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Open source hardware for counting and measuring raindrops

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Over the past years, simple acoustic drop detectors have been developed for different objectives. The core of these detectors were standard piezoelectric elements. For some applications, such as simply counting drops, not much signal processing is needed. For other applications, however, such as measurement of drop energy, which would allow for estimation of drop sizes as well, careful signal processing is needed. For this purpose, we have developed a shield, or “Wing” that can be plugged into an Adafruit Feather (<https://www.adafruit.com/feather>), which we call DisdroWing. This board includes a high-end operational amplifier and a fast analogue to digital converter. With this board, the user can experiment and implement specific applications, such as rain/no rain detection, hail detection, or drop energy. The design of the DisdroWing is publicly available and can also be purchased fully assembled.