



Saturn lightning recorded by Cassini/RPWS from high-inclination orbits in 2009

Joseph Ambrose Pagan and Georg Fischer

Space Research Institute, Austrian Academy of Sciences, Schmiedlstraße 6, 8042 Graz, Austria (joseph.pagan@oeaw.ac.at)

Saturn lightning activity is an important non-thermal radio source in the atmosphere of the magnetized planet Saturn. Like terrestrial lightning, it is probably dependent on the change of the planet's seasons. Saturn lightning has been monitored by Cassini since mid-2004. The key instrument is the RPWS (Radio and Plasma Wave Science) instrument, which via radio signals, detects the Saturn lightning storms. Since then the Cassini/RPWS instrument has recorded 13 storms of Saturn lightning. Each storm consists of episodes that start/stop when the SED cloud enters/leaves the radio horizon. Among these storms, statistical characterization of the first 7 storms exists so far in literature. Here we present the installment on the tabulation and organization of two storms from late 2008 and throughout 2009. This installment intends to address the temporal nature of the SED activity as Saturn enters the northern spring season (around August 2009). Coincidentally, most of these SEDs are observed from higher latitudes (above the kronometric latitude of ± 35 degrees) where Cassini happens to orbit most of the time during this period. At these high latitudes, we will present examples of overlapping SED episodes in which the start/end of one to the next episode are difficult to discern. There are also atypical SEDs that do not extend to high frequencies but appear only below 5-6 MHz. As the number of SEDs monitored by the Cassini/RPWS instrument is directly influenced by the spacecraft distance, attitude, antenna choice; RPWS receiver modes with different integration times, etc., we propose a normalization procedure to obtain the 'true' number of SEDs. We describe this normalization procedure and present preliminary results. This procedure is important in addressing the 'true' temporal nature of SED activity during Saturn's change of seasons.