
Erosivity indicators based on rainfall in Northwestern Mexico

Abstract
This study is motivated by the problem of erosivity (R), exacerbated in semiarid zones by intense seasonal storms. The purpose was to estimate the spatial variation of R in a coastal area covering 37500 km² which is one of the most important agricultural areas in northwestern Mexico. Four methods were used. Rainfall data from 11 SMN-CONAGUA weather stations (from 1966 to 2013) were used to calculate R. The annual average R1 was 1181.08, and R2 was 1084.51 MJ mm ha⁻¹ h⁻¹ with ranges of 2.35–5220.55 and 2.93–4711.38 MJ mm ha⁻¹ h⁻¹. Statistical tests showed that a transformation of the data of the form y = log (x), was appropriate for an ANOVA analysis of the data. The value of the test statistic was F = 1.77 with p = 0.149, showing interdependence between the indicators P (α = 0.05). The values of the correlation coefficients for the data were P vs. R1 = 0.96, P vs. R2 = 0.99, P vs. Aim = 0.98, P vs. MFI = 0.99. The classification of risk in this region showed that 2017.5 km² of the study area was at a very high risk of rain erosion, 2407.5 km² under high risk, 5662.5 km² under medium to high risk, and 14250 km² under low risk. The results are shown on 1:10,000 maps. Results are a set of useful information for soil management programs and for cultivation planning that takes the seasonal variation of R into account in this region where large volumes of extensive crops are grown. © 2016 Vilnius Gediminas Technical University (VGTU) Press.

Author Keywords
coastal area; indicators; rainfall; risk; semiarid zones

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