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ILDC/ILMC Strikes Again
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experts from around the world

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www.vaisala.com/ILDC



Maximum Month and Hour of Lightning around the Globe

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Abstract

Lightning data from Vaisala's Global Lightning Dataset GLD360 network are analyzed from 2012 through 2018. The data provide reliable estimates of lightning occurrence with respect to the time of the year and day. Stroke data are not corrected for detection efficiency since the monthly and hourly totals are compared within each pixel of 0.2 by 0.2 degrees. Annual plots have a one-month resolution, and time of day have a two-hour resolution. A minimum of 20 events per pixel is required to be evaluated.

The dataset will be divided by continent, land versus water, seasons, and latitude bands to provide an insight into the major factors affecting the time of year and day. Comparison will also be made with results of prior published studies of cloud-to-ground lightning detected by other national and regional lightning detection networks.

By time of year in the middle latitudes, the dominant month over land is during the summer season in each hemisphere. In the tropics, the maximum month of lightning is often due to the overhead passage of the Equatorial Trough. In Southeast Asia and western North America, the annual monsoon cycle is the strongest factor. Over the oceans, the annual cycle is more complex and often linked to the frequency of the nearest land mass. The Equatorial Trough has a strong January maximum in the Atlantic and Indian Ocean.

By time of day, the most frequent time of lightning is early to mid-afternoon over land in nearly all areas of the world. At higher latitudes, the maximum tends toward evening. In addition, lightning is more frequent to the lee of large mountains in North and South America in the evening to nighttime. Over the oceans, the maximum in lightning occurs most often during the nighttime.

Topic Areas

Lightning Climatology

Submission Format

Oral