

Total Lightning Climatology for Oklahoma using the Oklahoma Lightning Mapping Array

Lightning and Climate (or Lightning Detection Technologies)

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The Oklahoma Lightning Mapping Array (OK-LMA) has collected the time and location of the very high frequency (VHF) radiation sources produced by all types of lightning in central Oklahoma since the spring of 2003. To produce a useful climatology using these data, one must correct for the considerable bias with range in the minimum signal strength that can be detected across the range of OK-LMA coverage. Several methods for making this correction were attempted, and some yielded unrealistic results. A brief summary of the attempted methods and justification for the method we have chosen will be presented. Using this method, we have produced monthly, seasonal, and annual plots of the geographic distribution of lightning density in central Oklahoma with 10 km horizontal grid spacing. We also have examined how the seasonal and geographic variations in the diurnal time-series of flash rates are related to corresponding variations in the dominant mode of deep convection.