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Ambiente & Água in the context of impact indicators of scientific Brazilian journals

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For quite some time the international scientific community has criticized the use of impact indicators based only on few journals registered at commercially subscribed databases such as the ISI Web of Knowledge (producer of Journal Citation Reports - JCR). Several studies focusing on different subject areas have demonstrated the advantages and disadvantages of assessing the impact of an article, or journal, from commercial and open-access databases, such as Google Scholar (Segen, 1997; Gisvold, 1999; DuBois and Reeb, 2000; Whitehouse, 2002; Baumgartner and Pieters, 2003; Cameron, 2005; Ha et al., 2006; Mingers and Harzing, 2007). Most of the studies found that there was a strong correlation between impact indicators measured by a commercial databases (restricted) and open-access in certain field areas (Science, Health, Biological and Applied Social), while areas usually with lesser coverage by commercial databases (Environment, Humanities, among others) end up having lower impact indicator values based on these commercial databases. Moreover, the number of publications in these last areas has shown a significant expansion recently and, therefore, they end up receiving greater impact scores when evaluated by open-access databases. In these cases the correlation between impact indicators calculated by restricted versus open-access database is significantly lower.

In order to assess the position of the journal *Ambiente & Água*, with respect to its performance indicators in comparison with other Brazilian scientific journals, categorized by QUALIS-CAPES Interdisciplinary strata A2, B1, B2 and B3, an analysis was developed based on the values of three indicators calculated for the last five years of 58 Brazilian journals (with publications in thematic areas that overlap with those of *Ambiente & Água*) subdivided into: 11 of stratum A2, 22 in stratum B1, 8 in stratum B2 and 17 in stratum B3. The first indicator used was the h-index proposed by Hirsch (2005) and defined as: "a scientist has index h if h of his/her N_p papers have at least h citations each, and the other (N_p-h) papers have no more than h citations each". Thus, the h-index provides a value that is a mix of quantity and quality of articles published by a researcher, if quality is measured by citations. According to Bornmann and Daniel (2007) the h-index favors a researcher who publishes a series of articles over time with an above average impact measurement. The same concept is applied to calculate the impact of a scientific journal. The second indicator used was the g-index proposed by Egghead (2006) which is defined as: " [Given a set of articles] ranked in decreasing order of the number of citations that they received, the g-index is the (unique) largest number such that the top g articles received (together) at least g^2 citations". The third indicator used was the AW-index which was proposed based on a note published by Jin (2007) that gave origin to the AWCR indicator that uses a weighted age factor and measures a bundle of articles adjusted for the age of their publication. The AW-index corresponds to the square root of the AWCR that allows a more direct comparison with the h-index (Spiroski and Gogusev, 2008).

Figure 1 presents the results of the comparative values of the h-index and g-index for the journal *Ambiente & Água* and 58 other Brazilian scientific journals that were analyzed. It is evident from the figure that there is a high correlation between these indicators, which, numerically, were expressed as 0.99 for stratum A2, 0.90 for stratum B1, 0.99 for stratum B2, and 0.89 for stratum B3. The relative position of *Ambiente & Água* in all four strata is remarkable. In the A2 graphic *Ambiente & Água* surpasses three other journals and positions itself in the lower quarter of an imaginary regression line crossing all points. In the B1 stratum this journal moves slightly toward higher impact indicators, but if an imaginary cluster was drawn that surrounds most of the journals in this stratum (with values between 2 and 10 for both indicators), it could be stated that the position of *Ambiente & Água* would be in the center of this group. In the B2 stratum the relative position of this journal continues to progress toward higher impact values compared to earlier graphics and, again, positions itself ahead of three other journals in this category. In stratum B3 (which is the current rank of *Ambiente & Água*), it should be noted the relative value of the g-index value of this journal, which is surpassed by only one of the other journal while in the h-index only by three.

Based on the results presented in Figure 1 it is correct to state that *Ambiente & Água* has shown outstanding performance, in these five years of its brief history, as a scientific publication with significant impact when measured by indicators that use data from open-accessed databases.

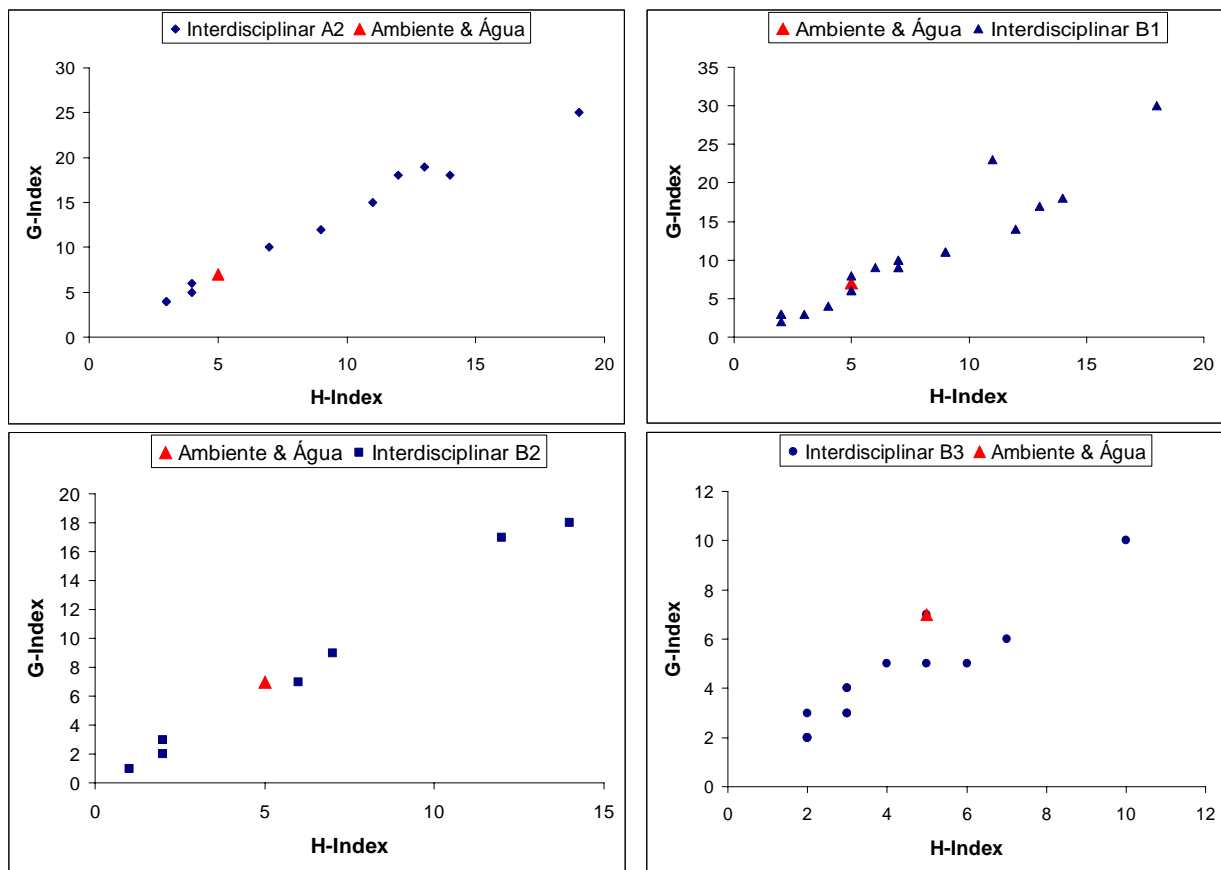


Figure 1. Comparison between *h-index* and *g-index* values of the journal *Ambiente & Água* and 58 Brazilian scientific journals subdivided in the strata A2, B1, B2, and B3 of the Interdisciplinary area of QUALIS-CAPES ranking.

Figure 2 shows the comparative results between the h-index and AW-index of the same journals. The distribution patterns among the four strata are clearly related to the patterns of

Figure 1. If on the one hand it shows little innovation in terms of new information, on the other it confirms the relative position of the journal Ambiente & Água in relation to the other Brazilian journals analyzed. It is worth emphasizing one aspect observed in stratum B3, where the AW-index value of the journal was passed only by two others, while the h-index shows the same pattern.

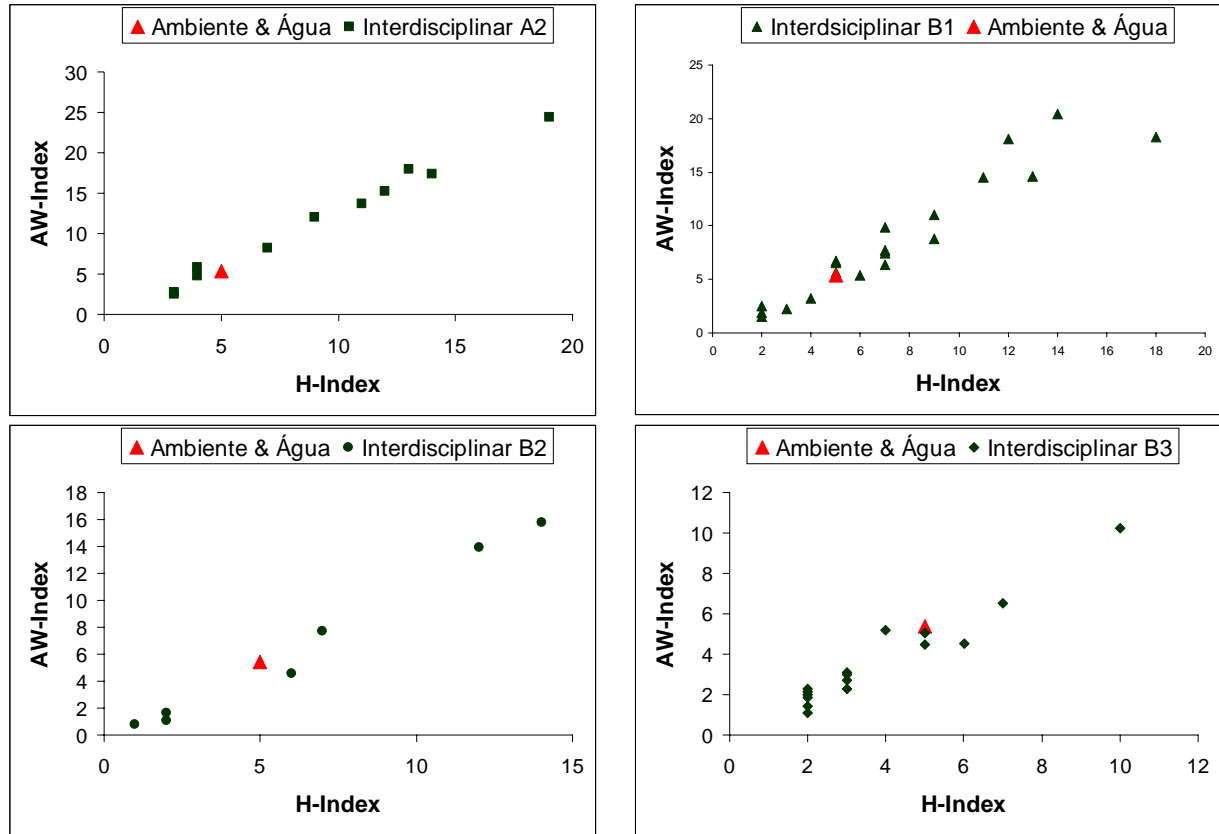


Figura 2. Comparison between *h-index* and *AW-index* values of the journal Ambiente & Água and 58 Brazilian scientific journals subdivided in the strata A2, B1, B2, and B3 of the Interdisciplinary area of QUALIS-CAPES ranking.

Figure 3 complements the comparative analysis between the three impact indicators and presents the comparison values between *g-index* and *AW-index*. The distribution patterns of values in the charts, although similar to previous ones, show some significant differences. The pattern of stratum B1, for example, is more clearly divided into two clouds (or clusters) of points, one denser with values below 12 in both indicators and other with a more scatter pattern above value 15. But once again the position of Ambiente & Água is toward the center of the denser cloud. In stratum B2, although quite similar to the previous ones, it should be noted that the journal is positioned ahead of four other journals. In the group B3 the relative position of Ambiente & Água is still higher compared with the previous ones, being surpassed by only two other journals in the comparison of these indicators.

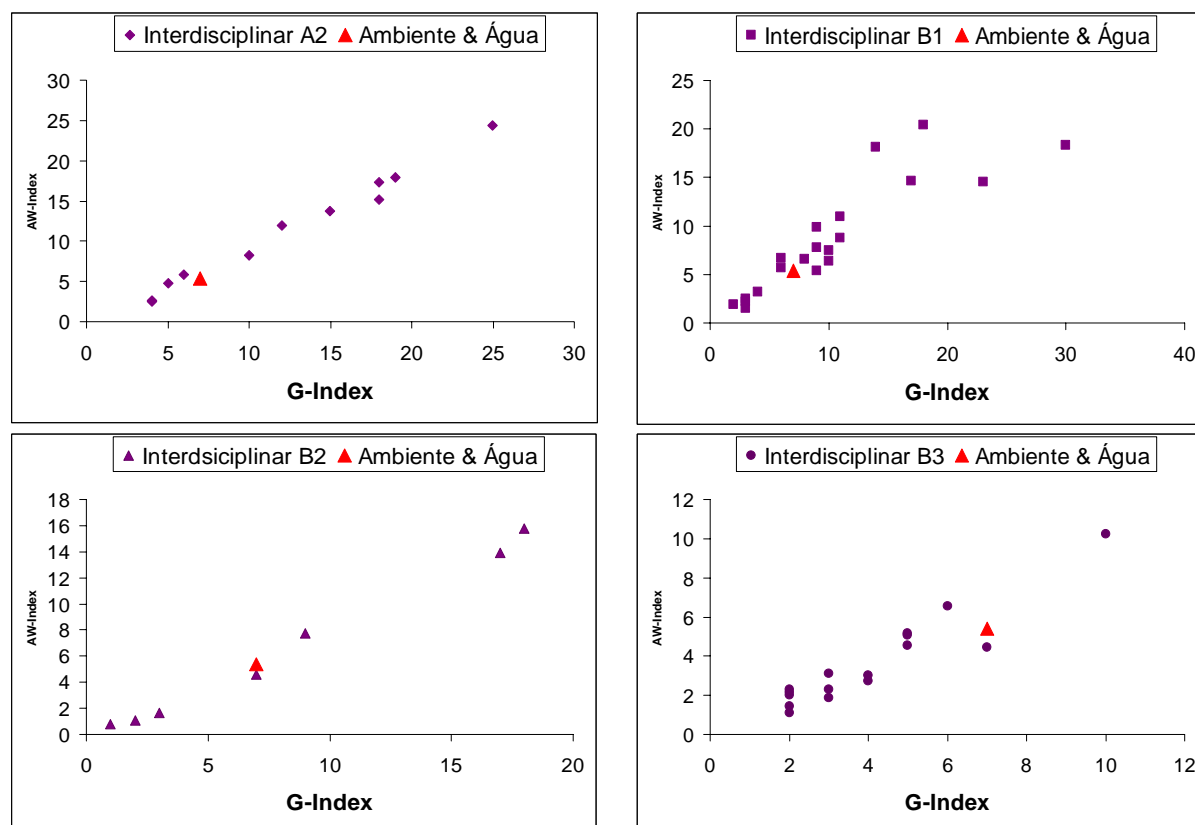


Figure 3. Comparison between *g-index* and *AW-index* values of the journal *Ambiente & Água* and 58 Brazilian scientific journals subdivided in the strata A2, B1, B2, and B3 of the Interdisciplinary area of QUALIS-CAPES ranking.

In this exercise, developed to obtain impact values of various Brazilian scientific journals in international open-access databases, not only it could be demonstrated the role that the journal *Ambiente & Água* withholds in the national scientific community (and even international if considered the information published in previous editorials), but also witnesses the degree of efficiency, transparency, and simplicity of the indicators used.

The Editorial Board of the journal *Ambiente & Água* stands in favor of using indicators that are transparent, simple, and free of charge in the process of assessing the impact of published articles and scientific Brazilian journals.

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