

## 2. Why Hazards Science? (Hazardology and Future Studies)

Abdolrahim Gavahi\*

Advisor to the Chairman and Head of Office of Future Studies, Iranian Academy of Sciences; Member of the editorial, Journal of Hazard Science, Professor of Allameh Tabatabai University

### Abstract

Before giving any preliminary definition of “hazard” and “hazardology”, it is important to notice that “who” is giving this definition, a geologist, a sociologist, an ethnologist, an expert in law, a religionologist, etc? Certainly, each of these people has their own personal assumptions & presuppositions and so will look at the matter from a different point of view. Also, there are different categories of hazards: natural, internal or inside, terrestrial, human, spiritual, etc., many of which have been addressed in The Holy Qur’an too. Scholars attending this meeting will define hazard and hazardology from their own respective. However, as a preliminary suggestion, one may say that hazard or calamity is what damages or destroys human being’s products or generation (Holy Qur’an, 2/30). From a theological point of view, this originates from man’s “arrogance” against God (ibid, 20/24, 43) or his excesses (ibid, 6/31) and squandering (ibid, 44/31). Apart from these spiritual matters, another source of hazardous actions is man’s unlimited use, or rather misuse, of natural resources, technological developments (atomic bomb), or unconditional or unethical application of IT, cognitive, biology, and other new/modern sciences. So much about hazards and hazardology, now we have to turn to futuring or future studies. Very briefly, futuring is not some sort of trending or forecasting, but rather to try to make or achieve a desirable future and, at the same time or even more important than that, trying to avoid non-desirable (calamitous, hazardous, dangerous, etc.) futures. Thus, it seems, hazardology has a direct relation with future studies. In other words, with the past and present “natural” and “human-made” calamities and hazards in mind, we have to think of a future devoid of such misdeeds and misfortunes, and try to make such a future or at least move towards that goal. The human race has only one earth to live in and as such should earnestly try to keep and preserve it for the generations to come.

**Keywords:** future studies, hazards, science.

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\* E-mail:agavahi@yahoo.com

## **Spatial Injustice and Human Hazards (Case Study: Sistan and Baluchestan Province)**

**Mohammad Reza Hafeznia <sup>1</sup>, Mostafa Ghaderi Hajat <sup>2\*</sup>**

1. Full Professor, Political Geography, Tarbiat Modares University, Tehran, Iran

2. PhD in Political Geography, Tarbiat Modares University, Tehran, Iran

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### **Abstract**

Iran's spatial organization tend to spatial rupture due to the anarchy prevailing in planning system and this resulted in pattern of regional uneven development. The core-periphery model is the prevailing pattern in Iran's spatial structure. Since Iran has practical regional ant ethnic areas, we should acknowledge that spatial injustice has predisposed political, cultural, and social divergences in a short term and will put solidarity, national unity and territorial integrity at serious hazards in a long term. Using analytical-descriptive method and relying on library resources, this article tries to explain human hazards related to spatial injustice in Sistan and Baluchestan province. Findings show that Sistan and Baluchestan's problem is rooted in spatial injustice more than other ones and we should not analyze this important and vital lifeline province's problem only as a security idea because such an approach will have repeated results.

**Keyword:** human hazards, Sistan and Baluchestan, spatial anarchy, spatial injustice.

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\* E-mail: hafezn\_m@modares.ac.ir

## Explaining the Hazards of Inefficient Self-Sufficiency Policies on Resources in Iran Water

Mohammad Bagher Ghalibaf<sup>1</sup>, Seyed Mohammad Hosseini<sup>2\*</sup>

1. Associate Professor, Faculty of Geography, University of Tehran, Iran

2. PhD in Political Geography, University of Tehran, Iran

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### Abstract

In this paper we use the exploring technique as one of the integrated research methods. Data has been gathered using library and documentary methods, surfing the internet for national and international scientific databases such as FAO. Focusing on the self-sufficiency policy in agricultural crops and to analyze the impact of this policy on water resources, wheat has been selected. We used data gathered from the statistical consensus and ministry of energy. Also, we used the data of FAO to analyze the production, consumption, imports, exports and the amount of the wheat cultivation in Iran. The self-sufficiency in producing wheat has been calculated by the use of self-Sufficiency Ratio Index and the Import Dependency Ratio. We forecasted the amount of production and consumption of wheat by ARIMA time series model. It is found that the self-sufficiency policy in Iran has been introduced just on the basis of political attitudes and not relying on the environment potentials. Therefore, this procedure will not lead to sustainable development and food security. Due to having a unilateral self-sufficiency policy and disregarding other real potentials of products in Iran, the amount of production would be increased while the amount of imports might be limited or prohibited. Because of the increasing production rates without considering the environment potentials and production advantages, we are facing new crises in natural assets including water and soil resources. If this trend continues, environmental hazards will be expanded. Our results imply that self-sufficiency policy did not only achieve its aims to produce strategic food crops, but it had negative effect on the plains and water resources too. If this trend continues, ecologic power will be reduced and natural resources will be destroyed. It is necessary to integrate the policy of self-sufficiency with that of food sustainable supply. It means that self-sufficiency policy should be replaced with environmentally friend and optimum usage of the country resources and supply food from abroad, sustainably.

**Keywords:** food security, hazard, self-sufficiency, strategic products of agriculture, water resources.

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\* E-mail: sm.hosseini1@ut.ac.ir

## Legal Analysis of Risk Insurance in Electronic Commerce (Case Study: Iranian Law)

Mohsen Sadeghi <sup>1\*</sup>, Vahid Amini <sup>2</sup>

1. Assistant Professor, Faculty of Law and Political Sciences, University of Tehran, Iran

2. PhD Student in Private Law, Faculty of Law, University of Shahid Beheshti, Iran

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### Abstract

Electronic environment is facing different risks. Risks in electronic commerce and business are considered the most significant risks in cyberspace. Insurance of the mentioned hazard is considered a solution for reduction and management of risks in electronic commerce. However, there is a key question here. Are there sufficient relevant regulations and laws available in Iranian laws? The hypothesis is that our legal system enjoys general regulations in this field but there are also several ambiguities. This article presents an analytical-comparative approach and is comprised of two sections: The first section is trying to explain the concepts as well as the reasons of the importance of the risk insurance in electronic commerce, taking into account its history and the second section aims to explain legal barriers and problems related to developing risk insurance in electronic commerce.

**Keywords:** insurance, insurance of electronic commerce, Iranian Law, risks of cyberspace.

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\* E-mail: sadeghilaw@ut.ac.ir

## **Response Quality to the Van Earthquake in Turkey of 23 October 2011, Mw7.2, for Hazards Reduction**

**Mehdi Zaré\***

Associate Professor, International Institute of Earthquake Engineering and Seismology (IIEES), Tehran, Iran

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### **Abstract**

The Van Turkey earthquake of 23 October 2011, Mw7.2, occurred at 13:41 local time, and caused 644 death losses (of which 477 were in Erciş). Van earthquake-stricken area was closed to an active tectonic intersection zone in NW Iran, east of Turkey and SW Caucasus, and the earthquake fault with a compressional mechanism created a surface rupture with a 10km length in the north of Van, between the coast line of Van and Erçek Lake. This article represent the seismological aspects of the Van earthquake based on a 5 days visit by the reconnaissance team of IIEES started in the 26<sup>th</sup> day after the mainshock. Meanwhile, there will be a look at the "response" of the disaster management system in Turkey to this major earthquake.

**Keywords:** aftershocks, earthquake fault, hazards, response, Van earthquake.

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\* E-mail: mzare@iiees.ac.ir

## Synoptic Analysis of Hazardous Thunderstorms in Isfahan

Mahdi Khazaei <sup>1\*</sup>, Ehsan Modiri <sup>2</sup>, Mahdi Modiri <sup>3</sup>

1. PhD. Student of Climatology, University of Tehran, Iran

2. MS. in Agrometeorology, Azad Islamic University, Science and Research Branch, Tehran, Iran

3. Associate Professor, Malek-Ashtar University of Technology, Iran

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### Abstract

Thunderstorms are severe weather phenomena which occur repeatedly in transitional seasons - fall and spring - in middle latitudes. These storms are among severe weather hazards which cause a lot of damage to agricultural fields, gardens, etc. Understanding the mechanism, genesis and development of these storms helps us in combatting or controlling them. This study looks at severe thunderstorms in Isfahan over a 19-years period (1990 -2008). At first the codes of thunderstorms which caused over 10 mm rains were extracted and then based on the data collected from NOAA NCEP-NCAR dataset - sea level pressure and 850 hPa and 500 mb geopotential height on days of rain - the required maps were drawn using Grads software and the precipitation patterns were identified. In this study, two general patterns were identified for thundershower in Isfahan. The first pattern (12 November 1993) at sea level pressure, anticyclone tongue that extends from the East through the Northern Sea of Oman and the Persian Gulf, caused moisture Advection in the study area and at pressure of 850 hPa level, cyclone with the contour 1500 geopotential meters Located on the region. At 500 hPa level, the study area is located completely in the deep trough western that in addition of providing moisture, has intensified instability to higher levels. In the second pattern (26 April 2006) a large low pressure center with 1008 hpa is located on the country. The flows direction in the system is such that flow moist air into the country and at the 850 hpa level, the study area is located fully in front of the cyclone whit contour curve 1470 geopotential meters that in addition to moisture advection of Persian Gulf into the country, has intensified instability in this level and the 500 hpa level, so the deep troughs western, passing through the country and the study area, has provided instability to the upper levels.

**Keywords:** geopotential height, Isfahan, synoptic systems, thunderstorm, weather hazards.

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\* E-mail: m.khazaei14@ut.ac.ir

## Analyzing and Mapping of Dust Storms Seasonal Frequency over Iran for Hazards Reduction

Sayyad Asghari<sup>1</sup>, Batool Zeinali<sup>2\*</sup>

1. Assistant Professor, Geomorphology, Urmia University, Iran

2. Assistant Professor, Climatology, University of Mohaghegh Ardabili, Iran

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### Abstract

Iran is facing dust storms every year and frequently. This phenomenon has affected, especially in recent years, various aspects of people's lives. The aim of this research is Iran's seasonal clustering in terms of dust storms frequency with visibility less than 1000 and 500 m for the period of 1987–2008. For this purpose, we used the data of 87 synoptic stations that had suitable spatial distribution in country. In this research, Iran was divided into 5 different regions in terms of dust storms frequency in the each season using Fuzzy clustering method. Stations located in these clusters are not homogeneous in terms of geographical location, climate and resources storm in different seasons of the year, but are homogeneous in terms of the visibility and intensity of storms. Results indicated critical condition in terms of dust storms frequency as follows: studied stations in Sistan & Baluchistan, Khuzestan and Bushehr provinces during spring; studied stations in Khuzestan province and Zabol, Zahedan and Iranshahr (Sistan & Baluchistan province) during summer; station of Zabol during autumn; and stations of Zahedan, Zabol, Konarak and Abadan during winter. The highest frequency of storms was observed in summer and spring, respectively, and the lowest in autumn and winter, respectively. Therefore, in order to decrease weather hazards, it is necessary to run national and international plans in Sistan and Baluchistan and Khuzestan provinces which are facing the disaster in all four seasons, with a high frequency.

**Key words:** clustering, dust storms, hazards, Iran.

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\* E-mail: zeinali.b@uma.ac.ir

## Hazards Tracing Hoz-e Soltan Playa through Investigating Chaos in Micro-landforms

Manijeh Ghahroudi Tali <sup>1\*</sup>, Khadijeh Alinoori <sup>2</sup>

1. Associate Professor, Department of Physical Geography, Shahid Beheshti University, Tehran, Iran

2. PhD Student, Department of Physical Geography, Shahid Beheshti University, Tehran, Iran

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### Abstract

Human intervention in intensification of natural hazards is a concern for researchers. Recognizing the response of morphological phenomena to human activities is not traceable in all phenomena. Small landforms could capture short-term changes caused by human interventions and react to them. Playa are among the areas in which micro-landforms changes can be traced monthly or permanently. Playa are the remaining parts of Quaternary rainy lakes which most of them currently drain the arid and semi-arid basins. The changes in water content and human interventions have created Morphogenesis changes in playas which are identifiable in micro-landforms. In this research, Hoz-e Soltan with 330 km area in north of Qom Province is studied by Fractal modelling in order to determine the prevailing pattern on microforms. Research data were collected through field observations. In order to measure geometrical fractals, field observation was conducted in spring 2014 and 102 clay microforms were selected in May and October. 73 well-developed microforms were selected randomly and their dimensions were calculated and plotted accurately. The results showed that the calculated DAP based on circumference-area Fractal model includes values from 1.5 to 2.5 which suggests the intensity of clay microforms change and their tendency to the increase of chaos and irregularity. Logarithmic diagram of fractal model also shows that there is a linear relationship between circumference logarithm and landform logarithm, so that the resulted correlation coefficient R<sup>2</sup> is larger than 0.98. Increase of chaos in Hoz-e Soltan playa implies its reaction to human intervention in harvesting mineral resources and irregularity in water content which could create hazardous results in this part of our country.

**Keywords:** Fractal Model, Hoz-e Soltan, micro-landform, playa.

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\* E-mail: Ghahroudi@sbu.ac.ir

## Improving Landslide Prediction Results using Shannon Entropy Theory

Amin Hoseinpoor Milaghardan <sup>1</sup>, Rahim Ali Abbaspour <sup>2\*</sup>

1. PhD Student in GIS, Department of Surveying Engineering, College of Engineering, University of Tehran, Iran
2. Assistant Professor, Department of Surveying Engineering, College of Engineering, University of Tehran, Iran

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### Abstract

A review of damages caused by landslide shows the need for studying effective parameters in landslide occurrence and prediction. This study aims to improve landslide prediction results for Tutkabon region in Gilan province. To this end, Shannon Entropy theory was employed for modeling and considering data uncertainty. Slope, height, geomorphologic conditions, earth's curve, closeness to river, and closeness to fault have been considered as the parameters affecting landslide. Using Shannon entropy theory, the weight of each parameter along with the uncertainty effect on the results was calculated and a landslide risk map for study area prepared. Finally, the comparison of the situation of landslide points in the under-study region with the modeled risk map was used for evaluation of the results. The under curve area of prediction rate curve was calculated at 0.69 considering Shannon entropy, and 0.54 disregarding Shannon entropy.

**Keywords:** landslide risk map, prediction rate curve, Shannon entropy theory, uncertainty.

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\* E-mail: amin\_hoseinpoor@ut.ac.ir