



The myth of the tear-shaped raindrop - a classroom experiment to reveal the truth

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Water is fundamental to life on Earth and precipitation is the primarily source of freshwater. In large part precipitation reaches the Earth in the liquid form as raindrops. In Earth Sciences there are so many aspects to water and to rain in particular: storms, floods, landslides, droughts and still, there is a general misconception on the shape of such a common thing as a raindrop.

These water drops – we all have seen them a thousand times. We see them at a leaking faucet just in the moment when a drop is released; we see them when a raindrop hits a water surface and on a windscreen. But when do we normally not observe them? – Right, on their path from the cloud to the ground. And on this journey they would not look like the ones we frequently see.

Probably the picture of a leaking faucet is one reason why so many people would think of raindrops as streamlined teardrops. This myth is somehow subliminally advertised every day e.g. in the daily weather forecast where - more often than not - the symbol for rain is shown as a cloud with a few streamlined drops. In fact small raindrops are spherical and the bigger they get while falling through the atmosphere, the more they get flattened on the bottom – sometimes described as the top half of a hamburger bun.

What props would you need to proof this fact in a classroom course? You can start off with a shaded classroom, a pipette filled with water, and a point-and-shoot camera with a permanent flash setting: Release a couple of drops by the pipette and try to catch at least one of them with the camera. Even if the drops have already a falling velocity of several meters per second it will be the flashlight that freezes the image. On these images the drops will be anything but tear-shaped.

Sure enough, if you are not working e.g. in radar meteorology or related fields you need not necessarily care about raindrop shapes but this experiment can be a vivid example that invites students to have a closer look on something that seems so trivial. It can also be a reminder what lasting impact pictures can have in our education, how hard it is to reverse them, and how easy it is to accept a wrong but on the first sight plausible explanation.