

SOUND DESIGNING WITH THUNDER AND RAIN

by Gordon Hempton, 10/28/2013



All around us we witness the transformative power of weather. Storm-lashed seas shape coastlines. Winds blow sands into dunes. Rivers carve out valleys and canyons. When the weather changes, we notice. Should we hear a single raindrop, we instinctively listen for another, because any moment could bring a downpour. Nothing seems to rivet an audience more than a brewing storm. A rolling peel of thunder plus a few drops of rain; we're glued.

While attractive events in themselves, storms are also useful for making transitions from one setting to another.

RAINSTORMS & THUNDERSTORMS

For the purposes of sound design, rainstorms and thunderstorms have been divided into four stages:

- ONSET
- DEVELOPMENT
- CLIMAX
- AFTERMATH

ONSET

At the beginning of any rainstorm the most distinguishing characteristic is that there are drops and no drips. Rain drops fall at terminal velocity and hit objects such as leaves, bare branches and rocks. Each of these objects makes a different sound when struck. Go for a short walk and simply tap on different objects with the end of a pencil for a quick preview. For the sound designer it is not practical to accurately match every drop to substrate, but you will want to pair diverse sounding rains to settings with diverse substrates.

Thunderstorm beginnings are often accompanied by a sustained lull in wildlife vocalizations and stillness. Thunder could precede the rain with a loud resounding clap or the rain may precede thunder. Thunderstorms are often associated with rapid heavy rainfall, but not always. It is possible to have a completely dry thunderstorm.



DEVELOPMENT

As rainwater accumulates, new sounds emerge. The sound quality is distinctly brighter and clearer with wet surfaces and increased humidity that reduces atmospheric attenuation. Also as the rain continues to fall, drips begin to occur. These are slower falling and often larger than the rain drops. Drips roll off surfaces, coalesce together, and may form trickles. Drips and trickles often reach into more sheltered areas that are not exposed to direct rainfall. If enough rain falls, puddles may form--producing new sounds: the Plops of drops on water.

CLIMAX

A thunderstorm's climax may not be known until it is clear that the storm is abating and moving into aftermath. The climax may have downpours and intense thunder, but often there's simply sustained rainfall. During sustained rainfall, I have noticed a humming sound. I am not sure if this sound is due to the actual vibration of vegetation triggered by drop impacts or if it is the result of white noise traveling through the vegetation and then naturally comb-filtered by repetitive branch patterns.

AFTERMATH

When the rain abates, either quickly or slowly, drips will continue in forest areas long after the actual rain stops, sometimes for an hour or more if the canopy has a high water retaining capacity (e.g., moss drapes). In desert areas, storms often clear quickly and in the absence of high reaching vegetation, driplelessly. In all cases, as long as the rain has been sufficient, the after storm ambience will be brighter (more high frequency content) and clearer than before the storm.

TRANSITIONS

Storms make graceful segues from one setting to another. But only if you don't overuse them. So save storms for the most difficult transition in your program and use a little rain or other weather for lesser transitions. For example, it would be a major leap for an audience to go from the Kalahari Desert where it is dry, quiet and spacious, all the way to the Amazon Rainforest where it is wet, loud, and spatially more confined. You could not expect the audience to accept a cross fade. No matter how long--it would feel awkward. But storms happen everywhere. Introduce a few dry thunder claps into the spacious Kalahari Desert followed by a curtain of rain, and when the curtain lifts, your audience will be at home in the Amazon, thanks to a pleasant surprise instead of an awkward transition. Generally, the more dramatic the shift in scene the larger



and more dramatic the storm will need to be to smooth the transition. Resist the temptation to use a dramatic, explosive clap of thunder during the lull before the storm. Your audience might be startled and a few might even suffer a temporary hearing loss. Instead, use one long peel of rolling thunder to introduce the storm, while giving your audience time to adjust volume levels. Also avoid soothing rain that extends longer than a few minutes unless you want to lull your audience into a deep state of relaxation/sleep.

SPECIAL CONSIDERATIONS



Storm characteristics vary by location, season, and time of day. If your sound design is for a specific geographic location, then you will want to study a weather atlas to learn about local characteristics. For example, in the Mississippi Valley summer thunderstorms travel south to north. Therefore, morning thunderstorms are typical in Louisiana and afternoon thunderstorms typical in Illinois. . In *The Adventures of Huckleberry Finn*, Mark Twain knowingly timed the thunderstorms to the passage of Huck and Jim on the Mississippi River.

Storms attract attention and make great transitions, so save them for when you need them most—to herald big changes. Check your recording for details and know the difference between a drip and a drop.

ADDITIONAL RESOURCES

How to Record Thunder and Rain, Gordon Hempton, 10/24/2013, available with „Sound Designing with Thunder and Rain“ inside the BOOM Library „Thunder and Rain“ product on www.boomlibrary.com.

VIDEO SHOWING LIGHTNING ACTIVITY AROUND THE GLOBE.

<http://www.vaisala.com/en/products/thunderstormandlightningdetectionsystems/Pages/GLD360.aspx>

WORLD MAP SHOWING FREQUENCY OF LIGHTNING STRIKES

<http://i1-news.softpedia-static.com/images/news2/Why-Lightnings-Generate-Gamma-Ray-Flashes-2.jpg>

NASA VIDEO SHOWING GLOBAL PRECIPITATION OVER TIME

<http://pmm.nasa.gov/education/videos/nasa-scientists-research-global-precipitation>

NASA VIDEO SHOWING TIME LAPSE VIEW OF EARTH FROM SPACE

<http://www.youtube.com/watch?v=lp2ZGND1I9Q>

THUNDERSTORM, LIGHTNING, TORNADOES AND HURRICANE INFORMATION FOR PILOTS

<http://www.theairlinepilots.com/met/thunderstormlightningtornadoesandhurricane.htm#Thunderstorms>



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