



## 14th annual Celebration of Student Research, Creativity recognizes undergrads who go extra mile

by Hillary Jones, Editor

Rain is liquid [water](#) in the form of [droplets](#) that have [condensed](#) from [atmospheric water vapor](#) and then [precipitated](#)-that is, become heavy enough to fall under [gravity](#). Rain is a major component of the [water cycle](#) and is responsible for depositing most of the [fresh water](#) on the Earth. It provides suitable conditions for many types of [ecosystems](#), as well as water for [hydroelectric power plants](#) and crop [irrigation](#).

The major cause of rain production is moisture moving along three-dimensional zones of temperature and moisture contrasts known as [weather fronts](#). If enough moisture and upward motion is present, precipitation falls from [convective](#) clouds (those with strong upward vertical motion) such as [cumulonimbus](#) (thunder clouds) which can organize into narrow [rainbands](#). In mountainous areas, heavy precipitation is possible where [upslope flow](#) is maximized within [windward](#) sides of the [terrain](#) at elevation which forces moist air to condense and fall out as rainfall along the sides of mountains. On the leeward side of mountains, desert climates can exist due to the dry air caused by downslope flow which causes heating and drying of the [air mass](#). The movement of the [monsoon trough](#), or [intertropical convergence zone](#), brings [rainy seasons](#) to [savannah climes](#).

The [urban heat island](#) effect leads to increased rainfall, both in amounts and intensity, downwind of cities. [Global warming](#) is also causing changes in the precipitation pattern globally, including wetter conditions across eastern [North America](#) and drier conditions in the tropics.<sup>[[citation needed](#)]</sup> Antarctica is the driest continent. The globally averaged annual precipitation over land is 715 mm (28.1 in), but over the whole Earth it is much higher at 990 mm (39 in).<sup>[1]</sup> [Climate](#) classification systems such as the [Köppen climate classification](#) system use average annual rainfall to help differentiate between differing climate regimes. Rainfall is measured using [rain gauges](#). Rainfall amounts can be estimated by [weather radar](#).

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