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Mini-Review

Automated Information System for Land Homogeneity (AISLH)

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Abstract

The AISLH is a free-to-use software by its authors for research, assessment and consultation purposes in socio-environmental, agro-ecological, socio-economic and quality of life projects in rural, peri-urban and urban media. In general, the application of the AISLH is of great use for the definition of a sustainable territorial management based on the use of renewable natural resources and the intervention of ecosystems to satisfy human needs without deteriorating the ecosystem.

Introduction

The innovation consists in the development, improvement and implantation of the "AISLH", with final evaluation and conservation of the renewable natural resources (water, soil, forest and fauna); based on the application of the Multiple Homogeneity Index (MHI). The design consists of two modules: the Central Module of Calculus (CMC) and the Module of Simulations (MS). The CMC evaluates the overall homogeneity of the system or area of interest, taking into account simultaneously the influence of all the variables (quantitative and qualitative) selected as relevant by the user. The MS allows the realization of interactions on the basis of data generated by the systems in the studio, with the quantification of its partial homogeneity.The proposal of this summary compendium should be known to the "AISLH" as a technical support for determining and controlling the incidence and negative effects of the factor processes that degrade the renewable natural resources and the non-renewable consequences of its use, management and management criteria. Ambient, social and economic, provoking the degradation of the entourage and the depression of the quality of life of the communities.

Description and Development of "AISLH"

The procedure used in all phases of the project (CMC and MS) is the Oriented Methodology Object (OMO), based on analysis techniques that allow the implementation of a solution to improve the processes involved in the design (CMC and MS). It is a tool to perform univariate and multivariate statistical calculations to determine the MHI of any thermodynamically open system; be these of a social, socio-environmental, public health, sanitation types and environmental deterioration; agricultural and agro-ecological production; economic, educational and cultural development, among others; It implies the integration of different variables, frequently auto-correlated, which contribute specifically to the value of the MHI of the systems in which it is used. The stages of development of the AISLH are indicated as continuation

Stage 1: Theory of multiple homogeneity

According to this premise, physical-chemical systems evolve spontaneously when they reach their maximum homogeneity (second and third law of thermodynamics); however, biotic systems are NEG-ENTROPIC); that is, they tend to remain in dynamic equilibrium, showing greater Resilience and, consequently, greater recovery capacity. On the contrary, the more ENTROPIC or disordered the biotic systems are in their structure and functionality, the lower their resilience, being prone to a greater degree of deterioration or degradation. These Ideas-Force led to the definition of the Multiple Homogeneity Index (MHI) between 1985 and 1988.

Stage 2: Validation of the MHI

It was carried out between 1990 and 2000, verifying the robustness of this parameter, which allowed the design of a first version of the "AISLH". In this stage, the members of the Soil and Water Research Group (SWRG) acquired the expertise and knowledge to apply the MHI in various research projects [4,5].

Stage 3: "AISLH" test and validation

Between 2000 and 2012 it continues with the validation of innovation, including masters and doctoral theses. Consolidates the expertise of all SWRG integrators for its implementation.

Stage 4: "AISLH" test and validation, v-2.0

Since the year 2015, a level of madurez has been set in the development of this innovation with the incorporation of Ing. Enver Jaimes. Currently this technological proposal is listed to be used as part of a business and learning model oriented towards its commercialization and marketing by some of the institutions and companies that are interested in sharing a patent on intellectual property is software [6].

Importance of "AISLH" Application Examples

The importance of the AISLH lies in the fact that it is a tool capable of determining the biotic or abiotic components, characteristic of any ecosystem, that are more susceptible or likely to be damaged by human agro-productive activity (livestock,

agricultural, forestry or agro-industrial), including extractive activities carried out by mining activity, artisanal or not, in terms of the evaluation and assessment of the impact caused by the loss of habitats and biodiversity, deforestation, environmental and human health, hydro-biological changes, mercury contamination by heavy metals, of surface water and underground; among other processes that degrade the quality of life of the communities included in the ecosystem subject to such impacts or in the areas surrounding it. Below are the publications detailing the various applications of the AISLH in the soil, geomorphology, climatology sciences and the analysis of socio-environmental deterioration.

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