

**ZMATH 2016f.01304**

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**Modeling raindrop size.**

J. Stat. Educ. 23, No. 1, 26 p., electronic only (2015).

Summary: Being able to characterize the size of raindrops is useful in a number of fields including meteorology, hydrology, agriculture and telecommunications. Associated with this article are data sets containing surface (i.e. ground-level) measurements of raindrop size from two different instruments and two different geographical locations. Students may begin to develop some sense of the character of raindrop size distributions through some basic exploratory data analysis of these data sets. Teachers of mathematical statistics students will find an example useful for discussing the beta, gamma, lognormal and Weibull probability density models, as well as fitting these by maximum likelihood and assessing the quality of fit. R software is provided by the authors to assist students in these investigations.

*Classification:* K90 K70 K40 M50

*Keywords:* stochastics; statistics; teaching; exploratory data analysis; data sets; distribution; parameter estimation; maximum likelihood estimation; disdrometer; beta density; exponential density; gamma density; lognormal density; Weibull density; applied statistics; parametric models; quality of fit; mathematical applications; meteorology

<http://ww2.amstat.org/publications/jse/v23n1/johnson.pdf>