

$$\epsilon(\tau) = \frac{4}{\pi} \int_0^{\frac{\pi}{2}} d\phi \int_0^{\frac{\pi}{2}} [1 - \exp(-\tau \frac{1}{R})] \cos\theta \sin\theta \, d\theta \, d\varphi$$

$$\frac{1}{R} = \frac{2\cos\theta}{1-\cos^2\theta\sin^2\varphi}$$