospheric Chemistry and Physics, 13(17), 8525-8541.
- Zhang, Y., Seidel, D. J., & Zhang, S. (2013). Trends in planetary boundary layer height over Europe. Journal of Climate, 26(24), 10071-10076.

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Evaluation the Role of Geomorphologic Processes in the Formation of Geomorphosites of Manesht, Bankol and Qelarang Protected Areas Using Perira Method

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Introduction

Geotourism including two geo and tourism concepts. The Geo section includes geological and geomorphological attractions, and the tourism sector, as a multidisciplinary subject, includes all the infrastructure of the tourism industry, including interpretation, management, accommodation and tours. The concept of modern geotourism was first defined by Hose (2003). In his definition, geotourism has a geological and geomorphological character (Hose, 2005, 2008, 2011). Raynard and Coratza consider geotourism as a set of activities, infrastructures, and services that contribute to the prosperity of Earth sciences through tourism (Raynard & Coratza, 2007). Geomorphosite is another new concept in the literature of geotourism. The geomorphosite consists of a geomorphological form which, according to human perception and understanding, has scientific, cultural-historical, aesthetic, and socio-economic value. The current research was carried out to identify and develop the geoturism sites of the protected area of Manesht, Bankol and Qelarang in the province of ilam. The protected area of Manehst, Bankol, and Qalarang has high potential for development of getourism activities. The assessment of relationship between sustainable exploitation and conservation of geotouristic resources in the area leads to the consideration of the capacity of tolerance, planning to create a balance between the numbers of visitors, restrictions of tourists' traffic and will reduce damage to these susceptible areas. On the other hand, increasing information about the identification and introduction of geographic features associated with tourist and recreational activities can help in informing tourists about natural and human phenomena, and processes for generating geotourism resources and planners in the management and planning of the study area.

Methods and Material

In the current study, the Perira method was used to evaluate the geomorphosite of the study area. This method is a valuation based on numerical indices. In the Perira method, the final value of geotourism sites is obtained from the sum of numerical values of geomorphology and management. The highest score in this section is 10. On the other hand, management value was derived from total protection value and value of exploitation. In this section, infrastructure such as access and equipment was evaluated. The sum of these two values indicates the potential of a geomorphosite in the development of tourism in the region. Finally, the score is close to 20, indicating the high potential of the region in planning for tourism development.

Results and Discussion

A study of the general status of the Manesht and Ghelarang protected area by extracting information from maps of the region and Perira method shows that this region has high natural potential for geotourism. The presence of geological and geomorphological attractions has made the area a major geostratious destination for tourist. In the study area more Attractions are glacial sites in manesht and Qalarang Mountain, karst phenomena including caves and karstic springs, doline, straits and erosion landforms in the north of the area, unique geomorphologic and geological phenomena such as Seshkalan, Abdalan and Arghavan valley in the north and center of the area. The results of this study showed that Arghavan geomorphosite ranked 1 in terms of TV index, but ranked 6 in the final ranking. The highest score in the geomorphologic section was 8.5 for Mansht and Qalarang geomorphosite, and in the management section the highest score was with 8.04 for the Arghavan geomorphosite. In the ranking table derived from the calculation of the indexes (main and sub) with the title rating (RK), Abdallan geomorphosite with the total value of 35 was the highest value among the six selected geomorphosites in the study area. The results of the research show that low value sites can be recognized as valuable geomorphosites in the area. Based on quantitative research results, low value sites were recognized as valuable geomorphosites in the area. The aim of this analysis is to emphasize ranking in the assessment of geomorphosites, estimates of the value or relative equivalence of criteria. Accordingly, geomorphosites that earn high score in every respect will have the best place in the final ranking.

Conclusion

In the current study, the Perira method was used to evaluate the geomorphosite of the study area. The results of the research showed, in the ranking table derived from the calculation of the indexes (primary and secondary) with the title of ranking (RK), Abdallan geomorphosite with the total value of 35 was the highest value among the six selected geomorphosites in the study area. The results indicate that investing and training is needed to introduce tourist attractions. Considering the educational capabilities of geotourism areas, such as the introduction of geomorphologic and geological phenomena that are necessary to introduce the site as natural capital, and the accessibility of tourists to these products and their educational aspects through brochures, guidebooks, newspapers, guided trails and information centers, the necessary criteria for accessibility and visibility of educational product and the risks of inappropriate utilization, the existence of tourism infrastructure for tourists and leading them toward new geotourism knowledge, investment in

conservation and education, and the provision of geomorphosite identification boards, and the assessment of the beauty and landscape aspects and the transfer of these values through positive advertisement to tourists can be useful in strengthening the knowledge of tourists about these natural attractions and geotourism resources. Finally, Implementation of practical and successful management in this region requires a comprehensive study of the area so that in addition to its ecological values, the potential capabilities of the region can also be identified.

Keywords: Geotourism, Geomorphosite, Pereira, Protedted area, Manesht, Ghelarang.

References

- Ahmadi, M (2008). Identification of suitable zones for the development of geotourism in Ilam province using geographic information system, Master's degree in natural geography. Unversity of kharazmi. Tehran.
- Alaei Taleghani, M. (2005). Geomorphology of Iran, Gomes Publications.Tehran.
- Almagià, R. (1910). Studi geografici sulle frane in Italia. Mem Soc Geogr Ital. 14:12-34.
- Ara, H. Shahordi, F. Kharrazi, P. & Kianian, K. (2014). The evaluation of tourism potential using the modified Pralong model (Kuchin) (Case study: Sarab Caves, Seyyed Issa and Chehelpoleh in Chaharmahal and Bakhtiari Province). Journal of Tourism Management Studies. 25, 135-151.
- Beneo, E. (1938). Insegnamenti di una galleria a proposito della tettonica nella Valle del Sagittario (Appennino abruzzese). Boll R Uff Geol Ital. 63(6),1-10.
- Bollati, I. Smiraglia, C. Pelfini, N. (2013). Assessment and Selection of Geomorphosites and Trails in the Miage Glacier Area (Western Italian Alps). Environmental Management. 51,951–967.
- Bollati, I. Reynard, E. Palmieri, E.L. & Pelfini, M. (2015). Runoff Impact on Active Geomorphosites in Unconsolidated Substrate. A Comparison Between Landforms in Glacial and Marine Clay Sediments: Two Case Studies from the Swiss Alps and the Italian Apennines. Geoheritage. DOI 10.1007/s12371-015-0161-0.
- Comanescu, L. Nedelea, A. & Dobre, R. (2011). Evaluation of geomorphosites in Vistea Valley (Fagaras Mountains-Carpathians, Romania), International Journal of the Physical Sciences. 6(5),1161-1168.
- Coratza, P. Chinol, A. Piacentnim, D. & Valdati. J. (2008). Management of geomorphosite in high tourism vocation area: an example of geo-hiking map in the Alpe difanes(natural park of fanes-braies, Italian dolomitis). GeoJournal of Tourism and Geosites. 2(2), 106-117.
- Dowling, R.K. & Newsome, D. (2010). The future of geotourism: where to from here? In: Newsome D, Dowling RK (eds) Geotourism: the tourism of geology and landscapes. Goodfellow, Oxford, PP.231-244.
- Feuillet, T. & Sourp, E. (2011). Geomorphological Heritage of the Pyrenees National Park (France): Assessment, Clustering, and Promotion of Geomorphosites, Geoheritage. 3(3), 151–162.
- Ghanbari, A. Karami, F. & Yazdani, O. (2017). Capability of Geomorphosites of Sarvabad area using Perira and Rynard Methods. Journal of Geographic Space. 57, 195-2011.
- Grandgirard, V. (1999). An inventory of geomorphological geotopes in the canton of Fribourg (Switzerland). Mem Descr Carta Geol 'It .54, 273-278.
- Grandgirard, V. (1997). Géomorphologie, protection de la nature et gestion du paysage. Thèse de doctorat en géographie, université de Fribourg, P. 210.
- Hejazi, A. Farmani Mansour, S. (2017). Evaluation of Geotourism Capability of Geomorphosites of varkaneh Village using Perira Method. Journal of Geography and Planning. 59, 41-63.
- Hose, T.A. (2000). European geotourism-geological interpretation and geoconservation promotion for tourists. In: Barretino D, Wimbledon WP, Gallego E (eds) Geological heritage: its conservation and management. Instituto Tecnologico Geominero de Espana, Madrid, PP. 127-146.

- Hose, T.A. (1996). Geotourism, or can tourists become casual rock hounds? In: Bennett MR (ed) Geology on your doorstep. The Geological Society, London, PP. 207-228.
- Hose, T.A. (1995). Selling the story of Britain's stone. Env Interpret. 10(2), 16-17.
- Jafari, K. (2003). Environmental studies of Ilam province comprehensive tourism plan, research project. Ilam University.
- Lima, A. João, C.N. José, B. (2016). Monitoring of the Visitors Impact atBPonta da Ferraria e Pico das Camarinhas^Geosite (São Miguel Island, Azores UNESCO Global Geopark, Portugal). Geoheritage. DOI 10.1007/s12371-016-0203-2.
- Lugeri, F. R. Amadio, V. Bagnaia, R. Cardillo, A. & Lugeri, N. (2011). Landscapes and Wine Production Areas: A Geomorphological Heritage, Geoheritage. 3(3), 221-232.
- Maghsoudi, M. Barzkar, M. Abbasi, M. & Moradi, A. (2014). Assessment of geomorphic capabilities of geomorphosites in Mahabad city. Journal of Tourism Management Studies. 25, 81-107.
- Martínez-Graña, A. M. Serrano, L. González-Delgado, J. A. Dabrio, C. J. & Legoinha,P. (2016). Sustainable geotourism using digital technologies along a rural georoute in Monsagro (Salamanca, Spain). International journal of digital earth. 11(5), 223-241.
- Mokhtari, D. (2016). Geotourism. Tabriz University Press. Tabriz.
- Mokhtari, D. & Hemmati, F. (2016). Identification of the geomorphic locations of the Deira River Basin and assessment of their georostric potential using Perira Method. Journal of Geography and Planning. 57, 255-276.
- Mokhtari, D. (2014). Fundamentals of Geomorphology Knowledge and Position of Geotourism (Cash in the field of geomorphology Knowledge of Iran). Geography and Planning. 1, 91-107.
- Mokhtari, D. (2013). Is the Jolfa plain is a geomorphologic location (geomorphosite)? New Attitude in Managing Tourism Areas. Geography and Planning. 43, 275-305.
- Mokhtari, D. (2011). Identification of active morphogenetic forms in the payam area with the goal of planning geotourism. Journal of geographic research. 4, 67-92.
- Mokhtari, D. (2011). The Importance of Landing map in Managing Geomorphic Places in Iran (Case Study: payam area). Geography and Planning. 37, 151-172.
- Oddone, E. (1915). Gli elementi fisici del grande terremoto marsicano fucense del 13 Gennaio 1915. Boll Soc Sism Ital. 29, 71-215.
- Panizza, M. & Piacente, S. (1993). Geomorphological asset evaluation. Z Geomorph NF 87:13–18.
- Pereira, P. Pereira, D. Caetano Alves, M. I. (2007). Geomorphosite assessment in Montesinho Natural Park (Portugal). Geographica Helvetica: 3.
- Reynard, E. & Panizza, M. (2005), "Geomorphosites: Definition, Assessment and Mapping", Géomorphologie: Relief, Processus, Environnement, Nnuméro 3.PP.181-188.
- Reynard, E. Coratza, P. (2007). Geomorphosites and geodiversity: a new domain of research. Geographica Helvetica, 62, PP. 138-139.
- Rezazadeh, Z. (2016). Identification of geotouristic sites in the seshakt and evaluation and comparison of their capabilities with Perira and Peralong methods. Master's thesis. Tabriz University. Iran.
- Sacco, F. (1907). Gli Abruzzi. Schema geologico. Boll Soc Geol Ital26:377-460.
- Shayan Yeganeh, A. A. (2016). Investigating Western Capabilities of Khorasan Razavi in Construction of Geopark and Providing Its Management and Protective Solutions. Ph.D. thesis. Hakim Sabzevari University.
- Zomoradiyan, M.J. (2005). Geomorphology of Iran. Publication of Mashhad University. Mashhad, Iran.

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Investigating the Landuse and Local Climate Changes in Gavehrod Basin Before and After Gavoshan Dam Construction

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Introduction

Dam construction in a watershed causes changes in basin's entire land cover and landuse. These changes affect basin's local climate and governed natural process directly or indirectly. Changes the Land use-land cover by converting the natural cover to the built up areas has a large impact on the climate on the micro and medium scale (Zoran, 2010:1). With the construction of the Dam, the farmlands may be irrigated using more surface water, and also in the downstream areas, cities may be developed because of the reduced risk of flooding and the increased availability of products and electricity. These systematic land use-land cover changes could lead to an increase in the availability of the local moisture content is microclimate (Niyogi et al, 2010:2). This in turn can affect the distribution of temperature and vegetation. Vegetation is important because it can control environmental conditions and energy exchange by selective reflection and absorption of solar radiation (Goward et al, 1985: 138). Such is assumed that the construction of a dam in semi-arid areas would reduce the temperature in the upstream areas of the dam and increase the temperature at the downstream of the dam. It also increases the growth of vegetation by increasing moisture and using the dam. Therefore, the aim of this study was to investigate the relation between temperature and ground cover temperature in Gavoshan Dam basin before and after construction with satellite imagery.

Methods and Material

Gavoshan Dam with a reservoir capacity of 550 million m^3 in the township Kamyaran provides 31000 hectares of farmland and part of the drinking water of the city of Kermanshah. In this research, Landsat satellite images (2000, 2002, 2006 and 2011) were used. All images were for July. First, geometric correction, then atmospheric and some transformations were performed on the images for extraction of information. First, radiance was calculated. Then the reflection coefficient was calculated. In the following the brightness temperature was calculated. Eventually, the land surface temperature was calculated. For evaluation the calculated temperature from Ravansar station data was used.

Results and Discussion

Studies show that the maximum temperature was about 0.76, the average temperature was around 0.48 and the minimum temperature was about -0.62 has been changed, and in total it was incremental. However, the minimum temperature has also decreased. Investigation of vegetation indices (NDVI, SAVI and EVI) showed that the maximum amount was decreasing during the study period. Reducing dense vegetation can be due to changing the use of gardens to agricultural lands or to change the pattern of cultivation. Studies have shown that NDVI is suitable for studying downstream of the dam and SAVI for studying upstream of the Gavshan Dam. For places where the topography is Heterogeneous, EVI is more effective. Studies have shown that the downstream of the Gavoshan dam has been denser due to increased humidity of air and soil. Surface temperature studies showed that at the downstream of the Gavshan Dam, the temperature of the hot levels was reduced and is replaced the temperature levels very cool and cool. But on the upstream of the dam is the reversed.

Conclusion

In this research, the trend of vegetation land cover and land surface temperature changes for the period of before and after Gavoshan dam construction in Gavehrood basin was studied using temporal Landsat images. To obtain vegetation cover changes, NDVI, EVI and SAVI indices were used. They all show an increase in vegetation cover in the south of dam. To obtain LST and LSE, Planck equation and NDVI thresh holding method used respectively. Analysis of spatial variations of temperature classes from land surface emissivity show that Downward the dam of very warm temperature category are eliminated and cool and very cool temperature categories replaced instead. Analysis of NDVI index show it has been changed averages from 0.13 to 0.165. So, changes in other vegetation indices have been incremental. With production of normalized classes of Temperature was determined that area of average class increased about 67 Km^2 (7.3%) and area of very warm class about 11 Km^2 (17.5%) decreased. Analysis the dispersion diagram of temperature normalized and vegetation (Fr/T) shows in the course of study decreased the dry edge length and increased the wet edge length. This means that the existence of water surface in this Basin in addition to changing vegetation coverage and soil moisture causes land surface temperature change which in turn evolves the microclimate of the region in the long term.

Keywords: Gavmishan Dam, Change Detection, Land Surface Temperature, Remote Sensing.

Refrences

- Alavipanah, s. k (2009). Thermal remote sensing and application in earth sciences, Tehran University press, 500 P. [In Persian]
- Amiri, R., Weng, Q., Alimohammadi, A., & Alavipanah, S. K (2009). Spatial–temporal dynamics of land surface temperature in relation to fractional vegetation cover and land use/cover in the Tabriz urban area, Iran. Remote sensing of environment, 113, PP: 2606-2617.
- Artis, D. A., & Carnahan, W. H. (1982). Survey of emissivity variability in thermography of urban areas. Remote Sensing of Environment, 12, PP: 313-329.
- Asrar, G., Kanemasu, E. T., & Yoshida, M. (1985). Estimates of leaf area index from spectral reflectance of wheat under different cultural practices and solar angle. Remote Sensing of Environment, 17, PP: 1-11.
- Avissar, R., and Liu,Y(1996). three-dimensional numerical study of shallow convective clouds and precipitation induced by land surface forcing, J. Geophys. Res., 101, PP: 7499–7518.
- Baret, F. (1995). Use of spectral reflectance variation to retrieve canopy biophysical character. In F. M. Danson, & S. E. Plumer (Eds.), Advances in environmental remote sensing. Chi Chester: Wiley (chap. 3).

- Baret, F., & Guyot, G. (1991). Potentials and limits of vegetation indices for LAI and PAR assessment. Remote Sensing of Environment, 35, PP: 161-173.
- Chaithanya, V.V., Binoy, B.V., Vinod, T.R., (2017). Estimation of the Relationship between Urban Vegetation and Land Surface Temperature of Calicut City and Suburbs, Kerala, India using GIS and Remote Sensing data, International Journal of Advanced Remote Sensing and GIS, Volume 6, Issue 1, PP: 2088-2096.
- Chander, G., Markham, B. L., & Helder, D. L. (2009). Summary of current radiometric calibration coefficients for Landsat MSS, TM, ETM+, and EO-1 ALI sensors. Remote sensing of environment, 113, PP: 893-903.
- Chapin, F. S., Sturm, M., Serreze, M. C., McFadden, J. P., Key, J. R., Lloyd, A. H., & Welker, J. M(2005). Role of land-surface changes in Arctic summer warming.Science,310,PP:657-660.
- Cotton, W. R., and R. A. Pielke Sr. (2007). Human Impacts on Weather and Climate, Cambridge Univ. Press, Cambridge, U. K. 330 p.
- Degu, A. M., Hossain, F., Niyogi, D., Pielke, R., Shepherd, J. M., Voisin, N., & Chronis, T. (2011). The influence of large dams on surrounding climate and precipitation patterns. Geophysical Research Letters, 38, PP: 1-7.
- Gilabert, M. A., Gonza´lez-Piqueras, J., Garcı´a-Haro, J., & Melia´, J. (1998). Designing a generalized soil-adjusted vegetation index (GESAVI). In E. T. Engman (Ed), Remote sensing for agriculture, ecosystems & hydrology. Proceedings of SPIE, Vol. 3499, PP:396-404.
- Goward, S. N., G. D. Cruickshanks, and A. S. Hope, (1985). Observed relation between thermal emission and reflected spectral radiance of a complex vegetated landscape, Remote Sensing of Environment, 18, PP: 137-146.
- Hadian, F., Jafari, R., Bashari, H., Ramezani, N (2013). Investigating the Effects of Hanna Dam Construction on Long-Term Land Use/ Cover Changes, Iranian Journal of Applied Ecology, Vol. 2, Issue 4, P: 101-114. [In Persian]
- Huete, A., Justice, C., & Liu, H. (1994). Development of vegetation and soil indices for MODIS-EOS. Remote Sensing of Environment, 49, PP: 224-234.
- Huete, A., Justice, C., & Van Leeuwen, W. (1999). MODIS vegetation index (MOD13). Algorithm theoretical basis document, 3, 213p.
- Karnieli, A., Agam, N., Pinker, R. T., Anderson, M., Imhoff, M. L., & Gutman, G. G. (2010). Use of NDVI and land surface temperature for drought assessment: Merits and limitations. Journal of Climate, 23, PP: 618–633.
- Li, Z. L., Tang, B. H., Wu, H., Ren, H., Yan, G., Wan, Z., & Sobrino, J. A. (2013). Satellite-derived land surface temperature: Current status and perspectives. Remote Sensing of Environment, 131, PP: 14-37.
- Liu, Y., Hiyama, T., & Yamaguchi, Y. (2006). Scaling of land surface temperature using satellite data: A case examination on ASTER and MODIS products over a heterogeneous terrain area. Remote Sensing of Environment, 105, PP: 115–128.
- Madadi, H. Ashrafzadeh, M. R (2013). Impacts of Karkheh Dam on Spatial Pattern of Riparian Zones in Karkheh National Park, Iranian Journal of Applied Ecology, Vol. 1, Issue 2, P: 1-14. [In Persian]
- Matkan, A.L., Saeidi, KH., Shakiba, A., Hosseini Asl, A (2010). Evaluation of Land Cover Changes in relation with Taleghan Dam Construction Using Remote Sensing, Journal of Applied researches in Geographical Sciences, v. 16, no. 19, pp: 45-64. [In Persian]
- Neteler, M. (2010). Estimating daily land surface temperatures in mountainous environments by reconstructed MODIS LST Data. Remote Sensing, 2, PP: 333-351.

- Niyogi, D., C. M. Kishtawal, S. Tripathi, and R. S. Govindaraju (2010). Observational evidence that agricultural intensification and land use change may be reducing the Indian summer monsoon rainfall, Water resource. Res, 46,W03533,PP:1-17.
- Orhan, O. a, M. Yakara, (2016). Investigating Land Surface Temperature Changes Using Landsat Data in Konya, Turkey, The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, Volume XLI-B8, PP: 285-289.
- Owen, T. W., Carlson, T. N., & Gillies, R. R. (1998). An assessment of satellite remotely-sensed land covers parameters in quantitatively describing the climatic effect of urbanization. International Journal of Remote Sensing, 19, 1663-1681.
- Petit, C., Scudder, T., & Lambin, E. (2001). Quantifying processes of land-cover change by remote sensing: resettlement and rapid land-cover changes in south-eastern Zambia. International Journal of Remote Sensing, 22, 3435-3456.
- Pielke, R., Sr. (2009). Climate change: The need to consider human forcing besides greenhouse gases, Eos Trans. AGU, 90, 413 p.
- Pirestani, M.R., Shafaghati, M (2009). Study of environmental effects of Dam construction, Quarterly Journal of Human Geography, No. 3, V. 1, PP: 39-50. [In Persian]
- Prata, A. J., Caselles, V., Coll, C., Sobrino, J. A., & Ottlé, C. (1995). Thermal remote sensing of land surface temperature from satellites: Current status and future prospects. Remote Sensing Reviews, 12, PP: 175-224.
- Qu,B. Zhu,W. Jia,SH and Lv,A (2015). Spatio-Temporal Changes in Vegetation Activity and Its Driving Factors during the Growing Season in China from 1982 to 2011. Remote Sens, 7, PP:13729-13752.
- Rautela, P., R. Rakshit, V. K. J. Rajesh, K. Gupta and A. Munshi (2002). GIS and remote sensing-based study of the reservoir-induced land-use! Land-cover changes in the catchment of Tehri dam in Garhwal Himalaya, Uttaranchal India .Current Science 83, PP: 308-311.
- Richardson, A. J., Wiegand, C. L., Wajura, D. F., Dusek, D., & Steiner, J. L. (1992). Multisite analyses of spectral– biophysical data for sorghum. Remote Sensing of Environment, 41, PP: 71-82.
- Rozenstein, O., Qin, Z., Derimian, Y., & Karnieli, A. (2014). Derivation of Land Surface Temperature for Landsat-8 TIRS Using a Split Window Algorithm. Sensors, 14, PP: 5768-5780.
- Sadeghinia, A., Alijani, B., Zeaieanfirouzabadi, P (2012). Analysis of Spatial-Temporal Structure of the Urban Heat Island in Tehran through Remote Sensing and Geographical Information System, Geography And Environmental Hazards, V. 1, No. 4, PP: 1-17. [In Persian]
- Weng, Q. (2009). Thermal infrared remote sensing for urban climate and environmental studies: Methods, applications, and trends. ISPRS Journal of Photogrammetry and Remote Sensing, 64, PP:335-344.
- Wijesundara, C. J. and N. D. K. Dayawansa. (2011). Construction of Large Dams and their Impact on Cultural Landscape: A Study in Victoria Reservoir and the Surrounding Area. Tropical Agricultural Research 22, PP: 211-219.
- Xu, H., Chen, Y., Dan, S., & Qiu, W. (2011). Spatial and temporal analysis of urban heat Island effects in Chengdu City by remote sensing. In Geoinformatics, 2011 19th International Conference on, PP: 1-5.
- Zhang, R., Tian, J., Su, H., Sun, X., Chen, S., & Xia, J. (2008). Two improvements of an operational Two-layer model for terrestrial surface heat flux retrieval. Sensors, 8, PP: 6165-6187.
- Zhao, B; Yan, Y; Guo, H; He, M; Gu,Y; Li, B (2009). Monitoring rapid vegetation succession in estuarine wetland using time series MODIS-based indicators: Ana pplication in the Yangtze River Delta area, ecological indicators, 9, PP: 346-356.
- Zoran, M. (2010). Heatwaves assessment in urban areas through remote sensing-based analysis. 38th COSPAR Scienti_c Assembly.