

## Section 2. Sources of Atmospheric and Atmospheric Electricity

Ever increasing pollutants in the atmosphere in recent years have come to a great problem to the human community and the biosphere. This year our efforts have mainly been devoted on the basis of several kinds of field observation to analyze the fundamental processes between the particle pollutants, so-called aerosols, and the electrical natures in the atmosphere.

Observations at Sakushima Observatory have been continued since April 1971 on the atmospheric electrical parameters, such as electric field, air-earth current, conductivity, large and small ions, large and small particles, phase and amplitude of LF and VLF station signals and the meteorological elements. Some of the data are compiled at World Data Center on Atmospheric Electricity in USSR. Accumulated data for long term are used to see the natural as well as artificial effects on alteration in the environment.

The in-situ observation in the stratosphere was made September 1976 by using a 5,000 m<sup>3</sup> plastic balloon at Sanriku Balloon Center, Institute of Space and Aeronautical Science, University of Tokyo. The balloon reached 25 km altitude and measured the vertical profiles of positive and negative polar conductivities, positive and negative small ion densities and concentration of aerosols with the diameter larger than 0.3  $\mu\text{m}$ . This was the first trial to obtain simultaneously conductivity and ion density of both polarities. The difference between the polarities is an indication of the existence of atmospheric dust.

A new device for the density of small size particles is being developed. It is designed as to operate accurately in low density range by means of nucleation and photo-counting of particles. It will be useful to measure condensation nuclei on the ocean or in the stratosphere.

Along with the members of Section 5, Ishikawa stayed at Kiruna, Sweden from May to August 1976 to observe mainly thunderstorm activity in the high latitude. He measured also the electric conductivity,

which is of interest to see the electrical nature in rather less-polluted area.

Y. Kondo has joined in this group of atmospheric electricity since October 1976.

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— Masumi Takagi —

#### Publications

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