

Using Lightning Mapper Array to evaluate the lightning detection signatures at VLF, LF and VHF systems

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During the CHUVA-GLM field campaign 10 lightning detection networks were measuring the lightning activity in the São Paulo area. This unprecedented field campaign aloud a great opportunity for understanding the different lightning detection technologies, because assuming that the Lightning Mapper Array (LMA) can capture all the electromagnetic irradiated sources through a lightning discharge (breakdown, step leader, return stroke and dart leaders), it is possible to correlate in space and time what the VLF, LF and VHF lightning detection systems are really measuring, i.e., are they measuring sferics, leaders, return strokes, sources or a complete lightning channel. For this presentation we are going to use a case study on February 10th, 2012, where the Lightning Imaging Sensor (LIS) onboard the TRMM satellite observed a storm in the São Paulo city. Coincident 90 seconds LIS measurements were compared with LMA, LINET, Vaisala-TLS200, EarthNetwork-BrazilDat, IMPACT/LPATS-RINDAT, ATDNet, STARNET, WWLLN, Vaisala-GLD360. In a preliminary analysis, the total lightning systems (LMA, LINET, TLS-200 and EarthNetwork) were very comparable in time, i.e., they had coincident time measurements, for the VLF and LF systems that were designed to measure mainly cloud to ground discharges, we did find some differences, i.e., sometimes all measure and most of the time just one or two. As for the presentation, we will be exploring these differences and spatial distribution that could provide insights on the type of discharges been observed.