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Group 2.3 Earth's Electrical Environment

The summer thunderstorms were observed in 1988 at Nango about 5 km south from the downtown of Ohtsu city together with Saitama University and Kansai Electric Power Company. The radar echoes of one thundercloud with lightning flashes showed flat top at about -5 degree in centigrade level. The distances between successive active cell developed higher than 8 km in some thunderclouds showed the log-normal distribution.

During November 1988, we attended to the rocket triggered lightning experiment at Hokuriku organized by Horii, Department of Electrical Engineering, Nagoya University. UHF radio waves associated with the lightning flashes were recorded.

We together with Gifu University, Saitama University and Kansai Electric Power Company observed the winter thunderstorms at Mihama close to Tsuruga. Main purpose of the project was the observation for the lightning flashes to the high voltage transmission power system. The data are now under analysis.

We are recording atmospheric wave forms radiated by lightning flashes at Mihama using so called the slow antenna and a transient memory. This system has been developed by our group originally and has been installed at Mihama. The total capacity of this transient memory is 1 Mega bytes. The system is believed to be useful for the measurement of lightning flashes during winter thunderstorms, which have the typical character of the quite long tail of currents.

Kawasaki visited Lanzhou Institute of Plateau Atmospheric Physics in Lanzhou, People's Republic of China in summer of 1988 to attend the international cooperative project for lightning research.

Takeuti, Kawasaki and Nakada joined to the international cooperative project on the rocket triggered lightning experiment held at a small village named Ciater, near Bandung, Indonesia between January and February 1989. This was the cooperative project among Nagoya University, Department of Electrical Engineering and our Institute, Nagoya Institute of Technology, Chubu University, Aichi Institute of Technology, Indonesian National Institute of Aeronautics and Space, Institute of Technology Bandung, and Indonesian State Electricity Corporation. During this project we observed natural Indonesian lightning flashes together with the rocket experiment.

Hasegawa and Kawasaki carried out the computer simulation of lightning leader development using the novel mathematical idea of Fractal. They succeeded to give a preliminary understanding of a horizontally propagating lightning channel, which is

often observed during winter thunderstorms in Hokuriku district.

Takeuti, Nakano and Kawasaki participated in the 1988 France-Japan seminar on lightning held in Tokyo. They presented two papers at the seminar. Nakano, Kawasaki and Nagatani participated in the International Conference on Lightning and Static Electricity (ICOLSE) held at Oklahoma U. S. A. and they visited National Severe Storm Laboratory and New Mexico Institute of Mining and Technology. Nakano and Kawasaki attended to the 8th International Conference on Atmospheric Electricity held at Uppsala, Sweden. Takeuti attended the EMC Conference held at Wroclaw, Poland and also visited the Polish Academy of Sciences. Takeuti and Nakada visited the University of Queensland, Australia to discuss on the lightning counter developed by Mackerras.

Nakano as one of co-authors wrote the book titled "Lightning: Hazards and Safe Guards" edited by Uenosono.

March 13, 1989

-Tosio Takeuti-

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