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Section 2. Sources of Atmospherics

Atmospherics source problem requests the knowledge in a wide field of geophysics including electrical discharge phenomena in the air, local meteorology relating to it, radio wave emission by the discharge, finally the global atmospheric electric circuit whose generator is the world wide thunderstorm activity.

Therefore our research activity has mainly been and will be directed for the time being toward the radiation of electromagnetic waves from lightning discharges with special emphasis on ELF atmospherics emission and on atmospherics source signals VLF through VHF. ^{(4) (5)}

Thunderstorm and atmospheric source signal observation expedition has been made without interruption for more than ten summers with some successful experimental results expanding our knowledges about the nature of lightning discharges as origin of atmospherics. ^{(1) (3)}

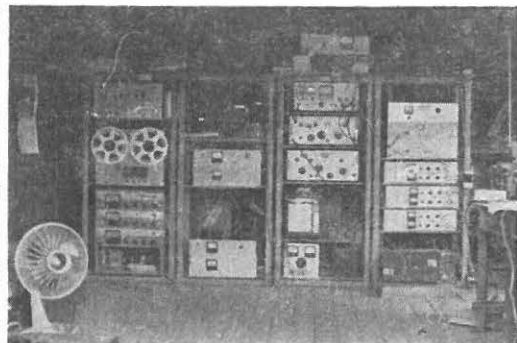
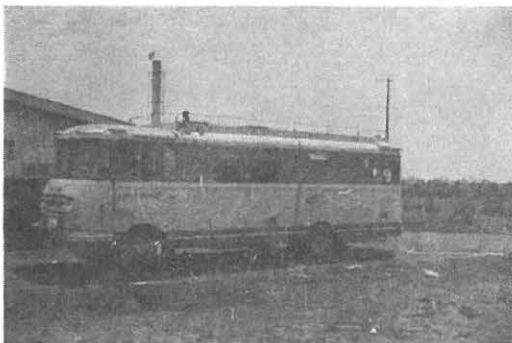


Fig.1. Mobile field site on working at Takasaki. Fig.2. Interior view of a fixed field site at Funyu.

Simultaneous electrostatic field change measurement of individual lightning discharges at three field sites has made a new contribution to the thunderstorm electricity research. (6) (7) (8) (9)

The thunderstorm expedition illustrated in Figures 1 and 2 will be continued toward the future aiming the study of radiation mechanism of atmospheric from lightning discharges and of thunderstorm cloud physics in connexion with discharge phenomena in the air.

Atmospheric electricity in the upper atmosphere below the E ionosphere is of special interest in relation to the global circuit of atmospheric electricity and to the nature of D region ionosphere which controls the propagation of atmospheric radio waves in VLF and ELF regions. A drop sonde measurement of electric conductivity is going to be made using a rocket-born Gerdien condenser aiming the final goal in future of investigating the ion density distribution in D region. A balloon measurement of atmospheric electricity above the exchange layer is also of our interest to be pursued along with the drop sonde probing.

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Section 3. Radio Astronomy

Sun—Routine observations of the solar radio flux density and polarization are being