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Search for weak TGFs in the RHESSI data by using conjunctions of TRMM and RHESSI orbits

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We searched the Lightning Imaging Sensor (LIS) data to identify optical signals within the field-of-view of RHESSI. During the entire TRMM mission we found more than 90 000 optical lightning within a 1000 km from RHESSI subsatellite point. For these lightning we extract a one second time interval of RHESSI data centered at the time of the optical flash. By taking into account the propagation time from source to satellites we superposed these RHESSI data strings to see whether there exists weak TGFs that could not be detected by the RHESSI search algorithm. The study turned out to be a no result. Based on a similar study using WWLLN and RHESSI, where we did find a large new population of TGF, we can conclude that the no result was due to the limited number of lightning flashes and the 2 ms uncertainty of LIS timing. With a bin size of 2 ms we would need about 3.5 million optical lightning within the RHESSI filed-of-view to achieve a significant signal (> 4 sigmas). As the TRMM mission has been terminated we will not be able to acquire the number of lightning flashes needed for a successful identification of new TGFs based on LIS data.