Proposal of a quantitative assessment method for viewpoint geosites

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Studies on viewpoints for geoheritage began to develop recently. Pereira (2006) pointed to “panoramic viewpoints” as a type of geosite; later Fuertes-Gutiérrez and Fernández-Martínez (2010) classified the geosites into five categories, namely: point, section, area, complex area and viewpoint.

Migoń and Pijet-Migoń (2017) considered viewpoints as locations that contribute to a holistic view of the landscape and that help in the understanding of natural history, spatial relationships, rock types, geoforms and continuous environmental changes. However, the problem of this research is the scarcity of methodological proposals for the quantification of these types of geosites, since the existing ones only evaluate the place and not what is observed in the observed landscape. Thus, the objective of this research is to present a methodology for quantifying the values of Geodiversity for the viewpoints, evaluating the landscape viewed from the viewpoints.

Regarding the proposed methods for quantifying the geomorphological heritage of the viewpoints, there are the works of Mikhailenko and Rubán (2019), who listed 17 criteria evaluated in a semi-quantitative way with scores from 0 to 4, and Mikhailenko, Ermolaev and Ruban (2021) who chose seven criteria (with defined scores) for a semi-quantitative assessment of viewpoints. This last work evaluated viewpoints based and observed from bridges, nevertheless it is considered that these methods do not present a rigid delimitation of the criteria evaluated to be replicated in the different types of viewpoints.

Based on the aforementioned researches, it was possible to elaborate a methodological proposal with three values, being two main values, the aesthetic value and the scientific value; and additional values that were divided into touristic, cultural and educational. The evaluation consists of a valuation assigning the highest score to the criteria with the greatest relevance. The valuation is divided into quartiles, being considered a geosite the site that has a high score (>75%) in the scientific and/or aesthetic values.

The proposed aesthetic value has six parameters: panoramas and other views, visibility of geological/geomorphological features, verticality, presence of water bodies, color contrast, presence of individual element and extent of viewable area. In terms of scientific value, the parameters of diversity of visible geological/geomorphological features, representativeness, integrity and paleogeographic value are proposed. In the additional values there is the touristic value in which accessibility, touristic category, existence of ongoing use, installed amenities, signage and security are considered. In terms of cultural value, it only deals with the parameter of cultural
relevance and, finally, educational relevance value.

The method was applied for testing and validation purposes in eight viewpoints located in tablelands ("chapadas") in the state of Rio Grande do Norte, Brazil, and the results indicated that four were classified as geosites and four as geodiversity sites.

The method proved to be efficient for the quantification of viewpoint geosites, however it is considered that more applications are needed in more diverse viewpoints, in terms of relative height (from the viewpoint to the visualized area) and extension of the visualized area.