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The occurrence rate of THR emissions observed by the Akebono satellite

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This is a report on the occurrence rate of Terrestrial Hectometric Radiation (THR), auroral radio emissions emanating from the topside ionosphere in the MF and HF ranges. Data shown in this paper were obtained by the Plasma waves and sounder experiment (PWS) mounted on the Akebono satellite. The Akebono/PWS measurements show that THR emissions are sometimes observed in two frequency bands near 1.5-2.0 MHz and 3.0-4.0 MHz when the satellite passes over the auroral latitudes; however, their occurence rate has not yet been invesigated. Statisitical studies using the Akebono/PWS data show the spatial distribution of THR occurence; THR is detected at all magnetic local times and most often during premidnight hours (2100-2400 MLT) in a wide magnetic latitude range ($|\mathrm{MLAT}| > 30$deg). During daytime hours (0600-1500 MLT), the distribution of its occurence is confined in higher latitude ranges ($|\mathrm{MLAT}| > 70$deg). The explanation of this spatial distribution is that THR is favorably generated in the night-side auroral latitudes near 1000-km altitude.

Keywords: auroral phenomena, auroral radio emissions, radio propagation, auroral ionosphere