

APPLICATION OF STATISTICAL MODELS TO ESTIMATE THE RAINFALL WATER  
AVAILABILITY IN SITES WITHOUT PLUVIOMETER IN SEMI-ARID TROPIC.

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ABSTRACT - - This study shows a prediction equation by which it is possible to estimate the annual rainfall for any particular point in a given region. This estimation is based just on the parameters of geographical location of that point. Adjusted "in situ", it was developed for an area of 40.000 Km<sup>2</sup> which embraces a large part of the "Sertão" of Pernambuco State and part of Ceará, Piauí, and Bahia States. It is as follow:

$$Y = X \beta + \varepsilon \text{ where:}$$

Y is a random vector

X is a matrix n x p

$\beta$  is a vector p x 1 and

$\varepsilon$  is a random vector N (0,  $\sigma^2 I$ )

In this study, the matrix X was composed of the variables: distance, angle, cartesian coordinates and their interactions related to a reference meteorological station (Ouricuri-PE). In the studied region the obtained equation allows prediction of annual rainfall with an average deviation of 8,5% for the stations involved in this research.

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