Chaotic Action of Geomorphological Processes of Ghezel Ozan Basin

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1 Introduction
The Chaos Theory was first used in the meteorology by Edward Lorenz in 1965 that turned it into a science (Kram, 2010). CHAOS means turmoil and disorder, and the synonym is turbulence in mechanics.; the term implies the absence of any structure or order. Usually, in everyday conversations, chaos and turmoil are signs of disorder and ineffectiveness, and have a negative aspect (Sayed Javadin, 2009). Geomorphologists describe the past and present trends as an essential principle and predict the future of processes. They, thus, understand the nature and the speed of change. Chaos means the order of a disorder The presence of new alluvial fans at the base of old alluvial fans, Galli, unbalanced landforms, etc. in the Ghezel Ozan basin indicates a change in the level base and active tectonics in the area. The main reason for the creation of a unbalance is the change in the base level, which they reflected as recession erosion in rivers and canals. Capture and deviation phenomena of glacial lakes discharge are due to variations and imbalances in the basin. The basis of the study of the Ghezel Ozen basin in a chaotic model is linear and surface erosion and a combination of both in different regions. The basin area of Ghezel Ozan is among the Caspian Sea basins, which originates from the heights of the Chehelcheshmeh Cheshmeh Kordestan, and after entering the Bijar Geonrouns, through its tributaries Mahanhan, Rajain, Hashtjin enters Tarom and flows into the lake of Manjil dam, and eventually after joining Shahrd to Sefidrud enter the Caspian Sea. This basin is located in Kurdistan, Zanjan, East Azarbaijan, Ardebil, Hamedan and a small part of the provinces of Qazvin, West Azerbaijan, and Gilan.

2 Materials and Methods
This research, which is based on library and field studies, attempts to study the chaotic behavior of geomorphologic processes in the Ghezel Ozan basin. For this purpose, changes in the basal level, captivity and river diversion, the sudden collapse of congestion, intermittent floating cones, hydro-geomorphologic cells, geomorphologic dominoes, salt domes and decreasing erosion coefficients in Ghezel Ozan sub-basins have been studied. To investigate the chaotic dimension of the target area, DEM of 30 *
30m of the region, we extracted our data from SRTEM satellite site. Then we removed the contour layer of the part from the DEM using Arc GIS software. Also, using 1: 50000 topographic maps of the study area, the rivers were extracted and digitize in ArcGIS software, and their pattern was analyzed. The lithology layer was digitized using geology maps of 1: 100,000 and 1: 250,000, and the network of drains was extracted with the help of DEM of the region.

3 Results and Discussion

Equilibrium is one of the words that have a special meaning in the chaos perspective. Chaos regards balance as an order in disorder. In the geomorphological equilibrium, external processes affect both the internal and the combination of both. The base of a river and its branches are one of the main parameters without which the analysis of drainage basins is impossible. The unity of the Ghezelan basin at the beginning of the Quaternary meant the existence of different geonrons. They were an independent gathering place of matter and energy that were formerly local base level. Such standards are the basis of localization in the current situation through traceable sediment traces. The numerous profiles plotted perpendicular to the Ghezelowzan River indicates a sudden downturn in the valley of rivers. The effects of local changes in Geonroun Bijar and Zanjanrood were detected through aggregate levels and alluvial plains.

4 Conclusion

The results show that the effects of changes in the baseline levels in Geonroun Bijar and Zanjanrood were reflected as congestion levels. The same changes have led to the capture and diversion of the QalaehChay, Mehrabad and Anguran Chay. The difference in the base levels in Geonroun Tarom on the two sides of the Ghezelowzan has leftover ten overlapping faces. The Geonrountic network of the Ghezel Ozen basin has been affected by several factors; their accumulation referred to as the cell. Distribution of lithological and tectonic cells has caused erosion of the line or line at the river level. The energy of the changes in the base level in the outflow basin transferred from the highest river rank, such as dominoes, to the status of the first rivers. In addition to excavation and excavation of dams, Ghezel Ozan domes, exploring and digging the rivers of the Ghezel Ozan Basin have played a significant role. The fractal dimension between 1 and 2 of most sub-basins is a line-level fractal. The fractal dimension above 2 in the rest of the sub-basins indicated the surface of the fractal. The mean erosion coefficient of recoil at the ranks 1 of the Zanjan and Tarom rivers indicates the discharge of matter and energy of the Tarom geonroun in the line.

Keywords: Geonroun, Base Level, Domino, Chaos, Equilibrium, Salt Dome, Geomorphic Cell
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