Fig. 1—Diffusivity values for Fresno fine sand, calculated with Eq. [2] and with Eq. [1] for the indicated values of $\gamma$. All diffusivities are expressed as a ratio of the exponential diffusivity values for the same water content.

nearly perfect average for Eq. [2], but an appreciably larger slope than for $\gamma = 0.57$ or $\gamma = 0.67$, resulting in the same maximum error of about 3.5% for all three equations. These results also indicate that the best results will be obtained with Eq. [1] when $\gamma$ is varied between 0.61 for clay and 0.63 for sand.

In conclusion, it is surprising that Eq. [2], which assumes a delta-function diffusivity, gives as good results for the clay as for the fine sand. (Actually the results for the clay are slightly better.) The same is true for Eq. [1], which normalizes properly for a linear soil. Whereas these results were obtained with exponential diffusivity functions, Parlange also obtained good results with Eq. [2], when he used the diffusivity function $D \sim \theta^p - \theta^{2p}/(1 + p)$, for Yolo light clay, for which the value $p = 4$ deviates appreciably from the theoretical value $p = \infty$, for a delta-function diffusivity (Philip and Knight, 1974). This all seems to indicate that this method is quite insensitive to the type of diffusivity function and will give good results for a wide range of soils. For this reason, rather than for his stated reasons, I am pleased with Parlange’s contribution. From a practical point of view, it makes no difference whether one uses Eq. [2] or Eq. [1]. For the latter, $\gamma = 0.62$ seems presently to be the better choice.

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