Geophysical Research Abstracts
Vol. 18, EGU2016-2634, 2016
EGU General Assembly 2016

Evaluating the effects of lightning-generated whistlers observed by the DEMETER spacecraft

Jan Zahlava (1), Frantisek Nemec (1), Jean-Louis Pincon (2), Ondrej Santolik (3,1), Ivana Kolmasova (3,1), and Michel Parrot (2)

(1) Faculty of Mathematics and Physics, Charles University in Prague, Prague, Czech Republic, (2) LPC2E/CNRS, Orleans, France, (3) Institute of Atmospheric Physics, Czech Academy of Sciences, Prague, Czech Republic

Although lightning-generated whistlers have been studied for nearly a century, there are still questions to be answered. It is clear that, at least in a certain frequency range, these waves significantly contribute to the overall wave intensity in the inner magnetosphere. They also influence distribution functions of energetic particles in the van Allen radiation belts. Due to the on board implemented neural network for automated whistler detection, the data set obtained by the low-altitude DEMETER spacecraft allows us to relate measured electromagnetic wave data and energetic particle flux with the number and dispersion of whistlers detected during a certain time interval. We distinguish the cases with high and low whistler occurrence and we use this information to determine the overall effect of lightning-generated whistlers.