

**Guest Editorial Special Section “Advances in Lightning Modeling, Computation, and Measurement”**

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**ABSTRACT**

The papers in this special section present the recent advances in the research on the lightning phenomenon both from a physical perspective and, most of all, from the electromagnetic compatibility (EMC) related issues standpoint. Lightning is certainly one of the most common electromagnetic field sources that can impact on power and signal transmission lines, often causing power interruptions and component damages. The analysis of the effects of lightning on communication and power infrastructure and the design of effective protection systems always requires an accurate and numerically efficient representation of the lightning current and of the associated electromagnetic fields. For this reason, a deeper understanding of the lightning process is mandatory and advanced models are required that can be easily interfaced with commercially available tools to simulate the effects of a lightning on an electric infrastructure. So, in the last decade, more accurate representations of the channel base current and new return stroke engineering models have been proposed; new insights in the attachment process have been presented; faster and more efficient methods to compute the lightning electromagnetic fields in the presence of a lossy and/or inhomogeneous ground have appeared. Moreover, more efficient methods to get information on the lightning current starting from far-field measurements have been validated against currents directly measured and some experimental infrastructure are going to be set up to obtain new measurements.

**Keywords:** [Special issues and sections](#), [Electromagnetics](#), [Current measurement](#), [Transmission line measurements](#), [Sea measurements](#), [Electromagnetic compatibility](#), [Lightning](#)