

ABSTRACT

THESIS: Comparative Complexity of continental divides on five continents

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The main focus of the present study is to identify and integrate the factors affecting the degree of irregularity of five continental divide traces, as expressed by their fractal characteristics measured by the divider method. The factors studied are climate, relief and tectonic environment. The second objective of this study is to determine the relationship between uplift rates and divide trace fractal dimension.

Analysis of the results suggests that the degree of irregularity of continental divide traces at fine scale (approximately 10-70 km of resolution) is strongly affected by both climate and tectonics. It is found that control of the factors is generally weaker at coarse scale (above approximately 70 km of resolution). Generic relief should be ranked below both climate and tectonic environment as a factor affecting the complexity of continental divide traces. In terms of the second objective, the fractal dimension at fine scales follows a weakly inverse relationship with uplift. At coarse scale, there is stronger inverse relationship between uplift rate and fractal dimension.