

Geography and Development  
10<sup>nd</sup> Year- No. 26 – Spring 2012  
Received : 6/3/2011 Accepted : 1/12/2011  
PP : 27- 29

## **The Application of Assessment Indicators of Active Tectonic in Estimating Tectonic Status in Upper Zayandehroud**

**Mahmood. Habibolahian**  
M.S of Geomorphology  
University of Isfahan

**Dr. Mohammad Hosein. Ramesht**  
Professor of Geography  
University of Isfahan

### **Introduction**

Given that Iran is located on the Seismicity belt of Alps-Himalaya and since we occasionally have seen huge and destructive earthquakes such as Bam and Tarom, the investigation and study of active tectonic and assessment of threat and risk of such damages in big cities are very important. Zayandehroud River, is known as the greatest and most famous permanent river of the Center of Iran on which the Zayandehroud dam has been established. Upper part of the river is placed at north east of Chaharmahal o Bakhtiyari province and east of Isfahan province att coordinates of geograhocal longitude of 50°, 45' and up to east 50°, 53' and 50 " and geographical latitude 32°, 30 ' and 45" up to north 32°, 45' and 50 " . This area is part of Sanandaj- Sirjan geological zone.

### **Research and Methodology**

In this research, the erosion and tectonic activities in longitudinal and transversal valleys of Zayandehroud have been investigated in an area of about 400 km<sup>2</sup> using quantitative morphometric indicators, such as Hypsometric curve, Integral of Watershed hypsometric curve, Ratio of width of valley bed to valley elevation, V ratio, river length- gradian in den and topography balance in den.

### **Discussion and Results**

An investigation of these indicators showed that the main valley (longitudinal) of the river was classified as semi-active based on  $V_f$  and V ratio indicators. Also according to  $V_f$  and V ratio, secondary valleys in the right and left shores of the river had active and semi-active status. Also, results indicated that the studied area was settled in non-active status based on SL indicators, and also according to dis-balance index, left side of the river was more active than the right side. Results showed that for purposes of topography balance (T), north of basin is more active than the south of the basin with low severity. Study area has an adult and old trend according to hypsometric and integral indicators.

## Conclusion

General assessment from the integration of indicators indicated that the studied area was settled in semi-active to non-active position from neotectonic aspect.

**Keywords:** Morphometric indicators, Active tectonic, Geomorphology, Zayandehroud.

## References

- 1- Arian, M. Pourkermani, M (2001). River morphology and active techtonic (Reviewing the current status of Ghezel ozon river in the province of Zanjan), the fifth annual conference of Geological Society of Iran, National Iranian Oil Company and Shahid Beheshti University.
- 2- Natural disaster institute (2004). First report on seismic zonation of Chahar mahal province.
- 3- Hajalibeigi, H (2001). Morphotectonic of Tehran basin, MS thesis, Shahid Beheshti University.
- 4- Davoodian Dehkordi, A (2005). Tectono Metamorphic and magmatic evolution of the zone between Shahrekord and Daran (Sanandaj-Sirjan zone, Iran), PhD dissertation, University of Isfahan.
- 5- Zolfaghari, M. Peirovan, H. R. Ghayoumian, J. Bouzari, S (2004). investigating the effect of active technotic on the pattern of drainage basins of the southern half of Haj Aligholi (Southeast of Damghan), Twenty-third Symposium of Geosciences, GSI and Mineral Exploration of Iran.
- 6- Soleimani, Sh (1999). Guidelines on the Identification of active and young tectonics with an attitude toward the long-standing seismology, International Institute of Seismology and Earthquake Engineering.
- 7- Soleimani, Sh. Zare, M (1999). Investigating Morphotectonic and young tectonic activities in Tehran-Karaj zone, Proceedings of the Third International Conference on Seismology and Earthquake Engineering, Third Volume, Tehran, International Institute of Seismology and Earthquake Engineering.
- 8- Ebadian, S (2000). Structural analysis and tectonic analysis of Sabzpousshan Taghdis based on Morphotectonic analysis of the area, MA Thesis, Shahid Beheshti University.
- 9- Karami, F (2002). Investigating geomorphological issues of northern slopes of Bozghoush mountains and Anbashti Sarab flat, PhD Thesis, University of Tabriz.
- 10- Malek, R (1998). Applying morphometrical parameters in neotecnotic studies of southern parts of Central Alborz, MA Thesis, Shiraz University.
- 11- Bull W., and McFadden L (1977). Tectonic geomorphology north and south of the Garlock Fault, California, Geomorphology in Arid regions, D. O. Doehring, ed., Publications in Geomorphology, State University of New York at Binghamton, 115-138.
- 12- Cox R.T (1994). Analysis of drainage basin symmetry as a rapid technique to identify areas of possible quaternary tilt block tectonics: an example from the Mississippi embayment. Geol. Soc. Am. Bull. 106, 571 – 581.

- 13- Gardner, T.W., Back, W., Bullard, T.F., Hare, P.W., Kesel, R.H., Lowe, D.R, Menges, C.M, Mora, S.C., Pazzaglia, F.J., Sasowsky, I.D., Troester, J. W., and Wells, S. G (1987). Central America and the Caribbean, in Graf W.L. ed, *Geomorphic systems of North America*: Boulder, Colorado, Geological Society of America, Centennial Special Volume 2, 343-401.
- 14- Hack J (1973). Stream profile analysis and stream gradient index, U. S. Geol. Surv. J. Res. 1, 421-429.
- 15- Keller, E. A (1977). Fluvial systems: selected observations. In *Riparian Forests in California: Their Ecology and Conservation*, Anne Sands (ed.), University of California, Davis, Institute of Ecology, Publication No. 15, Chapter 5, pp. 39-46.
- 16- Keller E (1986). Investigation of active tectonics: use of surficial earth processes. In: Wallace, R. E. (eds), *Active Tectonics studies in Geophysics*. Nat. Acad. Press, Washington, Dc, 136-147.
- 17- Keller, E. A., and Pinter, N (1996). *Active Tectonics* Prentice Hall, Upper Saddle River, NJ.
- 18- Keller E. A., and Pinter, N(2001). *Active Tectonics, Earthquake, Uplift and Landscape*, Earth Sciences Series, Preintice- Hall, Englewood Cliffs, NJ.
- 19- Mayer, Larry (1986). *Tectonic Geomorphology of Escarpments and Mountain Fronts*, Miami University.
- 20- Molin, P, Pazzaglia, F. J., Dramis, F (2003). *Geomorphic Expression of Active Tectonics in a Rapidly Deforming Arc, Sila Massif, Calabria, Southern Italy*, Dipartimento Di Scienze Geologiche, Universita Degli Roma Tre.