Immediately after the decision of the Indian National Committee on Space Research for establishing a rocket station near equator (at Thumba) plans were made to start ionospheric investigations under the supervision of Dr. K. G. Nastogi. Ionospheric drift measurements were started in January 1964, using closely spaced receiver technique originated by LITRA (1949). An ionosonde (CRPL model C4) was also put into operation in October, 1964. The daytime horizontal drifts and the parameters of the ground diffraction pattern for 1964-65 were studied by Mr. M. K. Deshpande. In May 1967, additional receiving aerials were installed in the north-south direction and the observations were extended whenever possible over the night-time hours. The results of the second epoch were discussed by Mr. Harish Chandra in his Ph.D. thesis.

With the increasing sunspot number, it was felt that a high power transmitter was required to compensate the increasing absorption in the lower ionosphere. A completely new and independent ionospheric drift unit involving higher transmitter power and various other modifications in the recording unit was developed and constructed by the author at Physical Research Laboratory during 1966-67 and
was installed at Thumba in January 1966. Additional receiving aerials were added in north-south direction increasing the antenna separation to about one thousand metres. This new unit enabled uninterrupted round the clock observations of the F-region as well as on some nights for the E-region.

With the two independent transmitter, receiver and recording units being available and with a system of ten receiving aerials, various special observations were possible, namely simultaneous recording of drifts at two heights, on different multiples of the same frequency, at six different aerials etc.

The main scope of the present work was, besides, the solar cycle variation of drift, the special observations and analyses of the drift records which would clarify the significance of the drift measurements at the magnetic equator. Due to a continuous series of data, it has been now possible to correlate the drift with geomagnetic field changes at the equator and thereby to show a close association between the drift measurements and the equatorial electrojet currents.

During the course of observations, it was noticed that the E-region echoes in the nighttime were significantly
prominent only during the periods of thunderstorm activity and an investigation of the thunderstorm effect on equatorial ionosphere has been discussed.

The observations at Thumba for the period 1968-69 were taken by the author. The analysis of the data was later done by him at Physical Research Laboratory during 1970-71, using the facilities of the IBM 1620 computer.

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