A numerical appraisal in the study of the relationships between joint separation and fauting

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A distance-fade law of joint density associated with master faults is found by means of regression analysis of average apparent joint separation versus distance from the closest master faults. The analysis was conducted through geo-structural studies carried out in three different zone of Calabria (Southern Italy) characterized by an intensely tectonically deformation involving crystalline terranes (granite and gneiss). Data was collected at 250 measure stations. The results of regression analysis is the formula $s=N\,d^{k}$, where s is the apparent joint separation, N is a coefficient depending from the study zones, d is the distance of the measure station from the closest master fault and k is an exponent close to 0.5 (it varies from 0.448 and 0.506) indicating a similar fade pattern. The determination coefficient was from 0.76 to 0.9. Both data sets range over one order of magnitude, thus the results of the analysis is reliable.