

## Section. 5 Atmospheric Radio Noise

Type of informations studied to clarify the detailed structure of atmospheric radio noise includes the four statistical parameters, i. e., amplitude probability distribution, crossing rate distribution, probability distribution of duration of pulses and that of interval between pulses. The study of interfering effect of the noise on a radio communication system involves not only the amplitude characteristics but also the time sequence of variations of the intensity.

It is expected that the amplitudes of atmospheric radio noise vary in a 80 dB, even in a little larger than 80 dB, dynamic range in various bandwidths, seasons, time of a day in VLF through SF bands. An electronic system has been constructed to measure the atmospheric radio noise, which make it possible to obtain the amplitude probability distribution in a 80 dB dynamic range without saturation. By using the system, the measurements of amplitude probability distributions were carried out on the atmospheric radio noise in a bandwidth of 1 KHz between 3 dB points, and at 50 KHz at Toyokawa, in summer, 1967. From the same data of a measurement, A. P. D.,  $V_{ave}$ ,  $V_{rms}$  and  $V_{log}$  have been derived with an accuracy, which make it possible to investigate the relation between these parameters. Diurnal variations of these three moments,  $V_{ave}$ ,  $V_{rms}$ ,  $V_{log}$ , relation  $L_d$  versus  $V_d$  have been obtained, where details are to be reported in this volume.

Thunderstorms at Weissenau in southern Germany, were observed in summer, 1968. A few unusual phenomena have been observed in this period. They are very valuable for the general study of thunderstorms and can give a good experimental basis for suggesting a thunderstorm-theory. Details is reported in this volume.

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### Publications (1967-1969)

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- Yamaguchi, T. and Nagatani, M. : The Amplitude Probability Distribution of the Atmospheric Radio Noise at Source, *ibid*, 63, 17 (1968)
- Nakai, T. and Sawakata, T. : Measurement of the Amplitude-Probability Distribution and Three Moments for the Atmospheric Noise, this volume.
- Takeuti, T., Mühleisen, R. and Fischer, H. - J. : Bemerkenswerte Gewitter in Süddeutschland, this volume.