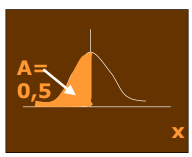
Capítulo 7 continuación

fdp normal

$$Variable \quad estandarizada \quad z = \frac{x-\mu}{\sigma}$$

$$F(z) = \int_{-\infty}^{z} \frac{1}{\sqrt{2\pi}} e^{-u^2/2}$$



$B = \frac{1}{2}\,[1+0{,}196854|z|+0{,}115194\,|z|^2+0{,}000344\,|z|^3+0{,}019527\,|z|^4]^{-4}$

Z<0 F(z)=B z>0 F(z)=1-B Error<0,00025

Factor de frecuencia

$w=[\mathrm{Ln}\,(1/p^2)]^{1/2}$

Si p>0,5 usar 1-p **1/T**

$$z = w - \frac{2{,}515517 + 0{,}802853w + 0{,}010328w^2}{1 + 1{,}432788w + 0{,}1889269w^2 + 0{,}001308w^3}$$

Distribución LogNormal

y=Ln (x)

$$f_y(y) = \frac{1}{\sqrt{2\pi}\sigma_y} e^{-(y-\mu_y)^2/(2\sigma_y^2)}$$

$z=(y-\mu_y)/\sigma_y$

fdp lognormal

$$f(x) = \frac{1}{\sqrt{2\pi}x\sigma_y} e^{\frac{-(y-\mu_y)^2}{2\sigma_y^2}}$$

X>0

$$M_r = e^{r\mu_y + \frac{r^2}{2}\sigma_y^2}$$

$$\mu_x = e^{\mu_y + \sigma_y^2/2}$$

$$\sigma_x^2 = e^{2\mu_y + \sigma_y^2}(e^{\sigma_y^2} - 1)$$

C_v<0,2

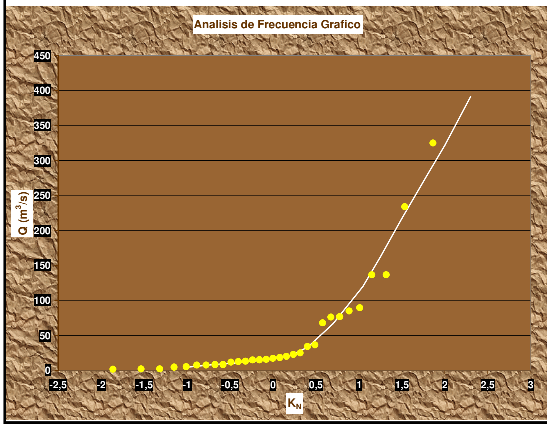
se aproxima a normal

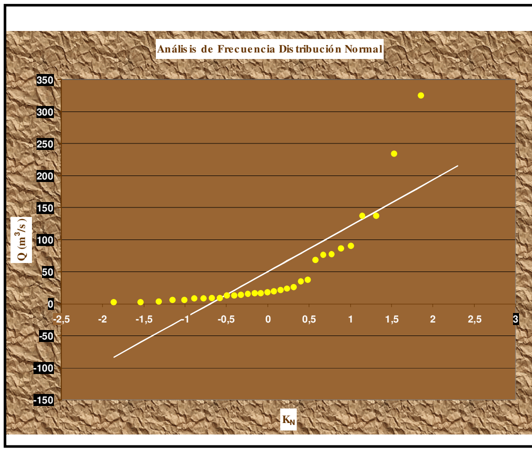
$$c_v = \frac{\sigma_x}{\mu_x} = (e^{\sigma_y^2} - 1)^{1/2}$$

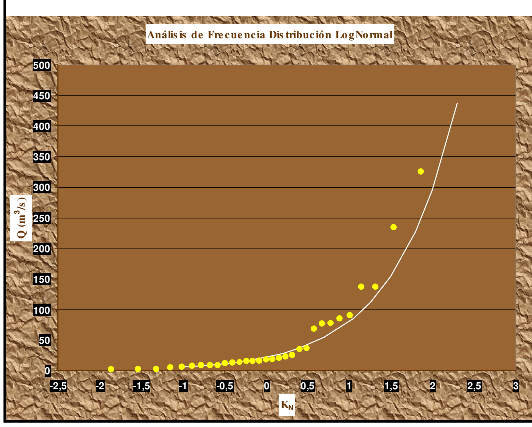
$$C_s = 3C_v + C_v^3$$

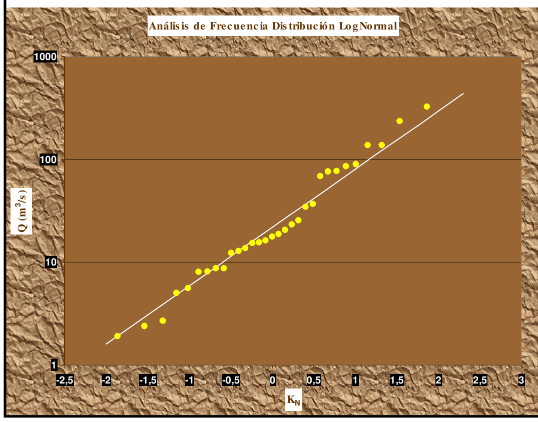
ANÁLISIS GRÁFICO

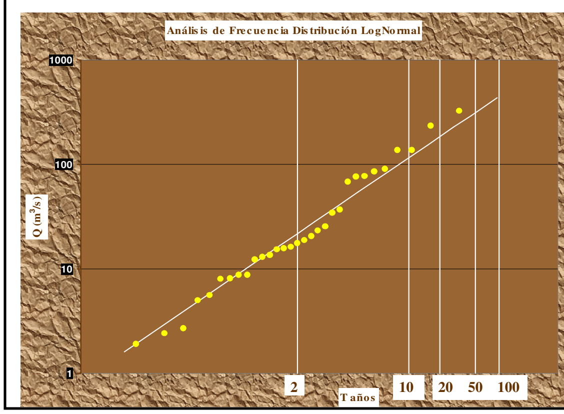
- **CALIFORNIA** **$P(X \geq x_m)=m/n$**
- **HAZEN** **$P(X \geq x_m)=(m-0,5)/n$**
- **CHEGODAYEV** **$P(X \geq x_m)=(m-0,3)/(n+0,4)$**
- **GRINGORTEN** **$P(X \geq x_m)=(m-0,44)/(n+0,12)$**
- **WEIBULL** **$P(X \geq x_m)=m/(n+1)$**


Analisis de Frecuencia Grafico
Q (m3/s)
KN


Análisis de Frecuencia Distribución Normal
Q (m3/s)
KN


Análisis de Frecuencia Distribución LogNormal
Q (m3/s)
KN





Distribución Gamma

$$f(x) = \frac{\lambda^k x^{k-1} e^{-\lambda x}}{\Gamma(k)}$$

Γ(k)=(k-1)! **Si k entero**

$$\Gamma(k) = \int_0^\infty e^{-u} u^{k-1} du$$

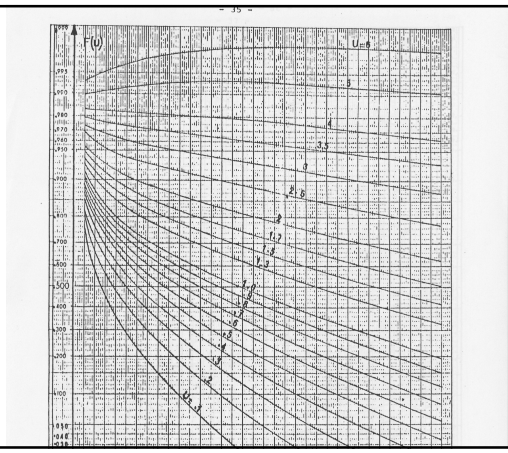
Tabulada en función de gamma incompleta

$$F(x)=\int_{-\infty}^{x} f(x)dx=\frac{\Gamma(k,x,\lambda)}{\Gamma(k)}$$

m(t)=(1-t/λ) $^{-k}$

$$\bar{x}=\frac{k}{\lambda} \quad \sigma^2=\frac{k}{\lambda^2} \quad C_v=\frac{1}{k^{1/2}} \quad C_s=\frac{2}{k^{1/2}}$$

De ábaco se obtiene F(u)=P(x≤x) u=x/σ



Extrema tipo I

$$F_x(Q)=e^{-e^{-\frac{Q-u}{a}}}$$

$$a=\frac{\sqrt{6}S}{\pi} \qquad u=\bar{x}-0{,}5772a$$

Variable reducida y=(x-u)/a