



Quantitative method applied to estimate the activity index associated to ELF/VLF electromagnetic emissions

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We analyze the ELF/VLF electromagnetic emissions observed by the 'Instrument Capteur Electrique' (ICE) experiment on board the DEMETER micro-satellite. The observed dynamic spectrum principally exhibits the well classic EM emissions, like the hiss and the chorus, in the frequency range from 20 Hz to 20 kHz. The intensity level, and also the upper and lower frequency limits of such emissions are variable and unpredictable from one half-orbit (about 35 minutes) to another. We propose to define an activity index related to the ELF/VLF emission observed during each half-orbit by taking into consideration the intensity level variation versus the observed frequency. This index is useful because it allows one: (a) to follow the variation of the ELF/VLF frequency characteristics from one half-orbit to another, (b) to show the presence, or not, of particular pre-electromagnetic signals over seismic regions, and (c) to compare this index to the classic ionospheric and geo-magnetospheric ones.