

Mendoza, Argentina, 14th march 2022.

Review of PhD Thesis Late Cenozoic response of the selected fluvial systems of the Bohemian Massif to tectonics, Mgr. Jan Flašar, supervision Mgr. Karel Martínek, Ph.D.

The thesis entitled *Late Cenozoic response of the selected fluvial systems of the Bohemian Massif to tectonics* of Mgr. Jan Flašar is well written and organized presenting novel results that contributes to the understanding of the tectonics of two sectors of the Bohemian massif. The two published papers and the recent one submitted to the International Journal of Earth Sciences, synthesize very well the results obtained from the doctoral thesis. However, there are details, following denoted, that need to be improved.

1. There are some grammatical errors and details in the manuscript that should be amended. I have shared the original pdf file with my comments so that the PhD student could follow my suggestions.
2. It would be wise avoid graphics/figures repetition. Figures included in published papers appear in the initial part of the thesis.
3. In my opinion the introduction and other items detailed at the top of the thesis should be considered as a chapter 1. Therefore the first paper should correspond to a chapter 2.
4. Please, consider other authors using morphometric indexes in other tectonic environments and related studies..

Goldrick, G., Bishop, P., 2007. Regional analysis of bedrock stream long profiles: evaluation of Hack's SL form, and formulation and assessment of an alternative (the DS form). *Earth Surface Processes and Landforms*, 32: 649-671.

Horton, R.E., 1945. Erosional development of streams and their drainage basins: hydrophysical approach to quantitative morphology. *Geological Society of America Bulletin*, 56: 275-370.


Haviv, I., Enzel, Y., Whipple, K.X., Zilberman, E., Stone, J., Matmon, A., Fifield, L.K., 2010. Evolution of vertical knickpoints (waterfalls) with resistant caprock: Insights from numerical modeling: *Journal of Geophysical Research*, 115, F03028.

Hurtrez, J.E., Sol, C., Lucazeau, F., 1999. Effect of drainage area on hypsometry from an analysis of small-scale drainage basins in the Siwalik Hills (central Nepal). *Earth Surface Processes and Landforms*, 24: 799-808.

- Larue, J.P., 2008. Effects of tectonics and lithology on long profiles of 16 rivers of the southern Central Massif border between the Aude and the Orb (France): *Geomorphology*, 93, 343-367.
- Luo, W., 2002. Hypsometric analysis of Margaritifer Sinus and origin of valley networks. *Journal of Geophysical Research-Planets*, 107, DOI: 10.1029/2001JE001500.
- Mahmood, S.A., Gloaguen, R., 2011. Appraisal of active tectonics in Hindu Kush: Insights from DEM derived geomorphic indices and drainage analysis. *Geoscience Frontiers* 3(4), 407–428.
- Ohmori, H., 1993. Changes in the hypsometric curve through mountain building resulting from concurrent tectonics and denudation. *Geomorphology*, 8: 263-277
- Pérez-Peña, J.V., Azañón, J.M., Azor, A., 2009b. CalHypso: an ArcGIS extension to calculate hypsometric curves and their statistical moments. Applications to drainage basin analysis in SE Spain. *Computers and Geosci.* 35, 1214–1223.
- Pérez-Peña, J.V., A., J.M., Azor, A., Delgado, J., González-Lodeiro, F., 2009c. Spatial analysis of stream power using GIS: SLk anomaly maps. *Earth Surf. Proc. Land.* 34, 16–25.
- Pérez-Peña, J.V., Azañón, J.M., Booth-Rea, G., Azor, A., Delgado, J., 2009d. Differentiating geology and tectonics using a spatial autocorrelation 3 technique for the hypsometric integral. *J. of Geophys. Res.–Earth Surf.* 114, F02018.
- Pérez-Peña, J.V., Azor, A., Azañón, J.M., Keller, E.A., 2010. Active tectonics in the Sierra Nevada (Betic Cordillera, SE Spain): Insights from geomorphic indexes and drainage pattern analysis. *Geomorphology* 119, 74-87. doi:10.1016/j.geomorph.2010.02.020.

5. Although the thesis is well oriented to demonstrate tectonics influence in streamflow evolution, a possible climatic forcing is not adequately addressed. I think the probable climatic forcing should be included in the discussion... Why a climatic influence is excluded on fluvial evolution? Would a double effect of climate and tectonics be possible? Why not? The Pliocene (?¿?) fluvio-lacustrine deposits could respond to a wetter period. As well finding that drainage pattern changes in the in both study areas simultaneously at Late Miocene/Early Pliocene (first) and between the Late Pliocene/Early Pleistocene (second) could be forced by a regional climatic pattern.

In my opinion the mentioned details of the manuscript and suggested incorporation in the thesis can be easily improved. So I consider the thesis reaches the level to approve the doctorate (PhD grade).



Stella Moreiras

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