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Emergency and the Importance of Relationships in Mathematical Models of Elliptic Statistical Structures

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Abstract: In the article seen tasks meteorological information based on emergency situation parameters analysis to do and forecast to do opportunities, emergency situation characteristics connection determination and assessment meteorological from factors, extreme emergency situations, dangerous meteorological of the conditions appearance to be and development the risk in the evaluation connection shown. Emergency situations characteristics meteorological to the parameters connection to determine attempt, in the future extreme emergency situation the risk analysis to do and prophecy to do methods working to go out help giver mathematician model shown.

Keywords: mathematical model, eventology, probability, randomness quantity, density function, mathematician unexpected, elliptical distribution, normal distribution

Introduction

The problem of emergency risk remains one of the pressing problems of our time. Management impossible large casualties to people and to nature big damage delivers [1].

That's why extreme for the value assessment and prophecy to do important to be remains . In the article seen tasks meteorological information emergency situation based on parameters analysis to do and forecast to do opportunities , emergency characteristics dependence determination and assessment meteorological factors , extreme emergencies , dangerous meteorological of the conditions appearance to be and development the risk assessment . Emergency situations characteristics meteorological to the parameters dependence to determine attempt , in the future extreme emergency the risk analysis to do and prophecy to do methods working to go out help gives [2].

In evaluation theoretical from data use important . Bykov , Rogkov , Vakurov , Vorobyov such as scientists in research example and statistic from analyses used , extreme values theory and different methods according to information again work eventological in terms of studied [3].

Methodology

Emergency situations in particular speaking if we were , the world on a scale forest with covered general land area approximately 3,866 million hectares organization will Latest in years to the atmosphere many in quantity greenhouse gases (carbonate anhydride , methane and others) release problem because of and other natural ecosystems they for absolutely new in terms of seeing come out began [4]. Nature storage and global importance of reproduction important international ecological in the documents , this including climate change according to The Convention also includes Kyoto in the protocol one how many there is emphasized [5].

Result and Discussion

Natural emergency situations in the city this of the regions status and dynamics determinant main are factors . Countries natural fund structure , dynamics main and intermediate use , resources to multiply goal does[6] . Statistical of analyses mathematician models many measurable elliptical to distributions based without elliptical distribution class many scaled normal distributions statistic of information main is one of the characteristics of such many measurable distributions in n- dimensional random quantity $X = (X_1, X_2, \dots, X_n)^T$ there is many measurable elliptical distribution $X \sim E_n(\mu, \sum, \psi)$, if its character is stick function

$$\varphi_X(t) = \exp(it^T\mu)\psi\left(\frac{1}{2}t^T\sum t\right)(1)$$

some quantity for μ, the defined matrix $x$is called the measure $n\ x\ n$and characteristic function some $\psi(t)$ functions by generator [7]. CHL (*) of characteristic generator clear related to be possible p, measure vectors X. Classical to distributions related one how many thoughts appropriate[8]. First , the general without , $f_X(x)$not being together possible distribution density but if there is if , it appears in the form of[9]

$$f_X(x) = c_n|\sum|^{-1/2} g_n[\frac{1}{2}(\mathrm{x} - \mu)^T \sum(x - \mu)^{-1}]\ (2)$$

$g_n(\cdot)$functions called density generator for , like the characteristic generator , it is clear related to be possible n use density generator , you are in the family x relevant the truth your writing possible $X \sim E_n(\mu, \sum, g_n)$elliptical distributions in the form[10]. From (2) the existence of the distribution density is expressed by normalization possible c $_n$ constant clear in the form of [11]:

$$C_n = (2\pi)^{-n/2}\Gamma(nA)\left[\int_0^\infty X^{n/2-1}g_n(x)\,dx\right]^{-1}(3)$$

Secondly , one measurable in case elliptical distribution class symmetrical from distributions consists of [12]. Therefore despite , they the following provides than usual according to more flexibility , because they heavy or light to be opportunity gives tails [13]. If the distribution elliptical density there is if , then his/her probability density contours to an ellipsoidal shape Third , the mathematical vector x waiting and covariance there is to be condition not [14]. However, if they there is if , then relevant phrases to form has :

$$E(x) = \mu, \mathrm{cov}(x) = -\Psi'(0)\Sigma(4)$$

Covariance existence for $|\psi'(0)| < \infty$Attention give some in cases characteristic there is generator $\psi'(0) = -1$when , then covariance $Cov\ (X)\ = \sum$ is equal to[15].

Conclusion.

And finally , every how private the distribution is also elliptical that don't forget exactly this with a characteristic generator . If we have a small the set Let's take X types $X_m = (X_1, X_2, \dots, X_m)^T$, where $m \le n$, then X $_m$ elliptical will be . For one measurable frequency In the distribution k = 1, 2, ..., n we have there is $X_k \sim E_1(\mu_k, \sigma_k^2, g_1)$and therefore the density of their individual distributions

$$fx_k(x) = \frac{c^1}{\sigma_k}g_1\left[\frac{1}{2}\left(\frac{x - \mu_k}{\sigma_k}\right)^2\right]$$

in the form of expression need . From now on except , elliptical of distributions every how linear combination exactly this to the feature has was some new elliptical distribution consecutively with $g_1, g_2, \dots, g_n$ density ψ to suitable comes . Size matrix $m\ x\ n$ degree $m \le n$ and b - some m - o ' dimensional column vector , then

$$Bx + b \sim E_m(B\mu + b, B\Sigma B^T, g_m)$$

n - dimensional vector Let there be X many measurable to the elliptical has distribution $X \sim E_n(\mu, \sum, g_n)$application generator assuming the existence of . We define the tail generator as followsg_n

$$T_n(u) = \int_{u^2/2}^{\infty} c_n g_n(x)\,dx$$

if such an integral exists if .

Many in a dimensional normal distribution the following show possible density generator

$g_n = \exp(-x)$has the form , which is dimensionless vectors and therefore the tail generator can be transformed into the form .

$$T_n(u) = \int_{u^2/2}^{\infty} \frac{1}{\sqrt{2\pi}} e^{-x}\, dx = \frac{1}{\sqrt{2\pi}} e^{u^2/2} = \varphi(u) (5)$$

From this visible It's like a tail . generator density function to the shape yes , such without , normal law . In general taking , normalization using , tail generator to density convert possible . Attention give ,

$$\int_{-\infty}^{\infty} T_n(u)du = \int_{-\infty}^{\infty}\int_{u^2/2}^{\infty} c_n g_n(x)\, dxdu = \int_{-\infty}^{\infty}\int_{z}^{\infty} c_n z g_n(z^2/2)\, dzdu$$

$$= \int_{-\infty}^{\infty}\int_{-z}^{\infty} c_n z g_n(z^2/2)\, dudz = 2\int_{0}^{\infty} c_n z^2 g_n(z^2/2)\, dz = \int_{-\infty}^{\infty} c_n z^2 g_n(z^2/2)\, dz$$

$$= E(Z^{*2})$$

this Z * math on earth to zero has was random elliptical quantity

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