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Abstract: This paper presents an investigation into cloud-to-ground lightning activity over the continental territory of Portugal with data collected by the national Lightning Location System. The Lightning Location System in Portugal is first presented. Analyses about geographical, seasonal, and polarity distribution of cloud-to-ground lightning activity and cumulative probability of peak current are carried out. An overall ground flash density map is constructed from the database, which contains the information of more than five years and almost four million records. This map is compared with the thunderstorm days map, produced by the Portuguese Institute of Meteorology, and with the orographic map of Portugal. Finally, conclusions are duly drawn.

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