

Survey and Analytic the Role of Critical Center and Wind Erosion in Vacate of Rural Settlements with Using GIS Technique in Zabol

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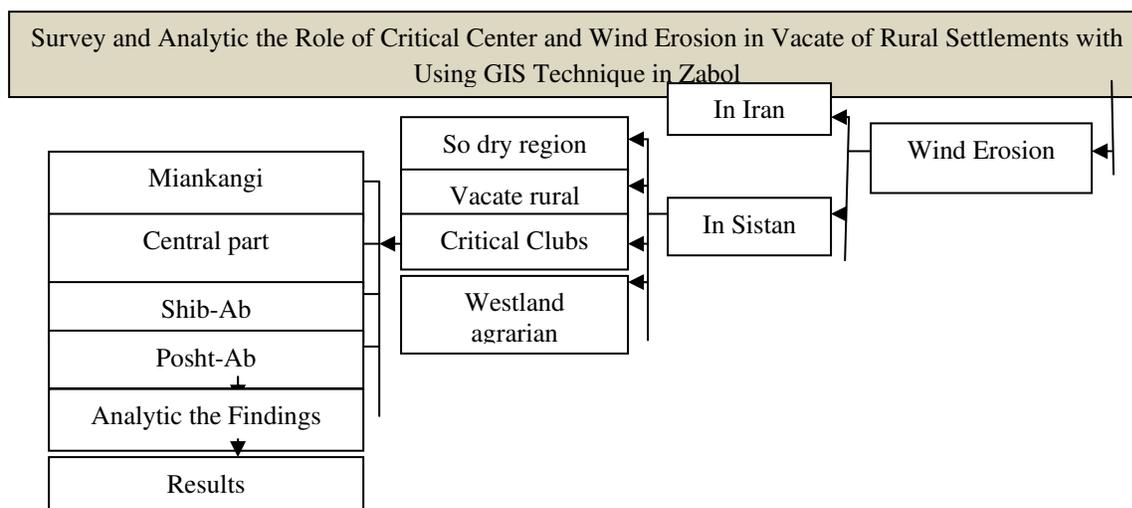
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ABSTRACT: Sistan region is too dry region and the weather has an important role in dispersal rural settlements and also attraction population or vacates these settlements. Mainly in formation rural settlements several factors can be effective which consist of natural and human factors which in this between these factors naturally wind erosion Sistan propellant abound create some problems for rural settlements in this region. During our research we understand Sistan have three critical wind erosion clubs that with using of Geography Information System (GIS) and use of image that taken by satellite from rural settlements in Sistan. We get up this data's. Results show the rate of rural with no population in this region which affected more by wind erosion is noticeable, this process with starvation in recent year is severe and led to wind transfusion sediment from Hamoun lake and cause to make wasteland agricultural and vacate rural settlement in Sistan plain.

Key Words: Wind Erosion, Zabol, Rural Settlements, GIS, Erosion Clubs

Graphical Abstract



INTRODUCTION

Deluge of dust is one of atmospheric event that in many wilderness and dry region are vesting and in recent years take too attention to them (Wetphal, 2006) and every year we observation which cause many under plot in every places of world (Youlin, 2001). Dust storms is one type of the dust events, and in most cases is the result of turbulent wind (Miller et al., 2008), which raise large quantities of dust from desert surfaces and reduce visibility to less than 1 km. This dust reaches concentrations in excess of 6000 µg/m³ in severe events (Song et al.,

2007). Sometimes this damage has physical and finance aspect that stopped their need to high investment and devotion of more resources and elements. But in many cases this under plot in addition before aspects also has a wide criminal damage which all kind of maladies; Allergies and etc has a large share in this criminal damage. (Miri, 2005). There is an increasing interest in the atmospheric transport of mineral dust. Effects of dust can be summarized in two groups: short-term effects inhuman life such as disturbing transportation systems by decreasing visibility, causing health problem by caring associated viruses, bacterium and atomic particles, damaging engines And reducing agricultural crops and long-term effects in environment and climate of earth such as global temperature through the absorption and scattering of solar radiation, cloud formation (Toon, 2003), convectional activity (Wong and Desler, 2005). Sistan region with medium raining (65mm in each year) and 4500mm evaporation in each year is one of the driest place in world (UNED, 2006). Dust sources, regardless of size or strength, can usually be associated with topographical lows located in arid regions with annual rainfall under 200-250 mm. Iran, Iraq, Jordan, southern part of Turkish, Saudi Arabia, Kuwait and Syria.

So take a right method for protect from ecosystems and vigil their live and develop the plant covets in different dimensions and specific programs are emergence. Geography information System (GIS) as set of soft and hard ware's and skill force that addition ability to provide different maps in diversity scale, has a suitable analytical ability and easy use of this data is another ability of this technique. (Eshraghiy, 1996) .Sistan consist of three region in wind erosion, these regions effective by Niatak , Jazinak and Tasoki-Shile regions that in total have 252453 hector space (Natural Administration of Sistan and Baluchistan , 2002). All of these regions with notice to continue of starvation and less of moisture resources in region take a damage situation to self and with add vest space of Hamoon Laguna and the lands outside political Iran borders wind erosion in Sistan take self a wide vast. The goal of this research is analytic wind erosion effects in vacate of rural settlements the study region that in final presentation same ways to reduce wind erosion effects on rural settlements in city of Zabol.

The Research Hypothesis

Between vacate of rural settlements in Zabol and increase the wind erosion in case study region has a positive relation.

History of Research

Some researches which done in the field of this research consist of: (Bazzi) (1990) Immigrants in Sistan to Golestan province and other places between the years of 1971-1972 caused from negative natural, economic, social and Political elements that this immigration with participant of other elements also action such an element to accent the poverty and proscription in the Sistan region and from last periods to today has a powerful effect on this part of Iran country (Bazzi, 1990).

Saeedi (1994) mentioned which rural settlements are expressions by lifestyle, live hood ways and in Final forces, effective environment elements are important in the give a suitable aspect to the rural houses (Saeedi, 1994).

In the years of 2004 Mahdavi and his partners and Bazzi work on this subject and mention Some reasons for the immigration and vacate rural from population, for example Mahdavi says some element such soil erosion , earthquakes, starvation cause to rural population immigrant to other places(Mahdavi, 2004).

Bazzi at university of Zabol which study on this subject about Sistan for many years mention that Sistan region with 150 days dust in each year has the most rate dust storms in Iran country which the winds boiling in the summer season in the long of four month and has a speed between 110 to 120 km (Bazzi, 1990).

During the last years, dust storms frequencies and intensities have increased significantly in Iran. This has affected human health in the southern provinces of Iran like the southwestern Khuzestan Province and the northern part of southeastern Sistan and Baluchistan Provinces (Misconi and Navi, 2010).

The Important of subject

If in rural society one or more elements consist of natural or human aspects get up a problem scathe easily and with exiting one element effect on other elements that its create some problems in live hood process of peoples who lives in rural settlement, the analytic this problems and presentation some of this article are the important of this paper.

About case study area

Natural visuals of cast study area consist of: Zabol city with 15197 km² of vast in northeast of Sistan and Baluchistan province and the distance of this city to the center of province is 207 km². Sistan mathematical situation is 30 and 18minute to 31 and 20minute in north

61 and 10 minute to 61 and 50 minute in north. This city has 30 km distance from the Afghanistan border, this city has wilderness climate because in weather statistics the temperature under zero is notation in it the average raining in each year in Zabol city 59/6mm and average temperature is between -5/9 to 4/9 centigrade. Situation of surface and under earth water in Sistan has too poverty as in recent years its cause wind erosion accent. In account Sistan plain form so foam clay which cause seepage don't let to form water mean mineral.

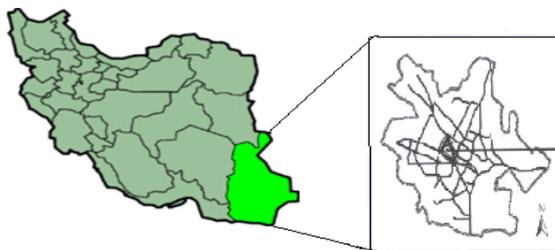


Figure1. The map of situation study Area (Reference: author, 2011).

Methodology

In this study statistical populat is all village which set in case study region which accept information of them earning with high exact in visit from the region. Important variables in this research are the role of critical center in wind erosion and vacate the rural settlements that more other rural set in wind direction.

The Way of Earning up Data and Information

Analytic way in this region is use of some software such GIS, Excel and AutoCAD.

Findings

In Iran 12million hectares of land form by sand pill hills that part of them are active and with their manual active cause some challenges for the roads , cities and equipment's and continue every day (Zabol Natural Mean Organization, 2006). In addition form lands with attack by fluent sands every day is in decreasing. Sistan has three important clubs for critical wind erosion consist of:

- 1- Critical Jazinak club in Zahak
- 2- Critical Miankangi club In Miankangi part
- 3- Critical Shile that set in Shib-Ab plain.

Table1. Critical wind erosion clubs in Sistan region

Critical clubs name	The vast of getup region(Hectare)	The vast of transport region (Hectare)	The vast of subsidence region (Hectare)	total(Hectare)
Miankangi	48652	34529	12739	95920
Jazinak	5703	5858	2344	13905
Shile	62703	45738	34187	142628
Total	117058	86125	49270	252453

Reference: Field studies, 2011

The Zabol has two region wind erosion gripe and In order to that Sistan is abyssal flat with foam material , high temperature , high condense of populat and high population that work in agricultural and shopper jobs . In Sistan region high trap in region, hot winds and set in end of Hirmand water fall. District with 15 million hector that Lange at that set in Afghanistan century create some quail fiction that wind erosion in this part have a large activity and effect many challenges. Some of the visual of this region consist of: less rain fall in each year (60mm, severer different between night and day high evaporation (500, mm), sensation and alkali land sand soil erosion able and with high speed populat faced many problems. Incidence starvation in recent years adds to these problems. Sistan in order of wind erosion In Iran has first stratum and in Asia has second stratum (Medilton, 1986). Plant covers is the only hope to stop the wind erosion that in Sistan is a low cover and in fact Sistan plain is poverty from the aspect of plant covered. In Sistan almost immigration that accrued is natural response from rural people to unsuitable live hood situation, statistical and data from the vast of dust hill in critical Shile club shows the effect of

wind erosion in this region. In this information from critical Shile club that set in Shib-Ab part appropriate to self-84% of dust hills in Zabol and result with condense of dust and sand pile in region wind erosion club of Shile vacate of population . This text show the effect of wind erosion on vacate of rural settlements.

Table 2. The volume of sand pile hills in each of study part

Part	Volume of each part(Hectare)	Volume of sand hills(Hectare)
Miankangi	89516	600
Central part	22760	3000
Posht- Ab	133833	1200
Shib- Ab	794598	26738
Total	1040707	31538

Reference: Iran Census Center, 2006

Also in critical Miankangi club sand pile hills are as a corridor that the most sunken rural in surroundings of this hill and from these sand hills in Miankangi to most distance see very low lands for agricultural purpose. In surrounding of Hamoun lake too with start of starvation many of rural population immigration and only of them other place to live and too clearly don't left this region and some other people to earning up their needs in life face to winder work.

Table 3. Vast of Zabol parts

Part	population	Population percent	Vast of each part%	Vast of agricultural land%	Sunken rural%
Miankangi	73254	23	8	29	28/5
Center part	160259	50/5	2	15	17/9
Posht- Ab	40434	12/7	12/6	25/8	26/8
Shib-Ab	43374	13/6	76/6	30/2	42/7
Total	317357	100	100	100	100

Reference: Field studies, 2011

With notice to table (3) we understand which central part 79/5% percent of that's vast is agricultural land and specialty to self only 2% vast of total area Zabol but almost 50% of Zabol live in it, In this Between Shib- Ab port form 4/6 % agricultural land while it has more than 76/6% of Zabol and only 13/6 % population Zabol live in it. According to 1996-2006 censuses in central part 17% of villages were without and vacate from population and in Shib- Ab region this to arrive to 42/7%.

The most important reason in vacate of this rural set in direction of wind erosion clubs. In central zone one reason for sunken of rural is set of Malaki and Niatak rivers in direction rural and pass these rivers from critical wind erosion channels and in result cause to sunken the rural (Middeltone, 1986).

What we must say in explain of table (4) it's that table show every part from one to for village which recognize the account of them with percent, tot, population and other patterns Shahraki-Naroi part in now change to Zahak. We find that the tot of rural and population rate decrease rather census 1996 and the percent of rural empty of population is increased.

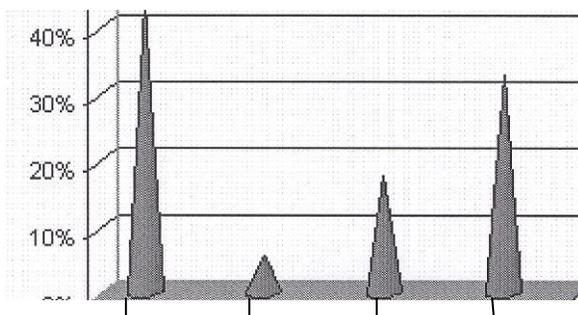


Figure 2. Sunken Rural in Zabol: Miankangi Central Posht-Ab Shib-Ab
Reference: Field studies, 2011.

Shib- Ab part while has 22/7% of rural and 13/7% Zabol population appropriate to self-more than 32/1 % of vacate rural in Zabol, also Miankangi zone with 46/6 of total rural has the most of rural without population in it.

(44%) while this zone form only 23% percent of Zabol population in this between central zones with only ten percent of rural as and 6% of sunken rural more than50% of Zabol population specialty to it.

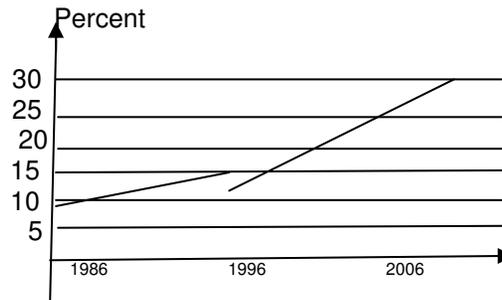


Figure 3. Sunken process in rural in Zabol region in three recent decades:
Resource: (Field studies, 2010).

According to this research the most rural sunken of population set in Shib- Ab zone and surrounding of Shile critical wind erosion club that don't seem any signature of human lives and rural settlements in this region.

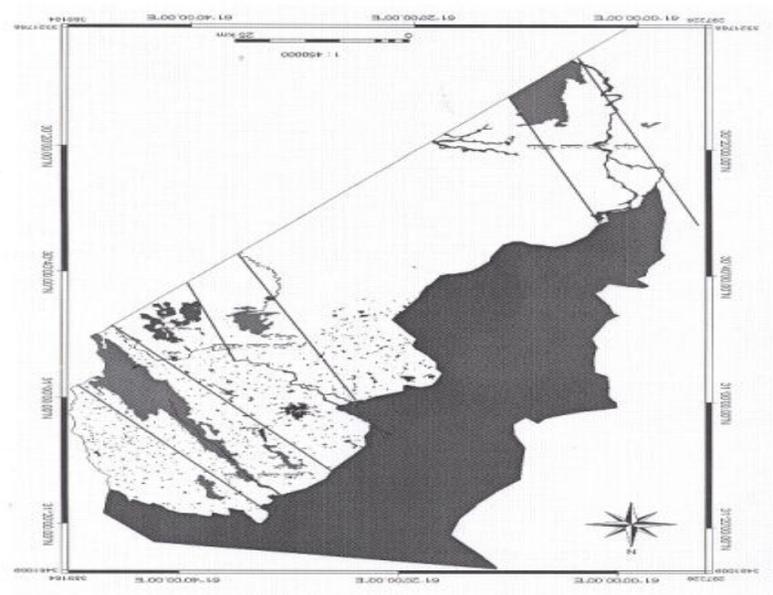


Figure4. Situation of critical wind erosion in each part of Zabol:
Reference: Field studies, 2011.

RESULTS

From all of discussion in this paper we explore that wind erosion in Sistan region in total has three main club consist of:(a) critical Jazinak club in Zahak (b) critical Miankangi club in Miankangi zone (c) critical Shile club in Shib-Ab part, in Shile part this rate is so high from else area. In critical Miankangi club sand pile hills are as a corridor that the most sunken rural in Surroundings of this hill and from these sand hills in Miankangi to most distance see very low lands for agricultural purpose. Shib-Ab part while has 22/7% of ruraland13/7% Zabol population appropriate to self-more than 32/1 % of vacate rural in Zabol, also Miankangi zone with 46/6 of total rural has the most of rural without population in it (44%). while this zone form only 23% percent of Zabol population in this between central zones with only ten percent of rural as and 6% of sunken rural more than50% of Zabol population specialty to it and Jazinak club as end region in this paper have 13905 hectare vast and also has less subsidence, transport and getup area from other clubs. the most rural sunken of population set in Shib- Ab zone and surrounding of Shile critical wind erosion club that don't seem any signature of human lives and rural Settlements in this region. the rate of rural with

no population in regions that affected more by wind erosion is noticeable that this process with starvation in recent year is severe and lead to wind transfusion sediment from Hamoun lake and cause to make wasteland agricultural and vacate rural settlement in Sistan plain.

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