

Spaceballs

Length estimate	$L = 2 * \left(\sum_{i=1}^n Q_i \right) * \frac{v}{a} * \frac{1}{ssf}$ This equation eliminates the terms F2 (area-fraction) and F3 (thickness-fraction) used by Mouton et al. (equation 2, 2002) by including that information in v (volume sampled).	n: Number of sections used Q_i: Intersections counted v: Volume (grid X * grid Y * section thickness) a: Surface area of the sphere ssf: Section sampling fraction
Variance due to noise	$s^2 = \sum_{i=1}^n Q_i$	Q_i: Intersections counted
Variance due to systematic random sampling	$VAR_{SRS} = \frac{3(A - s^2) - 4B + C}{12}, m = 0$ $VAR_{SRS} = \frac{3(A - s^2) - 4B + C}{240}, m = 1$ $A = \sum_{i=1}^n (Q_i^-)^2$ $B = \sum_{i=1}^{n-1} Q_i^- * Q_{i+1}^-$ $C = \sum_{i=1}^{n-2} Q_i^- * Q_{i+2}^-$	s^2: Variance due to noise m: Smoothness class of sampled function
Total variance	$TotalVar = s^2 + VAR_{SRS}$	s^2: Variance due to noise VAR_{SRS}: Variance due to systematic random sampling

Coefficient of error	$CE = \frac{\sqrt{TotalVar}}{s^2}$	<i>TotalVar</i> : Total variance s^2 : Variance due to noise
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References

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