Lightning Measurement Station at the Säntis Tower: An Update on Recent Instrumentation and Data

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Abstract— The Säntis telecommunications tower, located in northeastern Switzerland, has been instrumented since May 2010 to measure currents associated with lightning striking it ([1], [2]). The selection of the Säntis tower site followed an analysis of several candidate sites located in various regions in Switzerland which revealed that it is by far the most frequently struck structure in the country and one of the hotspots in Europe. The functional design constraints of the measurement system were selected on the basis of the statistical lightning parameters already available in the literature [3]. Considerations about the specificities of the tower in terms of very low winter temperatures and EMC were also taken into account in the design of the system [4].

In the first seven years of operation of the measurement station, more than 700 flashes have been recorded and analyzed. The obtained data constitutes the largest dataset available to date for upward negative flashes [5]. As of today, about 15% of the recorded flashes have been of positive polarity [6] and 3% bipolar [7].

In this plenary presentation, we provide an update on recent instrumentations deployed on the tower and on field measurement stations at various distances ranging from 20 m to 380 km. Recent observations using a Lightning Mapping Array (LMA), as well as simultaneous data of lightning currents and fields at 380 km featuring ionospheric reflections [8] will be presented at discussed.

Keywords-lightning; instrumented tower, lightning mapping array; electromagnetic fields.

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