



Hydromorphotectonic Analysis of Al Najaf-Karbala Plateau Using Remote Sensing Technique

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Abstract

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Najaf-Karbala Plateau is located in the central part of Iraq with economic and environmental importance. The hydrological analysis of the plateau show six main watersheds, which provide a comprehensive examination of how surface and tectonic processes interact to shape geological structures in the area. Five morpho-tectonic parameters were applied; Asymmetry factor, Transverse topographic symmetry factor, Stream length gradient index, Mountain-front sinuosity and Elongation ratio. It was concluded that the area under study is activated tectonically to be potential watersheds, symbolized by WSh1, WSh2, WSh3, WSh4, WSh5 and WSh6. The results show low tectonic activity across all watersheds based on to stream length gradient index, whereas three different levels of tectonic activity that based on the Mountain-front sinuosity. The watersheds have different tectonic levels; high activated at WSh1, WSh2, WSh4 and WSh6, while very high activated at WSh5. WSh3, on the other hand, has moderated activity over the area. However, the Elongation ratio indicated that the Najaf-Karbala Plateau exhibits elongation characteristics and more tectonic activity as well.

Keywords: Morphotectonic; lineaments; Remote sensing; GIS; Najaf- Karbala Plateau; Iraq

1. Introduction

The relationship between surface formations and geological processes is the primary concern of tectonic geomorphology. It provides an insight into the origins and configurations of various land features. It is also a useful tool for determining the extent, timing, and intensity of present tectonic movements (Burbank and Anderson, 2001). Plateau, is a unique landform which characterized by sediment deposition in the form of a cone, serves as a good example of this matter. From a central source, this sediment gradually spreads outward, taking the shape of gently sloping cone. These formations are typically found in areas with a variety of climate patterns, including mountainous regions that are arid to semi-arid and areas that receive a greater amount of precipitation (Hargital, 2014).

Tar Al-Najaf which is located on the western border of Lake Milih, is also known as the Al-Razzaza Depression. Through a controlled outlet canal, this depression collected excess water from the Euphrates River. The lake has limited depth, which creates variation in its water level throughout the year. This lake's inception dates back to 1969. Their plan was to re-route the Euphrates River's yearly floods, so they could flow into the surrounding sand dunes rather than drowning southern Iraq. Such plateau has been studied by many researchers, such as Chalib (1988) who found that the Dibdibba Formation represents a very large Pleatue, which has been constructed and covered by the two cliffs in the study