Proceedings of the Research Institute of Atmospherics,
Nagoya University, vol.25 (1978) —Activity Report—

Section 3. Radio Astronomy

Analysis Center for Solar Radio Emission (WDC-C2 Toyokawa) was established in April, 1977. S. Enome was appointed its Director and K. Shibasaki was transferred from Radio Astronomy Laboratory to the Analysis Center. Compilation and critical analysis of world-wide solar radio data are continued as before for the Quarterly Bulletin on Solar Activity of IAU.

Reconstruction of the north-south arm of 3-cm radioheliograph was completed in October, 1977. Solar radio maps and scan curves are daily obtained at 8 cm and 3 cm around local noon. From January 1st, 1978, drift-scan curves at 3 cm are to be published on Solar-Geophysical Data of WDC A for Solar-Terrestrial Physics at Boulder, U. S.A. Daily values of solar radio flux at 9.4, 3.75, 2, and 1 GHz are put into machine-readable form from the beginings of observations up to the end of 1976. They are available through WDC A for STP at Boulder or through WDC-C2 Toyokawa.

Full-automatic radio polarimeters at 9.4, 3.75, 2, and 1 GHz and a Solar Radio Data Acquisition and Communication System(SORDACS) are completed. Both systems enable us to sample total solar radio flux both intensities and polarization differences at the four frequencies in every tenth of second from sunrise to sunset. The timing accuracy will be improved as good as 10 msec. In the course of unusually high solar activities in the later part of 1977, intense bursts were recorded with these systems, for example, bursts on September 7, September 18, and September 20. The introduction of SORDACS, which is linked to the new host computer of the Institute, has considerably improved the capability of on-line processing of solar radio data.

H. Tanaka, Chief of Project Office for the construction of large radio telescopes(LRT) at Tokyo Astronomical Observatory, University of Tokyo, keeps his directorship on radio astronomy at Toyokawa.

The construction of LRT will start from April, 1978 at Nobeyama. LRT consists of a 45-m telescope and a super-synthesis telescope of

five 10-m dishes. It is designed to be operative down to millimeter wavelengths. The radio astronomy group at Toyokawa is responsible for the design of the super-systhesis telescope. This telescope has 30 stations along two railroad tracks of 600 m long each. We were forced to adopt a combination of two linear arrays as an array configuration because of the limitation of the land available. Ten Fourier components can be obtained at the same time. The distribution of stations is designed to be minimally redundant so as to sample as many Fourier components as possible within a limited time of observation.

Design works on new techniques such as coudé optics, phase-locked local oscillator system, and acousto-optical spectral correlator are under their way.

January 14, 1978

- Haruo TANAKA -

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