The Modeling of Nebkha dune with vegetation factors

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Abstract

One of the most important process in shaping of aeolian landscape specially nebkha landscape in arid land environment is vegetation. This paper has evaluated the Modeling of Nebkha dune with vegetation factors in desert Sirjan. Dominant species that it has been formed Nabkha is Tamarix mascatensis. This shrub has been adapted with conditions of Aeolian transition area. Results of analysis of regression showed a strong significant relation between volume of Aeolian dune and vegetation horizontal parameter with 0.90 of determination index and 0.60 of standard deviation estimated error .in the next grade are placed relation of Nebkha volume and volume of plant with 0.84 for coefficient of determination and 0.76 of estimated error value. Also results illustrated a weak significant between volume of dune and vertical parameters of plant with determination index of 0.50 and standard deviation estimated error of 1.34. Therefore the best relation between Nebkha dune and vegetation morphology explained intentionally with its canopy cover.

Key words: *Modeling, Morphology, Nebkha , Sirjan , Vegetation*

Introduction

Nebkhas result of interaction systems, wind, and sediment production are biological systems that can process during the formation stages of growth, stability and decline to show Nebkhas a group which forms an uneven Sequestration and their development is influenced by various factors. In the formation of different viewpoints are research Nebkhas Wang et al (2004) that the formation Nebkhas due to factors such as increased by reduced rainfall or wind energy is controlled. Marston (1986) and Khalaf (1995) reported that plant growth patterns and also provide resources essential factors in determining sediment size and development are Nebkha. Narrow leaves and Chen (1995) factors determining growth and development stages of harvest time Nebkhas antibody sediments introduced to the carrying amount and source of sediment supply, wind their strong relationship with the density of vegetation in semiarid areas of their results show that very important factor in the development and growth of song is Nebkhas Plant ecology. Nick Ling and Wolf (1994) have reported that due to the disturbance Nebkhas Vision Nebkha Morphologic are formed largely by the growth patterns of plant species forming is controlled. The important point in the process of development to create vegetation condition is Nebkha. Ecological factors such as tolerance of plant species in the development landscape has Nebkha role because they create Nebkha ability in different species are Nebkha morphology largely by vegetative patterns of plant species that are controlled constituent. Modeling as a tool for understanding the complex communications

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Ecogeomorphology evolution of irregularities and vegetation may be prevailing in the management of environmental changes or human systems in dry and semiarid areas is effective. In general, research results conducted on the characteristics and communication in the formation and development to achieve results Nebkhas Ali figure considerable lower than quantitative criteria to follow and always results in the formation of classic view these forms are unstable. This study is trying to rely on the quantitative characteristics in Geomorphology and landscape Nebkhas study the relationship between factors will determine the yielding Nebkhas. Since Nebkha Morphology several factors are involved in this study tried to keep constant some of these factors as the amount of vegetation in the morphology Nebkha factor will be investigated. In other words, selecting a limited area studied climatic factors (wind, rain and ...) Sequestration factors (size, grain classification and ...) and operating time is assumed constant and the result of changes and communication performances species forming Nebkha is paid. The main purpose of the research relationship between factors Poll vegetation Nebkha with sediment volume measurements apply numerical techniques and statistical analysis based on Poll base year is planned to also always other researchers able to apply quantitative methods to compare their results with the results this study are.

The study area

Study area called the salt desert of Sirjan range latitud 57º 54 and '27 ° 56 East is located. Figure (1) position of the study area shows. Salt desert of Sirjan with average height 1688 meters above sea level and average level of rainfall 100 mm and mean annual temperature of 17.1 º C in the southern city of Sirjan is the dominant wind direction in south-eastern desert is135 ° (Web mail Meteorological Office city Sirjan 1381).

Method

First use of aerial region, range and then study specific reference to attendance area development and Nebkhas territory were determined. Then 10 samples along the entire pan Transkt 1000 meters have took cover along each Transkt Nebkhas Morphometric characteristics were measured in sample size depending on the location to place Nebkha Transkt has been settled. Nebkha a total of 105 species Tamarix mascatensis has been evaluated. In order to get the height and size parameters Nebkha. Nebkha measured cross section then through the year (1) Nebkha size characteristics were determined for the study of vegetation forming factors Nebkha plant morphology, including canopy cover and plant height measured and the measured was. Canopy cover to calculate a mean of two crown diameter measurements to calculate a plant and plant height, branch plant to the highest peak ground operation has Nebkha. The relationship of plant size (2). Respectively. Technique Poll relationship between traits plant with the capacity of sediments Nebkha regression analysis and correlation with spss software is based. Profile botany species Tamarix mascatensis Table (1) are listed (Mozaffarian, 1375).Relationship (1): $v = 1/2(0.33\pi r^2 h)$

Research findings

Results between the size characteristics of plant morphology and sediments Nebkha coefficients established relationships between vegetation components with a cone size Nebkhas species Tamarix mascatensis tables (2) and (3) is expressed. The results showed

most tables between the horizontal component of plant Nebkha size coefficient determined 0.899 and the lowest estimated error rate of 0.601 is the horizontal component of the plant after the highest relationships with Nebkha size plant size coefficient of component explained 0.837 and the error estimate 0.764 is capable. The results of this table shows that the vertical component of plant coefficient determined 0.496 and the error rate estimate 1.343 for the least connection with the volume of Nebkha sediments.

Conclusion

The important point in the process of development to create vegetation condition is Nebkha. Ecological factors such as tolerance, species Nebkha role in the development prospects and ability to create because they are Nebkha different species are different. Some species are more talented Nebkha formed alongside such species (Ziziphus lotus), which form wide estepian areas of North Africa by (Kilian 1945, Lang 1954, Menshing and Ebrahim 1977, Tengberg 1994) reported the species Nebkhas Acacia by Tengberg and chen (1998) in Burkina Fasou is. Therefore, this study characteristics of plant morphology and properties by the Nebkha Morphometric species Tamarix mascatensis was created to justify some characteristics Represent Nebkha Morphometry species by the morphology characteristics are.

Communication between components volume sediment of Nebkha and morphology of plant species Tamarix mascatensis shows the highest correlation between volume sediment of nebkha and horizontal component plant with coefficient determined 0.899 and the lowest estimated error rate of 0.601probability level less than one percent error After the horizontal component is the relationship between plant volume and volume sediments of Nebkha with coefficient 0.837and the error estimate 0.764 at the level of error probability less than one percent is placed next Rank. The results of this table shows that the vertical component of plant coefficient determined 0.496 and the error rate estimate 1.343 for the least connection with the volume of sediments Nebkha. These results show that the most important factor in the sediment trapped by the horizontal component species Tamarix mascatensis plant or vegetation canopy is the same, ie what is more vegetation canopy plant is capable of higher levels of sediment to Sequestration.

Table (1): Profile Tamarix mascatensis species in the study area

Vegetative forms	Life forms	family	Persian name	Scientific name
phanerophytes (over cm30)	Shrub	Tamaricaceae	Gaz	Tamarix mascatensis

Table (2) Summary Relation between vegetation components with a cone volume Nebkhas species Tamarix mascatensis.

Relations	Correlation coeffict	Coefficient determined	adjusted coefficient	error estimates	ANOVA	
					F	Significant
Plant height and size Nebkha	0.704	0.496	0.491	1.343	101.222	0.000
Canopycover and Nebkha volume	0.948	0.899	0.898	0.601	917.436	0.000
Plant volume and Nebkha volume	0.915	0.837	0.835	0.764	528.560	0.000

Table (3) coefficients established relationships between vegetation components with a cone volume Nebkhas species Tamarix mascatensis

Relations	standard coefficients	Unstandard coefficients		T	Significant
		Coefficient	Standard deviation error		
Canopycover and Nebkha volume	0.948	3.561	0.118	30.289	0.000
Constant	……	0.769	0.130	5.919	0.000
Plant height and Nebkha volume	0.704	3.139	0.312	10.061	0.000
Constant	.....	41.447	6.380	6.497	0.000
Plant volume and Nebkha volume	0.915	1.263	0.055	22.990	0.000
Constant	.....	0.022	0.008	2.693	0.008

Figure (1): position of the study area

Figure (2) Appearance Tamarix mascatensis formed by species in the study area

Sources and origin

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