Fuzzy logic model for desertification vulnerability risk assessment – A case study, district Bellary, Karnataka

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(Received: October 21, 2010; in final form June 12, 2012)

Abstract: It is important to estimate the risk of desertification in order to take proper measures for its prevention. The paper intends to identify the areas under the risk of desertification, through an integrated geo-statistical model with fuzzy classification system for natural parameters and cumulative weighted method for socio-economic components. Assuming the property of distribution of natural variables as Gaussian, normal probability density function was used to derive the membership of a particular variable into suitable class. The vulnerable areas were recognized from the infinite distribution tails of each normal curve. Socio economic risks were obtained using cumulative weighted method (*Sastry, 2010*). The risk areas in terms of individual parameters were then combined to locate the areas under desertification risk using geo-statistical multi-criteria base analysis. Various anthropogenic pressures are accelerating land deterioration, coupled with natural erosive forces. The study examines four major sources of land degradation in Bellary, namely water erosion, degradation due to salinity and alkalinity, deforestation due to illegal mining within the forest, and growing urbanization.

Key words: Desertification risk, Fuzzy membership function analysis.