Redevelopment of the MU radar transceiver-module control system

*Mamoru Yamamoto[1], Koki Kurokawa[1], Hiroyuki Hashiguchi[1]

1. Research Institute for Sustainable Humanosphere, Kyoto University

The MU radar was installed in Shigaraki, Japan in 1984 as the world first atmospheric radar with active phased-array antenna system. The MU radar consists of 475 Yagi antennas in the circular field of about 100m diameter. By the electronic phase shift of each Yagi, the antenna beam is steered to one of pre-selected 2048 directions in the transmitting pulse-to-pulse basis. Success of the MU radar in the atmospheric/ionospheric research is well known, and its active phased-array configuration was followed by many other radar systems. The phase control of the MU radar is realized by the control of its transceiver-module (TR-module) that are equipped with each Yagi antenna. They are gathered into 25 groups of each 19 modules. One CPU (microcomputer board) is used for control of one group of modules. A weak point of the MU radar exists in this point because we are using the original 8085 CPU board that is connected to the host computer by 1200-baud (!) serial line. This control is very slow, and we could not meet demands for rapid change of observation parameters for long time. This time we tried to re-develop the new TR-module controller by using recent CPU board and electronic devices. In the presentation, we show hardware/software of the newly developed prototype of the MU radar TR-module controller.

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