



2012-05-03

In the last update I discussed disdrometers, which are instruments that count and measure the sizes of raindrops. Before the advent of lasers and some of the sophisticated electronics we currently have in our arsenal of tools, scientists had to use other techniques. I find many of these techniques to be fascinating, both because of their low-tech nature and because of the incredible creativity their development required. For instance, raindrop sizes have been measured for over 100 years, and several ingenious methods have been developed. I will discuss three of these here. Each can be used at home and would make good science project for children (of all ages). Instructions for these methods are easily found on the web, and NASA even has a webpage on this topic for schools.

One method to count and measure the sizes of falling raindrops is to observe the splash patterns of individual drops on surfaces that are exposed to rain for a short time. Originally this method consisted in observing the stains left by drops on treated filter paper or ruled sheets of slate, but construction paper will also work. This approach was first employed in 1892, and I found a scientific paper from as late as 1957 that discussed its use – a long life indeed. This method would require calibration to relate the original drop size to that of the splash that would result after the drop has been flattened, but an eyedropper could be used for this.

Another method that dates from the same time period is to spread a layer of flour in a pan and expose it to rain for a short time, then use a sieve to separate out the clumps which can be counted and sized. Of course a raindrop of a give size would form a larger clump, so this technique would also require calibration. This method was first used in 1895 by Wilson Bentley, who is better known as the snowflake man for his wonderful pictures of snowflakes, and I saw a scientific paper written in 1980 that described a modification of this approach – also a long life.

A third technique is to stretch a nylon stocking around a frame, moisten it, and sprinkle it with powdered sugar, which will stick to the wetted stocking. When this is exposed to the rain, drops will fall through and dissolve sugar as they pass, and the sizes of the holes can be measured and counted. As the drop does not splatter, no calibration is required.

I would love to hear results from anyone trying any of these techniques.

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2012-05-03

Please address any questions or comments to elewis@bnl.gov.

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